Supplement C

Reward sensitivity and internalizing symptoms during the transition to puberty: An examination of 9- and 10-year-olds in the ABCD Study

Contents

Sensitivity Analysis Results for Sample 1

1—Int~Puberty—

1.1 Model: CBCL internalizing factor ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + race.ethnicity.5level +
```

```
##       interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      4.459444   2.122551   2.101 0.035747 *
## PDS_score                        0.487526   0.168041   2.901 0.003751 **
## race.ethnicity.5levelBlack      -0.817758   0.867140  -0.943 0.345750
## race.ethnicity.5levelMixed       1.181182   0.847964   1.393 0.163760
## race.ethnicity.5levelOther       1.754101   0.961984   1.823 0.068364 .
## race.ethnicity.5levelWhite       1.265869   0.799230   1.584 0.113357
## interview_age                   -0.009392   0.015097  -0.622 0.533939
## bmi                              0.064337   0.029572   2.176 0.029684 *
## household.income[>=200K]        -2.776896   0.770842  -3.602 0.000322 ***
## household.income[100K-200K]     -2.207448   0.716007  -3.083 0.002073 **
## household.income[12K-16K]       -0.252511   0.955819  -0.264 0.791662
## household.income[16K-25K]        0.113765   0.797340   0.143 0.886554
## household.income[25K-35K]       -0.983116   0.753977  -1.304 0.192390
## household.income[35K-50K]       -1.167663   0.725683  -1.609 0.107736
## household.income[50K-75K]       -1.162286   0.721034  -1.612 0.107100
## household.income[5K-12K]        -0.641181   0.841959  -0.762 0.446412
## household.income[75K-100K]      -1.599332   0.725749  -2.204 0.027640 *
## high.educBachelor                0.190727   0.730984   0.261 0.794178
## high.educHS Diploma/GED         -0.501619   0.728623  -0.688 0.491237
## high.educPost Graduate Degree    0.367506   0.737471   0.498 0.618295
## high.educSome College            0.585969   0.687515   0.852 0.394133
## demo_race_hispanic1             -0.173681   0.342093  -0.508 0.611709
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =   0.03
## lmer.REML =  14919  Scale est. = 13.539    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + race.ethnicity.5level +
##       interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      3.801997   2.011384   1.890 0.058837 .
## PDS_score                        0.741548   0.206964   3.583 0.000346 ***
## race.ethnicity.5levelBlack       0.487473   0.773236   0.630 0.528467
## race.ethnicity.5levelMixed       1.951839   0.754590   2.587 0.009746 **
## race.ethnicity.5levelOther       1.539984   0.891712   1.727 0.084286 .
## race.ethnicity.5levelWhite       1.660299   0.704532   2.357 0.018517 *
## interview_age                   -0.009571   0.014136  -0.677 0.498427
## bmi                              0.065498   0.030104   2.176 0.029662 *
## household.income[>=200K]        -2.608757   0.752136  -3.468 0.000532 ***
```

```
## household.income[100K-200K]     -2.458648   0.695787   -3.534 0.000417 ***
## household.income[12K-16K]       -1.078558   0.929070   -1.161 0.245788
## household.income[16K-25K]       -0.433543   0.766599   -0.566 0.571755
## household.income[25K-35K]       -1.293509   0.752654   -1.719 0.085806 .
## household.income[35K-50K]       -0.951979   0.723375   -1.316 0.188281
## household.income[50K-75K]       -1.690169   0.691764   -2.443 0.014621 *
## household.income[5K-12K]         0.538916   0.817212    0.659 0.509661
## household.income[75K-100K]      -2.126280   0.707806   -3.004 0.002689 **
## high.educBachelor                0.564548   0.694996    0.812 0.416691
## high.educHS Diploma/GED         -0.366349   0.703525   -0.521 0.602596
## high.educPost Graduate Degree    0.474387   0.706474    0.671 0.501971
## high.educSome College            0.699741   0.661840    1.057 0.290488
## demo_race_hispanic1             -0.405084   0.321145   -1.261 0.207287
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0243
## lmer.REML =  16198  Scale est. = 14.08      n = 2633
```

1.2 Model: CBCL Anxious-Depressed ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ PDS_score + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    2.111715   1.213530    1.740 0.081962 .
## PDS_score                      0.174618   0.096065    1.818 0.069235 .
## race.ethnicity.5levelBlack    -0.236175   0.493301   -0.479 0.632150
## race.ethnicity.5levelMixed     0.619583   0.482507    1.284 0.199234
## race.ethnicity.5levelOther     0.706582   0.547938    1.290 0.197339
## race.ethnicity.5levelWhite     0.760516   0.454699    1.673 0.094542 .
## interview_age                 -0.003032   0.008651   -0.350 0.726007
## bmi                            0.011332   0.016912    0.670 0.502898
## household.income[>=200K]      -1.483952   0.438686   -3.383 0.000729 ***
## household.income[100K-200K]   -0.968914   0.407697   -2.377 0.017553 *
## household.income[12K-16K]     -0.177325   0.544682   -0.326 0.744788
## household.income[16K-25K]      0.088222   0.454470    0.194 0.846099
## household.income[25K-35K]     -0.420475   0.429723   -0.978 0.327936
## household.income[35K-50K]     -0.413257   0.413282   -1.000 0.317441
## household.income[50K-75K]     -0.422752   0.410589   -1.030 0.303290
## household.income[5K-12K]      -0.365691   0.479251   -0.763 0.445511
## household.income[75K-100K]    -0.701845   0.413218   -1.698 0.089545 .
## high.educBachelor              0.292754   0.416535    0.703 0.482229
## high.educHS Diploma/GED       -0.186536   0.415689   -0.449 0.653660
## high.educPost Graduate Degree  0.594945   0.420212    1.416 0.156958
## high.educSome College          0.495422   0.391857    1.264 0.206248
```

```
## demo_race_hispanic1            -0.066710    0.194367   -0.343 0.731464
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0178
## lmer.REML =  12243  Scale est. = 5.202     n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ PDS_score + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   1.883537   1.133308   1.662 0.096636 .
## PDS_score                     0.429198   0.116466   3.685 0.000233 ***
## race.ethnicity.5levelBlack    0.440936   0.434938   1.014 0.310776
## race.ethnicity.5levelMixed    1.184824   0.424770   2.789 0.005320 **
## race.ethnicity.5levelOther    1.072004   0.500808   2.141 0.032403 *
## race.ethnicity.5levelWhite    1.171454   0.396771   2.952 0.003181 **
## interview_age                -0.007697   0.007974  -0.965 0.334514
## bmi                           0.017530   0.016940   1.035 0.300841
## household.income[>=200K]     -1.003848   0.420727  -2.386 0.017104 *
## household.income[100K-200K]  -0.918087   0.389405  -2.358 0.018464 *
## household.income[12K-16K]    -0.352548   0.521493  -0.676 0.499078
## household.income[16K-25K]     0.038012   0.428656   0.089 0.929345
## household.income[25K-35K]    -0.294045   0.421006  -0.698 0.484968
## household.income[35K-50K]    -0.226831   0.404931  -0.560 0.575411
## household.income[50K-75K]    -0.695819   0.387065  -1.798 0.072343 .
## household.income[5K-12K]      0.100049   0.457922   0.218 0.827069
## household.income[75K-100K]   -0.772514   0.396081  -1.950 0.051236 .
## high.educBachelor             0.323477   0.388707   0.832 0.405380
## high.educHS Diploma/GED      -0.296793   0.393543  -0.754 0.450823
## high.educPost Graduate Degree 0.311636   0.395109   0.789 0.430339
## high.educSome College         0.259251   0.370272   0.700 0.483888
## demo_race_hispanic1          -0.102216   0.179896  -0.568 0.569952
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0132
## lmer.REML =  13209  Scale est. = 5.8515    n = 2633
```

1.3 Model: CBCL Withdrawn-Depressed ~ PDS

Females

```
##
## Family: gaussian
```

```
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.095487   0.599256   1.828 0.067662 .
## PDS_score                    0.158433   0.047515   3.334 0.000868 ***
## race.ethnicity.5levelBlack  -0.129429   0.242278  -0.534 0.593242
## race.ethnicity.5levelMixed   0.211498   0.237210   0.892 0.372694
## race.ethnicity.5levelOther   0.388096   0.269925   1.438 0.150624
## race.ethnicity.5levelWhite   0.239030   0.223178   1.071 0.284263
## interview_age               -0.004195   0.004282  -0.980 0.327328
## bmi                          0.020412   0.008365   2.440 0.014749 *
## household.income[>=200K]    -0.767334   0.216073  -3.551 0.000391 ***
## household.income[100K-200K] -0.691186   0.201079  -3.437 0.000597 ***
## household.income[12K-16K]   -0.227585   0.269043  -0.846 0.397689
## household.income[16K-25K]   -0.140194   0.224589  -0.624 0.532539
## household.income[25K-35K]   -0.305108   0.212257  -1.437 0.150720
## household.income[35K-50K]   -0.491138   0.204030  -2.407 0.016151 *
## household.income[50K-75K]   -0.459631   0.202573  -2.269 0.023359 *
## household.income[5K-12K]     0.004470   0.236552   0.019 0.984926
## household.income[75K-100K]  -0.572401   0.203806  -2.809 0.005017 **
## high.educBachelor           -0.016307   0.205542  -0.079 0.936772
## high.educHS Diploma/GED     -0.090991   0.205417  -0.443 0.657836
## high.educPost Graduate Degree -0.044833 0.207345  -0.216 0.828833
## high.educSome College        0.086132   0.193435   0.445 0.656158
## demo_race_hispanic1          0.014752   0.094543   0.156 0.876016
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0307
## lmer.REML = 8873.1  Scale est. = 1.4438    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.088368   0.630370   1.727 0.084366 .
## PDS_score                    0.135628   0.065134   2.082 0.037414 *
## race.ethnicity.5levelBlack   0.101897   0.242012   0.421 0.673760
## race.ethnicity.5levelMixed   0.451033   0.237287   1.901 0.057439 .
## race.ethnicity.5levelOther   0.222566   0.279688   0.796 0.426242
```

```
## race.ethnicity.5levelWhite       0.335747  0.220478   1.523 0.127926
## interview_age                    -0.002482  0.004449  -0.558 0.576915
## bmi                               0.021140  0.009495   2.226 0.026071 *
## household.income[>=200K]         -0.896306  0.234714  -3.819 0.000137 ***
## household.income[100K-200K]      -0.859369  0.217986  -3.942 8.28e-05 ***
## household.income[12K-16K]        -0.351142  0.292369  -1.201 0.229850
## household.income[16K-25K]        -0.056446  0.240132  -0.235 0.814179
## household.income[25K-35K]        -0.394040  0.236127  -1.669 0.095285 .
## household.income[35K-50K]        -0.340758  0.227134  -1.500 0.133671
## household.income[50K-75K]        -0.478070  0.216722  -2.206 0.027477 *
## household.income[5K-12K]          0.320481  0.256658   1.249 0.211898
## household.income[75K-100K]       -0.731898  0.221927  -3.298 0.000987 ***
## high.educBachelor                 0.040513  0.216642   0.187 0.851671
## high.educHS Diploma/GED          -0.008600  0.219838  -0.039 0.968799
## high.educPost Graduate Degree     0.007908  0.220470   0.036 0.971391
## high.educSome College             0.125252  0.206755   0.606 0.544700
## demo_race_hispanic1              -0.292398  0.095657  -3.057 0.002260 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0345
## lmer.REML =  10196  Scale est. = 2.0092    n = 2633
```

1.4 Model: CBCL Depressed DSM-5 ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.951849   0.712964   1.335  0.18198
## PDS_score                    0.163950   0.056585   2.897  0.00380 **
## race.ethnicity.5levelBlack  -0.063231   0.289565  -0.218  0.82716
## race.ethnicity.5levelMixed   0.475312   0.283540   1.676  0.09380 .
## race.ethnicity.5levelOther   0.682351   0.322480   2.116  0.03445 *
## race.ethnicity.5levelWhite   0.553199   0.266594   2.075  0.03809 *
## interview_age               -0.005394   0.005084  -1.061  0.28883
## bmi                          0.020409   0.009960   2.049  0.04056 *
## household.income[>=200K]    -0.824482   0.258495  -3.190  0.00144 **
## household.income[100K-200K] -0.665538   0.240483  -2.768  0.00569 **
## household.income[12K-16K]   -0.058547   0.321515  -0.182  0.85552
## household.income[16K-25K]    0.007014   0.268398   0.026  0.97915
## household.income[25K-35K]   -0.234232   0.253629  -0.924  0.35583
## household.income[35K-50K]   -0.220153   0.244079  -0.902  0.36716
## household.income[50K-75K]   -0.307151   0.242287  -1.268  0.20502
## household.income[5K-12K]    -0.184737   0.283235  -0.652  0.51431
## household.income[75K-100K]  -0.443821   0.243788  -1.821  0.06880 .
```

```
## high.educBachelor                0.128556   0.245633    0.523  0.60077
## high.educHS Diploma/GED           0.027594   0.245196    0.113  0.91041
## high.educPost Graduate Degree     0.159235   0.247798    0.643  0.52054
## high.educSome College             0.208469   0.231117    0.902  0.36714
## demo_race_hispanic1              -0.015424   0.112626   -0.137  0.89108
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0257
## lmer.REML = 9702.2  Scale est. = 1.6733    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.9932649  0.7755799   1.281  0.20042
## PDS_score                    0.1981086  0.0799001   2.479  0.01322 *
## race.ethnicity.5levelBlack   0.1798092  0.2976781   0.604  0.54587
## race.ethnicity.5levelMixed   0.6304201  0.2911087   2.166  0.03043 *
## race.ethnicity.5levelOther   0.4769890  0.3433376   1.389  0.16487
## race.ethnicity.5levelWhite   0.5471171  0.2713902   2.016  0.04390 *
## interview_age                0.0003371  0.0054635   0.062  0.95081
## bmi                         -0.0001894  0.0116278  -0.016  0.98700
## household.income[>=200K]    -0.8464646  0.2885510  -2.934  0.00338 **
## household.income[100K-200K] -0.8061765  0.2673602  -3.015  0.00259 **
## household.income[12K-16K]    0.0148142  0.3580411   0.041  0.96700
## household.income[16K-25K]    0.0962250  0.2944429   0.327  0.74384
## household.income[25K-35K]   -0.2171530  0.2892877  -0.751  0.45293
## household.income[35K-50K]   -0.1146487  0.2782022  -0.412  0.68030
## household.income[50K-75K]   -0.5291003  0.2657879  -1.991  0.04662 *
## household.income[5K-12K]     0.4132437  0.3144588   1.314  0.18891
## household.income[75K-100K]  -0.7125151  0.2720251  -2.619  0.00886 **
## high.educBachelor            0.2716688  0.2665056   1.019  0.30812
## high.educHS Diploma/GED     -0.0269615  0.2700208  -0.100  0.92047
## high.educPost Graduate Degree 0.1554190 0.2710105   0.573  0.56637
## high.educSome College        0.1113269  0.2540015   0.438  0.66121
## demo_race_hispanic1         -0.2989639  0.1213881  -2.463  0.01385 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0178
## lmer.REML =  11243  Scale est. = 2.7098    n = 2633
```

1.5 Model: CBCL internalizing factor ~ Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   5.08076    2.18733   2.323 0.020273 *
## pds_p_ss_categoryEarly        0.96804    0.30158   3.210 0.001345 **
## pds_p_ss_categoryLate         1.03335    0.74541   1.386 0.165788
## pds_p_ss_categoryMid          0.83566    0.30015   2.784 0.005409 **
## race.ethnicity.5levelBlack   -0.65406    0.86623  -0.755 0.450285
## race.ethnicity.5levelMixed    1.27299    0.84780   1.502 0.133356
## race.ethnicity.5levelOther    1.87000    0.96091   1.946 0.051762 .
## race.ethnicity.5levelWhite    1.33650    0.79918   1.672 0.094586 .
## interview_age                -0.01103    0.01538  -0.718 0.473126
## bmi                           0.05221    0.03068   1.702 0.088885 .
## household.income[>=200K]     -2.80617    0.77050  -3.642 0.000276 ***
## household.income[100K-200K]  -2.30649    0.71539  -3.224 0.001281 **
## household.income[12K-16K]    -0.33950    0.95632  -0.355 0.722611
## household.income[16K-25K]    -0.01489    0.79787  -0.019 0.985110
## household.income[25K-35K]    -1.10245    0.75422  -1.462 0.143953
## household.income[35K-50K]    -1.30151    0.72580  -1.793 0.073065 .
## household.income[50K-75K]    -1.25475    0.72066  -1.741 0.081792 .
## household.income[5K-12K]     -0.66961    0.84279  -0.795 0.426975
## household.income[75K-100K]   -1.67574    0.72560  -2.309 0.021004 *
## high.educBachelor             0.18520    0.73167   0.253 0.800192
## high.educHS Diploma/GED      -0.44485    0.72877  -0.610 0.541642
## high.educPost Graduate Degree 0.37269    0.73817   0.505 0.613691
## high.educSome College         0.62253    0.68758   0.905 0.365348
## demo_race_hispanic1          -0.19907    0.34280  -0.581 0.561490
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0305
## lmer.REML =  14914  Scale est. = 13.391    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
```

```
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  4.203592   2.024703   2.076 0.037978 *
## pds_p_ss_categoryEarly       0.631280   0.251205   2.513 0.012030 *
## pds_p_ss_categoryLate        1.056199   1.673731   0.631 0.528067
## pds_p_ss_categoryMid         0.769237   0.522520   1.472 0.141096
## race.ethnicity.5levelBlack   0.534316   0.774274   0.690 0.490201
## race.ethnicity.5levelMixed   1.987743   0.755497   2.631 0.008563 **
## race.ethnicity.5levelOther   1.582369   0.893086   1.772 0.076545 .
## race.ethnicity.5levelWhite   1.693684   0.705438   2.401 0.016425 *
## interview_age               -0.007518   0.014146  -0.531 0.595154
## bmi                          0.074087   0.029947   2.474 0.013426 *
## household.income[>=200K]    -2.693825   0.752295  -3.581 0.000349 ***
## household.income[100K-200K] -2.529599   0.696337  -3.633 0.000286 ***
## household.income[12K-16K]   -1.092665   0.930332  -1.174 0.240306
## household.income[16K-25K]   -0.530478   0.766919  -0.692 0.489187
## household.income[25K-35K]   -1.348648   0.753424  -1.790 0.073566 .
## household.income[35K-50K]   -0.997987   0.724394  -1.378 0.168418
## household.income[50K-75K]   -1.756783   0.692121  -2.538 0.011198 *
## household.income[5K-12K]     0.436140   0.817556   0.533 0.593755
## household.income[75K-100K]  -2.198172   0.708257  -3.104 0.001932 **
## high.educBachelor            0.587679   0.697207   0.843 0.399358
## high.educHS Diploma/GED     -0.308636   0.705418  -0.438 0.661769
## high.educPost Graduate Degree 0.514506  0.708661   0.726 0.467888
## high.educSome College        0.744509   0.664060   1.121 0.262328
## demo_race_hispanic1         -0.433370   0.321771  -1.347 0.178153
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0223
## lmer.REML =  16199  Scale est. = 14.306    n = 2633
```

1.6 Model: CBCL Anxious-Depressed ~ Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  2.237706   1.250752   1.789 0.073727 .
## pds_p_ss_categoryEarly       0.457348   0.172985   2.644 0.008250 **
## pds_p_ss_categoryLate        0.273122   0.427555   0.639 0.523014
## pds_p_ss_categoryMid         0.279920   0.171581   1.631 0.102934
## race.ethnicity.5levelBlack  -0.152336   0.492589  -0.309 0.757153
## race.ethnicity.5levelMixed   0.663603   0.482253   1.376 0.168935
## race.ethnicity.5levelOther   0.756057   0.547164   1.382 0.167170
## race.ethnicity.5levelWhite   0.790522   0.454498   1.739 0.082105 .
```

```
## interview_age                      -0.003043  0.008814  -0.345 0.729933
## bmi                                 0.007642  0.017541   0.436 0.663136
## household.income[>=200K]           -1.497082  0.438359  -3.415 0.000648 ***
## household.income[100K-200K]        -1.013073  0.407238  -2.488 0.012926 *
## household.income[12K-16K]          -0.220888  0.544847  -0.405 0.685210
## household.income[16K-25K]           0.030298  0.454677   0.067 0.946876
## household.income[25K-35K]          -0.470706  0.429776  -1.095 0.273523
## household.income[35K-50K]          -0.470186  0.413252  -1.138 0.255331
## household.income[50K-75K]          -0.462304  0.410272  -1.127 0.259931
## household.income[5K-12K]           -0.371009  0.479607  -0.774 0.439262
## household.income[75K-100K]         -0.732071  0.413027  -1.772 0.076446 .
## high.educBachelor                   0.284008  0.416849   0.681 0.495734
## high.educHS Diploma/GED            -0.160654  0.415712  -0.386 0.699194
## high.educPost Graduate Degree       0.591259  0.420537   1.406 0.159865
## high.educSome College               0.512774  0.391815   1.309 0.190756
## demo_race_hispanic1                -0.074639  0.194659  -0.383 0.701432
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0188
## lmer.REML =  12240  Scale est. = 5.1808    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                2.128858   1.140267   1.867  0.06202 .
## pds_p_ss_categoryEarly     0.419814   0.141621   2.964  0.00306 **
## pds_p_ss_categoryLate      0.682829   0.948223   0.720  0.47152
## pds_p_ss_categoryMid       0.322583   0.293489   1.099  0.27181
## race.ethnicity.5levelBlack 0.469387   0.435404   1.078  0.28111
## race.ethnicity.5levelMixed 1.208837   0.425185   2.843  0.00450 **
## race.ethnicity.5levelOther 1.105095   0.501471   2.204  0.02763 *
## race.ethnicity.5levelWhite 1.192829   0.397200   3.003  0.00270 **
## interview_age             -0.006673   0.007975  -0.837  0.40282
## bmi                        0.022604   0.016844   1.342  0.17974
## household.income[>=200K]  -1.054589   0.420760  -2.506  0.01226 *
## household.income[100K-200K] -0.962982 0.389671  -2.471  0.01353 *
## household.income[12K-16K] -0.363289   0.522122  -0.696  0.48662
## household.income[16K-25K] -0.025505   0.428745  -0.059  0.95257
## household.income[25K-35K] -0.324683   0.421369  -0.771  0.44105
## household.income[35K-50K] -0.258138   0.405439  -0.637  0.52438
## household.income[50K-75K] -0.737211   0.387214  -1.904  0.05704 .
## household.income[5K-12K]   0.040509   0.458052   0.088  0.92954
## household.income[75K-100K] -0.817057  0.396287  -2.062  0.03933 *
```

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```
## high.educBachelor                0.333544    0.389865    0.856  0.39233
## high.educHS Diploma/GED          -0.259385    0.394538   -0.657  0.51096
## high.educPost Graduate Degree     0.331436    0.396255    0.836  0.40300
## high.educSome College             0.283512    0.371459    0.763  0.44539
## demo_race_hispanic1              -0.119174    0.180218   -0.661  0.50849
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0114
## lmer.REML =  13212  Scale est. = 5.9408    n = 2633
```

1.7 Model: CBCL Withdrawn-Depressed ~ Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ pds_p_ss_category + race.ethnicity.5level +
##      interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      1.471416   0.617684    2.382 0.017289 *
## pds_p_ss_categoryEarly           0.222248   0.085782    2.591 0.009632 **
## pds_p_ss_categoryLate            0.648799   0.211977    3.061 0.002233 **
## pds_p_ss_categoryMid             0.278102   0.084841    3.278 0.001061 **
## race.ethnicity.5levelBlack      -0.099892   0.241939   -0.413 0.679730
## race.ethnicity.5levelMixed       0.232705   0.237107    0.981 0.326479
## race.ethnicity.5levelOther       0.410360   0.269564    1.522 0.128064
## race.ethnicity.5levelWhite       0.259925   0.223094    1.165 0.244098
## interview_age                   -0.005860   0.004362   -1.343 0.179250
## bmi                              0.015363   0.008674    1.771 0.076668 .
## household.income[>=200K]        -0.773713   0.215937   -3.583 0.000346 ***
## household.income[100K-200K]     -0.714600   0.200872   -3.557 0.000382 ***
## household.income[12K-16K]       -0.253332   0.269137   -0.941 0.346658
## household.income[16K-25K]       -0.168554   0.224701   -0.750 0.453252
## household.income[25K-35K]       -0.339785   0.212295   -1.601 0.109612
## household.income[35K-50K]       -0.527756   0.204039   -2.587 0.009753 **
## household.income[50K-75K]       -0.485478   0.202437   -2.398 0.016553 *
## household.income[5K-12K]        -0.020700   0.236764   -0.087 0.930337
## household.income[75K-100K]      -0.592643   0.203734   -2.909 0.003660 **
## high.educBachelor               -0.019808   0.205721   -0.096 0.923303
## high.educHS Diploma/GED         -0.081636   0.205436   -0.397 0.691123
## high.educPost Graduate Degree   -0.045884   0.207531   -0.221 0.825037
## high.educSome College            0.088851   0.193428    0.459 0.646026
## demo_race_hispanic1             -0.003196   0.094670   -0.034 0.973075
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0316
```

```
## lmer.REML = 8872.2  Scale est. = 1.4253    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   1.176371   0.633966   1.856 0.063627 .
## pds_p_ss_categoryEarly        0.120490   0.079329   1.519 0.128917
## pds_p_ss_categoryLate         0.246024   0.533123   0.461 0.644496
## pds_p_ss_categoryMid          0.267361   0.164326   1.627 0.103854
## race.ethnicity.5levelBlack    0.101445   0.242137   0.419 0.675281
## race.ethnicity.5levelMixed    0.456226   0.237366   1.922 0.054710 .
## race.ethnicity.5levelOther    0.224624   0.279910   0.802 0.422346
## race.ethnicity.5levelWhite    0.342538   0.220596   1.553 0.120595
## interview_age                -0.002312   0.004445  -0.520 0.603058
## bmi                           0.022394   0.009434   2.374 0.017679 *
## household.income[>=200K]     -0.901258   0.234663  -3.841 0.000126 ***
## household.income[100K-200K]  -0.861598   0.218046  -3.951 7.97e-05 ***
## household.income[12K-16K]    -0.346812   0.292543  -1.186 0.235925
## household.income[16K-25K]    -0.061829   0.240095  -0.258 0.796798
## household.income[25K-35K]    -0.398639   0.236234  -1.687 0.091632 .
## household.income[35K-50K]    -0.338904   0.227317  -1.491 0.136111
## household.income[50K-75K]    -0.481324   0.216715  -2.221 0.026437 *
## household.income[5K-12K]      0.305244   0.256622   1.189 0.234364
## household.income[75K-100K]   -0.734593   0.221951  -3.310 0.000947 ***
## high.educBachelor             0.046202   0.217167   0.213 0.831541
## high.educHS Diploma/GED      -0.003564   0.220264  -0.016 0.987091
## high.educPost Graduate Degree 0.017373   0.220998   0.079 0.937348
## high.educSome College         0.132829   0.207304   0.641 0.521746
## demo_race_hispanic1          -0.300194   0.095894  -3.130 0.001764 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0339
## lmer.REML =  10197  Scale est. = 2.0155    n = 2633
```

1.8 Model: CBCL Depressed DSM-5 ~ Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ pds_p_ss_category + race.ethnicity.5level +
```

```
##       interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.247783   0.735176   1.697  0.08978 .
## pds_p_ss_categoryEarly            0.254143   0.101864   2.495  0.01267 *
## pds_p_ss_categoryLate             0.501426   0.251625   1.993  0.04640 *
## pds_p_ss_categoryMid              0.280387   0.101088   2.774  0.00559 **
## race.ethnicity.5levelBlack       -0.022299   0.289338  -0.077  0.93857
## race.ethnicity.5levelMixed        0.500412   0.283570   1.765  0.07774 .
## race.ethnicity.5levelOther        0.712650   0.322220   2.212  0.02708 *
## race.ethnicity.5levelWhite        0.575068   0.266667   2.157  0.03114 *
## interview_age                    -0.006476   0.005181  -1.250  0.21142
## bmi                               0.015943   0.010334   1.543  0.12300
## household.income[>=200K]         -0.832805   0.258439  -3.222  0.00129 **
## household.income[100K-200K]      -0.692663   0.240329  -2.882  0.00399 **
## household.income[12K-16K]        -0.083009   0.321749  -0.258  0.79643
## household.income[16K-25K]        -0.026447   0.268630  -0.098  0.92158
## household.income[25K-35K]        -0.269880   0.253768  -1.063  0.28767
## household.income[35K-50K]        -0.259486   0.244168  -1.063  0.28801
## household.income[50K-75K]        -0.334439   0.242212  -1.381  0.16748
## household.income[5K-12K]         -0.202605   0.283562  -0.714  0.47499
## household.income[75K-100K]       -0.466477   0.243790  -1.913  0.05581 .
## high.educBachelor                 0.126548   0.245935   0.515  0.60691
## high.educHS Diploma/GED           0.040361   0.245317   0.165  0.86933
## high.educPost Graduate Degree     0.159981   0.248106   0.645  0.51911
## high.educSome College             0.215312   0.231201   0.931  0.35180
## demo_race_hispanic1              -0.028884   0.112909  -0.256  0.79811
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0257
## lmer.REML = 9703.4  Scale est. = 1.6658    n = 2420
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ pds_p_ss_category + race.ethnicity.5level +
##       interview_age + bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.1258676  0.7799787   1.443  0.14901
## pds_p_ss_categoryEarly      0.1948370  0.0971281   2.006  0.04496 *
## pds_p_ss_categoryLate       0.1517642  0.6503774   0.233  0.81551
## pds_p_ss_categoryMid        0.3249323  0.2013838   1.613  0.10676
## race.ethnicity.5levelBlack  0.1822400  0.2978518   0.612  0.54069
## race.ethnicity.5levelMixed  0.6391979  0.2912276   2.195  0.02826 *
## race.ethnicity.5levelOther  0.4818763  0.3436407   1.402  0.16095
```

```
## race.ethnicity.5levelWhite      0.5575928  0.2715295   2.054  0.04012 *
## interview_age                    0.0006032  0.0054605   0.110  0.91204
## bmi                              0.0018273  0.0115558   0.158  0.87437
## household.income[>=200K]        -0.8598926  0.2885080  -2.980  0.00290 **
## household.income[100K-200K]     -0.8160723  0.2674644  -3.051  0.00230 **
## household.income[12K-16K]        0.0186943  0.3583048   0.052  0.95839
## household.income[16K-25K]        0.0810109  0.2944423   0.275  0.78324
## household.income[25K-35K]       -0.2291078  0.2894670  -0.791  0.42873
## household.income[35K-50K]       -0.1184713  0.2784684  -0.425  0.67055
## household.income[50K-75K]       -0.5386376  0.2658172  -2.026  0.04283 *
## household.income[5K-12K]         0.3869017  0.3144439   1.230  0.21865
## household.income[75K-100K]      -0.7224390  0.2720902  -2.655  0.00798 **
## high.educBachelor                0.2734413  0.2672252   1.023  0.30628
## high.educHS Diploma/GED         -0.0211473  0.2706189  -0.078  0.93772
## high.educPost Graduate Degree    0.1624617  0.2717249   0.598  0.54997
## high.educSome College            0.1167055  0.2547380   0.458  0.64689
## demo_race_hispanic1             -0.3093894  0.1216038  -2.544  0.01101 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0171
## lmer.REML =  11243  Scale est. = 2.7088    n = 2633
```

1.9 Model: CBCL internalizing factor ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.6588323  2.2615754   0.733  0.46334
## hormone_scr_ert_mean             -0.0026370  0.0073583  -0.358  0.72010
## hormone_sal_end_min_since_midnight -0.0001973  0.0006845  -0.288  0.77317
## race.ethnicity.5levelBlack       -0.6240199  0.8733463  -0.715  0.47498
## race.ethnicity.5levelMixed        1.0706228  0.8523047   1.256  0.20919
## race.ethnicity.5levelOther        1.9309965  0.9700818   1.991  0.04665 *
## race.ethnicity.5levelWhite        1.2930446  0.8021421   1.612  0.10711
## interview_age                     0.0115741  0.0153662   0.753  0.45140
## bmi                               0.0924760  0.0305522   3.027  0.00250 **
## household.income[>=200K]         -2.2497853  0.8144795  -2.762  0.00579 **
## household.income[100K-200K]      -1.6855646  0.7593305  -2.220  0.02653 *
## household.income[12K-16K]         0.2950437  1.0148288   0.291  0.77128
## household.income[16K-25K]         0.7862198  0.8515711   0.923  0.35597
## household.income[25K-35K]        -0.4137149  0.7977787  -0.519  0.60410
## household.income[35K-50K]        -0.2237425  0.7689633  -0.291  0.77110
## household.income[50K-75K]        -0.6171795  0.7663473  -0.805  0.42070
```

```
## household.income[5K-12K]              0.2368349  0.8995923   0.263  0.79237
## household.income[75K-100K]            -1.0669749  0.7689027  -1.388  0.16538
## high.educBachelor                      0.4579963  0.7578390   0.604  0.54568
## high.educHS Diploma/GED               -0.5167084  0.7602901  -0.680  0.49682
## high.educPost Graduate Degree          0.6709191  0.7651295   0.877  0.38065
## high.educSome College                  0.7279549  0.7133271   1.021  0.30760
## demo_race_hispanic1                   -0.2603928  0.3529664  -0.738  0.46076
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0262
## lmer.REML =  13817  Scale est. = 13.585    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        2.8253802  2.1873065   1.292 0.196578
## hormone_scr_ert_mean              -0.0019466  0.0074421  -0.262 0.793679
## hormone_sal_end_min_since_midnight 0.0005592  0.0006545   0.854 0.392982
## race.ethnicity.5levelBlack         0.6711542  0.8040691   0.835 0.403971
## race.ethnicity.5levelMixed         1.9941753  0.7843831   2.542 0.011073 *
## race.ethnicity.5levelOther         1.4268036  0.9324761   1.530 0.126117
## race.ethnicity.5levelWhite         1.6896880  0.7313654   2.310 0.020954 *
## interview_age                     -0.0010327  0.0148060  -0.070 0.944400
## bmi                                0.0840405  0.0316304   2.657 0.007937 **
## household.income[>=200K]          -2.6234188  0.7956979  -3.297 0.000991 ***
## household.income[100K-200K]       -2.5172229  0.7391071  -3.406 0.000671 ***
## household.income[12K-16K]         -0.9432898  0.9973465  -0.946 0.344345
## household.income[16K-25K]         -0.4412443  0.8220803  -0.537 0.591496
## household.income[25K-35K]         -1.2398980  0.8006505  -1.549 0.121605
## household.income[35K-50K]         -0.9069887  0.7702214  -1.178 0.239084
## household.income[50K-75K]         -1.6199953  0.7372163  -2.197 0.028083 *
## household.income[5K-12K]           0.7240325  0.8618116   0.840 0.400919
## household.income[75K-100K]        -2.1655900  0.7513280  -2.882 0.003982 **
## high.educBachelor                  0.8520318  0.7357642   1.158 0.246969
## high.educHS Diploma/GED           -0.1388206  0.7429543  -0.187 0.851794
## high.educPost Graduate Degree      0.7132842  0.7463144   0.956 0.339298
## high.educSome College              0.9796164  0.6998775   1.400 0.161732
## demo_race_hispanic1               -0.4082620  0.3338234  -1.223 0.221453
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) =   0.02
## lmer.REML =  15132  Scale est. = 13.895    n = 2447
```

1.10 Model: CBCL Anxious-Depressed ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.1052703  1.3000119   0.850   0.3953
## hormone_scr_ert_mean              0.0017462  0.0042352   0.412   0.6801
## hormone_sal_end_min_since_midnight -0.0002491 0.0003927  -0.634   0.5260
## race.ethnicity.5levelBlack        -0.2348006  0.4996861  -0.470   0.6385
## race.ethnicity.5levelMixed         0.5457718  0.4877352   1.119   0.2633
## race.ethnicity.5levelOther         0.7722479  0.5555977   1.390   0.1647
## race.ethnicity.5levelWhite         0.7870124  0.4590129   1.715   0.0866 .
## interview_age                      0.0039389  0.0088512   0.445   0.6564
## bmi                                0.0231365  0.0175594   1.318   0.1878
## household.income[>=200K]          -1.1410848  0.4661564  -2.448   0.0144 *
## household.income[100K-200K]       -0.6329692  0.4347897  -1.456   0.1456
## household.income[12K-16K]          0.1454448  0.5813603   0.250   0.8025
## household.income[16K-25K]          0.5762044  0.4879294   1.181   0.2378
## household.income[25K-35K]         -0.0194263  0.4570938  -0.042   0.9661
## household.income[35K-50K]          0.1106987  0.4403279   0.251   0.8015
## household.income[50K-75K]         -0.0555616  0.4388159  -0.127   0.8993
## household.income[5K-12K]           0.0655370  0.5148758   0.127   0.8987
## household.income[75K-100K]        -0.3659170  0.4402197  -0.831   0.4059
## high.educBachelor                  0.2991967  0.4341951   0.689   0.4908
## high.educHS Diploma/GED           -0.2848212  0.4360820  -0.653   0.5137
## high.educPost Graduate Degree      0.6423942  0.4383499   1.465   0.1429
## high.educSome College              0.4587277  0.4087598   1.122   0.2619
## demo_race_hispanic1               -0.1074454  0.2018505  -0.532   0.5946
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.019
## lmer.REML =  11364  Scale est. = 5.1815    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
```

```
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     1.805e+00  1.235e+00   1.461  0.14415
## hormone_scr_ert_mean           -1.577e-03  4.211e-03  -0.374  0.70810
## hormone_sal_end_min_since_midnight -2.164e-05  3.707e-04  -0.058  0.95345
## race.ethnicity.5levelBlack      5.640e-01  4.536e-01   1.243  0.21383
## race.ethnicity.5levelMixed      1.196e+00  4.429e-01   2.699  0.00700 **
## race.ethnicity.5levelOther      1.004e+00  5.249e-01   1.913  0.05586 .
## race.ethnicity.5levelWhite      1.150e+00  4.132e-01   2.783  0.00543 **
## interview_age                  -3.378e-03  8.369e-03  -0.404  0.68655
## bmi                             2.623e-02  1.785e-02   1.470  0.14183
## household.income[>=200K]       -1.055e+00  4.456e-01  -2.368  0.01798 *
## household.income[100K-200K]    -9.863e-01  4.141e-01  -2.382  0.01731 *
## household.income[12K-16K]      -2.921e-01  5.609e-01  -0.521  0.60261
## household.income[16K-25K]      -2.711e-02  4.602e-01  -0.059  0.95302
## household.income[25K-35K]      -3.373e-01  4.484e-01  -0.752  0.45199
## household.income[35K-50K]      -2.315e-01  4.317e-01  -0.536  0.59179
## household.income[50K-75K]      -7.173e-01  4.130e-01  -1.737  0.08255 .
## household.income[5K-12K]        1.379e-01  4.836e-01   0.285  0.77558
## household.income[75K-100K]     -8.315e-01  4.209e-01  -1.975  0.04834 *
## high.educBachelor               4.525e-01  4.120e-01   1.098  0.27220
## high.educHS Diploma/GED        -1.951e-01  4.161e-01  -0.469  0.63926
## high.educPost Graduate Degree   4.313e-01  4.179e-01   1.032  0.30211
## high.educSome College           3.731e-01  3.920e-01   0.952  0.34138
## demo_race_hispanic1            -8.261e-02  1.876e-01  -0.440  0.65968
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00754
## lmer.REML =  12371  Scale est. = 6.1673    n = 2447
```

1.11 Model: CBCL Withdrawn-Depressed ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     3.509e-01  6.286e-01   0.558 0.576788
## hormone_scr_ert_mean           -1.582e-03  2.052e-03  -0.771 0.440853
## hormone_sal_end_min_since_midnight  2.237e-05  1.864e-04   0.120 0.904519
## race.ethnicity.5levelBlack     -4.980e-02  2.396e-01  -0.208 0.835408
```

```
## race.ethnicity.5levelMixed             2.104e-01  2.342e-01   0.898 0.369229
## race.ethnicity.5levelOther             3.947e-01  2.677e-01   1.474 0.140625
## race.ethnicity.5levelWhite             2.634e-01  2.199e-01   1.198 0.231134
## interview_age                          1.825e-03  4.296e-03   0.425 0.670993
## bmi                                    2.913e-02  8.509e-03   3.423 0.000631 ***
## household.income[>=200K]              -6.952e-01  2.247e-01  -3.094 0.002000 **
## household.income[100K-200K]           -6.208e-01  2.100e-01  -2.957 0.003143 **
## household.income[12K-16K]             -3.749e-02  2.812e-01  -0.133 0.893967
## household.income[16K-25K]             -3.028e-02  2.362e-01  -0.128 0.897993
## household.income[25K-35K]             -2.001e-01  2.211e-01  -0.905 0.365449
## household.income[35K-50K]             -3.094e-01  2.129e-01  -1.453 0.146373
## household.income[50K-75K]             -3.972e-01  2.121e-01  -1.873 0.061205 .
## household.income[5K-12K]               2.209e-01  2.489e-01   0.887 0.374968
## household.income[75K-100K]            -5.158e-01  2.126e-01  -2.426 0.015345 *
## high.educBachelor                      5.996e-02  2.097e-01   0.286 0.775018
## high.educHS Diploma/GED               -1.251e-01  2.111e-01  -0.593 0.553555
## high.educPost Graduate Degree          3.723e-02  2.118e-01   0.176 0.860451
## high.educSome College                  1.197e-01  1.975e-01   0.606 0.544582
## demo_race_hispanic1                   -2.398e-02  9.562e-02  -0.251 0.801987
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0245
## lmer.REML = 8164.3  Scale est. = 1.4664    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          9.082e-01  6.754e-01   1.345 0.178869
## hormone_scr_ert_mean                -1.704e-04  2.290e-03  -0.074 0.940694
## hormone_sal_end_min_since_midnight  -1.722e-05  1.947e-04  -0.088 0.929530
## race.ethnicity.5levelBlack           1.556e-01  2.478e-01   0.628 0.530114
## race.ethnicity.5levelMixed           4.723e-01  2.429e-01   1.944 0.051992 .
## race.ethnicity.5levelOther           2.269e-01  2.877e-01   0.789 0.430356
## race.ethnicity.5levelWhite           3.560e-01  2.256e-01   1.578 0.114687
## interview_age                       -6.917e-04  4.585e-03  -0.151 0.880093
## bmi                                  2.564e-02  9.812e-03   2.613 0.009022 **
## household.income[>=200K]            -9.156e-01  2.439e-01  -3.754 0.000178 ***
## household.income[100K-200K]         -8.976e-01  2.273e-01  -3.949 8.09e-05 ***
## household.income[12K-16K]           -4.047e-01  3.088e-01  -1.310 0.190153
## household.income[16K-25K]           -1.645e-01  2.529e-01  -0.651 0.515306
## household.income[25K-35K]           -3.633e-01  2.465e-01  -1.474 0.140720
## household.income[35K-50K]           -3.409e-01  2.374e-01  -1.436 0.151024
```

```
## household.income[50K-75K]              -4.627e-01  2.267e-01  -2.041 0.041406 *
## household.income[5K-12K]                3.512e-01  2.660e-01   1.320 0.186814
## household.income[75K-100K]             -7.475e-01  2.312e-01  -3.233 0.001243 **
## high.educBachelor                       1.431e-01  2.251e-01   0.636 0.525061
## high.educHS Diploma/GED                 3.825e-02  2.278e-01   0.168 0.866626
## high.educPost Graduate Degree           7.894e-02  2.285e-01   0.345 0.729831
## high.educSome College                   2.253e-01  2.146e-01   1.050 0.293742
## demo_race_hispanic1                    -2.828e-01  9.874e-02  -2.864 0.004221 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0332
## lmer.REML = 9484.3  Scale est. = 2.1096     n = 2447
```

1.12 Model: CBCL Depressed DSM-5 ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         3.522e-01  7.567e-01   0.465  0.64163
## hormone_scr_ert_mean               -1.427e-03  2.467e-03  -0.579  0.56289
## hormone_sal_end_min_since_midnight  3.798e-05  2.234e-04   0.170  0.86498
## race.ethnicity.5levelBlack         -3.087e-02  2.901e-01  -0.106  0.91527
## race.ethnicity.5levelMixed          4.476e-01  2.836e-01   1.578  0.11460
## race.ethnicity.5levelOther          7.004e-01  3.241e-01   2.161  0.03082 *
## race.ethnicity.5levelWhite          5.683e-01  2.660e-01   2.137  0.03273 *
## interview_age                       7.429e-04  5.161e-03   0.144  0.88555
## bmi                                 2.693e-02  1.026e-02   2.624  0.00875 **
## household.income[>=200K]           -7.676e-01  2.724e-01  -2.817  0.00488 **
## household.income[100K-200K]        -6.345e-01  2.545e-01  -2.493  0.01275 *
## household.income[12K-16K]           1.757e-03  3.407e-01   0.005  0.99589
## household.income[16K-25K]           8.674e-02  2.862e-01   0.303  0.76186
## household.income[25K-35K]          -1.500e-01  2.678e-01  -0.560  0.57549
## household.income[35K-50K]          -8.148e-02  2.582e-01  -0.315  0.75241
## household.income[50K-75K]          -2.602e-01  2.571e-01  -1.012  0.31165
## household.income[5K-12K]            1.290e-02  3.022e-01   0.043  0.96595
## household.income[75K-100K]         -3.974e-01  2.578e-01  -1.541  0.12337
## high.educBachelor                   1.109e-01  2.540e-01   0.437  0.66240
## high.educHS Diploma/GED            -4.673e-02  2.554e-01  -0.183  0.85483
## high.educPost Graduate Degree       1.566e-01  2.565e-01   0.611  0.54157
## high.educSome College               1.774e-01  2.392e-01   0.742  0.45846
## demo_race_hispanic1                -7.429e-02  1.151e-01  -0.645  0.51870
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
## 
## 
## R-sq.(adj) =  0.0227
## lmer.REML = 8987.3  Scale est. = 1.6772    n = 2239
```

Males

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
## 
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        0.7389589  0.8405889   0.879  0.37944
## hormone_scr_ert_mean               0.0003540  0.0028568   0.124  0.90141
## hormone_sal_end_min_since_midnight 0.0001349  0.0002473   0.545  0.58558
## race.ethnicity.5levelBlack         0.2289714  0.3085815   0.742  0.45815
## race.ethnicity.5levelMixed         0.6611666  0.3017026   2.191  0.02851 *
## race.ethnicity.5levelOther         0.4566772  0.3580539   1.275  0.20227
## race.ethnicity.5levelWhite         0.5540880  0.2807471   1.974  0.04854 *
## interview_age                      0.0019197  0.0057000   0.337  0.73630
## bmi                                0.0066758  0.0121829   0.548  0.58376
## household.income[>=200K]          -0.8476704  0.3046856  -2.782  0.00544 **
## household.income[100K-200K]       -0.8243039  0.2834328  -2.908  0.00367 **
## household.income[12K-16K]          0.0597420  0.3835360   0.156  0.87623
## household.income[16K-25K]          0.1175711  0.3153082   0.373  0.70927
## household.income[25K-35K]         -0.1941353  0.3073034  -0.632  0.52762
## household.income[35K-50K]         -0.0964487  0.2956599  -0.326  0.74429
## household.income[50K-75K]         -0.4742197  0.2827274  -1.677  0.09361 .
## household.income[5K-12K]           0.5014247  0.3309819   1.515  0.12991
## household.income[75K-100K]        -0.7342944  0.2882151  -2.548  0.01090 *
## high.educBachelor                  0.4031308  0.2814703   1.432  0.15221
## high.educHS Diploma/GED            0.0280533  0.2845021   0.099  0.92146
## high.educPost Graduate Degree      0.2460101  0.2856596   0.861  0.38921
## high.educSome College              0.2192993  0.2679927   0.818  0.41326
## demo_race_hispanic1               -0.3212392  0.1257262  -2.555  0.01068 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.017
## lmer.REML =  10515  Scale est. = 2.5184    n = 2447
```

1.13 Model: CBCL internalizing factor ~ Testosterone + PDS

Females

```
## 
## Family: gaussian
## Link function: identity
```

```
## 
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
##     household.income + high.educ + demo_race_hispanic
## 
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       2.4461488  2.2751447   1.075  0.28242
## hormone_scr_ert_mean             -0.0075078  0.0075461  -0.995  0.31988
## hormone_sal_end_min_since_midnight -0.0001712  0.0006840  -0.250  0.80241
## PDS_score                         0.5144749  0.1808484   2.845  0.00448 **
## race.ethnicity.5levelBlack       -0.8688962  0.8762787  -0.992  0.32151
## race.ethnicity.5levelMixed        0.9521369  0.8519837   1.118  0.26388
## race.ethnicity.5levelOther        1.7594951  0.9703720   1.813  0.06993 .
## race.ethnicity.5levelWhite        1.2221603  0.8013690   1.525  0.12738
## interview_age                     0.0020934  0.0157026   0.133  0.89396
## bmi                               0.0772399  0.0309647   2.494  0.01269 *
## household.income[>=200K]         -2.1872723  0.8133419  -2.689  0.00722 **
## household.income[100K-200K]      -1.6105881  0.7584153  -2.124  0.03381 *
## household.income[12K-16K]         0.3236496  1.0130354   0.319  0.74939
## household.income[16K-25K]         0.7771070  0.8500220   0.914  0.36070
## household.income[25K-35K]        -0.3955209  0.7963693  -0.497  0.61948
## household.income[35K-50K]        -0.2074727  0.7675679  -0.270  0.78696
## household.income[50K-75K]        -0.5760572  0.7650826  -0.753  0.45157
## household.income[5K-12K]          0.1821932  0.8981050   0.203  0.83926
## household.income[75K-100K]       -1.0448255  0.7675549  -1.361  0.17358
## high.educBachelor                 0.4338940  0.7565567   0.574  0.56636
## high.educHS Diploma/GED          -0.5711147  0.7591854  -0.752  0.45197
## high.educPost Graduate Degree     0.6605072  0.7637972   0.865  0.38726
## high.educSome College             0.6642026  0.7124090   0.932  0.35127
## demo_race_hispanic1              -0.2263130  0.3528082  -0.641  0.52129
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.029
## lmer.REML =  13811  Scale est. = 13.63     n = 2239
```

Males

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
##     household.income + high.educ + demo_race_hispanic
## 
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       3.0685809  2.1829753   1.406 0.159945
## hormone_scr_ert_mean             -0.0046168  0.0074582  -0.619 0.535956
```

```
## hormone_sal_end_min_since_midnight  0.0005149  0.0006543   0.787 0.431401
## PDS_score                            0.8415313  0.2196667   3.831 0.000131 ***
## race.ethnicity.5levelBlack           0.4512688  0.8043162   0.561 0.574809
## race.ethnicity.5levelMixed           1.9466825  0.7824897   2.488 0.012920 *
## race.ethnicity.5levelOther           1.3528249  0.9303859   1.454 0.146063
## race.ethnicity.5levelWhite           1.6786784  0.7296966   2.301 0.021504 *
## interview_age                       -0.0093790  0.0149302  -0.628 0.529940
## bmi                                  0.0679028  0.0318297   2.133 0.032999 *
## household.income[>=200K]            -2.3920524  0.7961025  -3.005 0.002686 **
## household.income[100K-200K]         -2.3208370  0.7390303  -3.140 0.001708 **
## household.income[12K-16K]           -0.7705929  0.9957047  -0.774 0.439055
## household.income[16K-25K]           -0.2093403  0.8222738  -0.255 0.799064
## household.income[25K-35K]           -1.1235552  0.7991338  -1.406 0.159862
## household.income[35K-50K]           -0.7271172  0.7696809  -0.945 0.344906
## household.income[50K-75K]           -1.4326669  0.7370140  -1.944 0.052026 .
## household.income[5K-12K]             0.8574714  0.8603086   0.997 0.319009
## household.income[75K-100K]          -1.9580418  0.7514190  -2.606 0.009222 **
## high.educBachelor                    0.7602864  0.7344314   1.035 0.300677
## high.educHS Diploma/GED             -0.2973860  0.7422370  -0.401 0.688704
## high.educPost Graduate Degree        0.6117403  0.7449851   0.821 0.411645
## high.educSome College                0.8527232  0.6989373   1.220 0.222573
## demo_race_hispanic1                 -0.4275574  0.3337765  -1.281 0.200327
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0246
## lmer.REML =  15119  Scale est. = 13.679    n = 2447
```

1.14 Model: CBCL internalizing factor ~ Testosterone + Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        2.9343709  2.3437791   1.252  0.21071
## hormone_scr_ert_mean              -0.0045407  0.0074532  -0.609  0.54244
## hormone_sal_end_min_since_midnight -0.0002610  0.0006847  -0.381  0.70310
## pds_p_ss_categoryEarly             0.8508492  0.3109989   2.736  0.00627 **
## pds_p_ss_categoryLate              0.3787418  0.8060780   0.470  0.63850
## pds_p_ss_categoryMid               0.8417161  0.3159133   2.664  0.00777 **
## race.ethnicity.5levelBlack        -0.7118236  0.8757318  -0.813  0.41640
## race.ethnicity.5levelMixed         1.0356264  0.8522384   1.215  0.22443
## race.ethnicity.5levelOther         1.8996610  0.9695882   1.959  0.05021 .
## race.ethnicity.5levelWhite         1.2900693  0.8016640   1.609  0.10771
## interview_age                      0.0015350  0.0160024   0.096  0.92359
```

```
## bmi                                      0.0656637  0.0321391   2.043  0.04116 *
## household.income[>=200K]                 -2.2265379  0.8138117  -2.736  0.00627 **
## household.income[100K-200K]              -1.7126966  0.7587557  -2.257  0.02409 *
## household.income[12K-16K]                 0.2467046  1.0141088   0.243  0.80782
## household.income[16K-25K]                 0.6676446  0.8512152   0.784  0.43292
## household.income[25K-35K]                -0.4990347  0.7971799  -0.626  0.53138
## household.income[35K-50K]                -0.3267396  0.7686434  -0.425  0.67082
## household.income[50K-75K]                -0.6555266  0.7655112  -0.856  0.39191
## household.income[5K-12K]                  0.2039003  0.8987881   0.227  0.82055
## household.income[75K-100K]               -1.1196673  0.7682271  -1.457  0.14513
## high.educBachelor                         0.4671714  0.7573997   0.617  0.53742
## high.educHS Diploma/GED                  -0.4859814  0.7593501  -0.640  0.52224
## high.educPost Graduate Degree             0.6997183  0.7647415   0.915  0.36031
## high.educSome College                     0.7279044  0.7125354   1.022  0.30710
## demo_race_hispanic1                      -0.2293871  0.3539406  -0.648  0.51699
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0282
## lmer.REML =  13807  Scale est. = 13.44    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        3.5038689  2.1960552   1.596  0.11072
## hormone_scr_ert_mean              -0.0034455  0.0074540  -0.462  0.64395
## hormone_sal_end_min_since_midnight 0.0005421  0.0006545   0.828  0.40759
## pds_p_ss_categoryEarly             0.7256528  0.2637440   2.751  0.00598 **
## pds_p_ss_categoryLate              1.6984157  1.7728892   0.958  0.33816
## pds_p_ss_categoryMid               0.8692189  0.5443121   1.597  0.11042
## race.ethnicity.5levelBlack         0.4942084  0.8058050   0.613  0.53973
## race.ethnicity.5levelMixed         1.9872154  0.7836389   2.536  0.01128 *
## race.ethnicity.5levelOther         1.4211721  0.9321195   1.525  0.12747
## race.ethnicity.5levelWhite         1.7210174  0.7307503   2.355  0.01860 *
## interview_age                     -0.0076293  0.0149461  -0.510  0.60978
## bmi                                0.0774010  0.0316789   2.443  0.01462 *
## household.income[>=200K]          -2.4993545  0.7960727  -3.140  0.00171 **
## household.income[100K-200K]       -2.4087152  0.7396175  -3.257  0.00114 **
## household.income[12K-16K]         -0.8351234  0.9972938  -0.837  0.40246
## household.income[16K-25K]         -0.3142520  0.8229287  -0.382  0.70259
## household.income[25K-35K]         -1.1953636  0.7998448  -1.494  0.13518
## household.income[35K-50K]         -0.7977274  0.7707426  -1.035  0.30077
## household.income[50K-75K]         -1.5132950  0.7376475  -2.052  0.04032 *
```

```
## household.income[5K-12K]                   0.7368234  0.8606919   0.856  0.39204
## household.income[75K-100K]                 -2.0488675  0.7518832  -2.725  0.00648 **
## high.educBachelor                           0.8281832  0.7357352   1.126  0.26042
## high.educHS Diploma/GED                     -0.1710687  0.7427024  -0.230  0.81785
## high.educPost Graduate Degree               0.6988684  0.7462260   0.937  0.34909
## high.educSome College                       0.9465209  0.6999690   1.352  0.17643
## demo_race_hispanic1                         -0.4717603  0.3344531  -1.411  0.15851
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0225
## lmer.REML =  15120  Scale est. = 13.967    n = 2447
```

1.15 Model: CBCL Anxious-Depressed ~ Testosterone + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
##     household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.3491718  1.3092276   1.031   0.3029
## hormone_scr_ert_mean              0.0002082  0.0043502   0.048   0.9618
## hormone_sal_end_min_since_midnight -0.0002412  0.0003927  -0.614   0.5391
## PDS_score                         0.1608238  0.1040954   1.545   0.1225
## race.ethnicity.5levelBlack       -0.3112513  0.5020279  -0.620   0.5353
## race.ethnicity.5levelMixed        0.5093285  0.4881697   1.043   0.2969
## race.ethnicity.5levelOther        0.7183732  0.5565194   1.291   0.1969
## race.ethnicity.5levelWhite        0.7652230  0.4591182   1.667   0.0957 .
## interview_age                     0.0009972  0.0090517   0.110   0.9123
## bmi                               0.0183705  0.0178197   1.031   0.3027
## household.income[>=200K]         -1.1218565  0.4661361  -2.407   0.0162 *
## household.income[100K-200K]      -0.6098477  0.4348650  -1.402   0.1609
## household.income[12K-16K]         0.1542107  0.5811459   0.265   0.7908
## household.income[16K-25K]         0.5736075  0.4877287   1.176   0.2397
## household.income[25K-35K]        -0.0139938  0.4569201  -0.031   0.9756
## household.income[35K-50K]         0.1157897  0.4401511   0.263   0.7925
## household.income[50K-75K]        -0.0430719  0.4387043  -0.098   0.9218
## household.income[5K-12K]          0.0483078  0.5147670   0.094   0.9252
## household.income[75K-100K]       -0.3591740  0.4400595  -0.816   0.4145
## high.educBachelor                 0.2922563  0.4340477   0.673   0.5008
## high.educHS Diploma/GED          -0.3011563  0.4360365  -0.691   0.4898
## high.educPost Graduate Degree     0.6397212  0.4381818   1.460   0.1444
## high.educSome College             0.4392331  0.4087898   1.074   0.2827
## demo_race_hispanic1              -0.0970572  0.2019475  -0.481   0.6308
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.0195
## lmer.REML =  11365  Scale est. = 5.1945    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
##     household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      1.956e+00  1.233e+00   1.587  0.11266
## hormone_scr_ert_mean            -3.114e-03  4.220e-03  -0.738  0.46056
## hormone_sal_end_min_since_midnight -4.783e-05 3.706e-04  -0.129  0.89732
## PDS_score                        4.870e-01  1.240e-01   3.927 8.86e-05 ***
## race.ethnicity.5levelBlack       4.347e-01  4.537e-01   0.958  0.33801
## race.ethnicity.5levelMixed       1.167e+00  4.418e-01   2.641  0.00833 **
## race.ethnicity.5levelOther       9.610e-01  5.236e-01   1.835  0.06657 .
## race.ethnicity.5levelWhite       1.142e+00  4.122e-01   2.771  0.00563 **
## interview_age                   -8.284e-03  8.441e-03  -0.981  0.32648
## bmi                              1.686e-02  1.796e-02   0.939  0.34799
## household.income[>=200K]        -9.211e-01  4.458e-01  -2.066  0.03890 *
## household.income[100K-200K]     -8.728e-01  4.140e-01  -2.108  0.03513 *
## household.income[12K-16K]       -1.860e-01  5.599e-01  -0.332  0.73977
## household.income[16K-25K]        1.083e-01  4.603e-01   0.235  0.81401
## household.income[25K-35K]       -2.720e-01  4.474e-01  -0.608  0.54327
## household.income[35K-50K]       -1.263e-01  4.313e-01  -0.293  0.76959
## household.income[50K-75K]       -6.093e-01  4.128e-01  -1.476  0.14002
## household.income[5K-12K]         2.135e-01  4.827e-01   0.442  0.65827
## household.income[75K-100K]      -7.122e-01  4.209e-01  -1.692  0.09077 .
## high.educBachelor                3.985e-01  4.112e-01   0.969  0.33260
## high.educHS Diploma/GED         -2.859e-01  4.156e-01  -0.688  0.49162
## high.educPost Graduate Degree    3.717e-01  4.171e-01   0.891  0.37296
## high.educSome College            2.990e-01  3.915e-01   0.764  0.44511
## demo_race_hispanic1             -9.395e-02  1.875e-01  -0.501  0.61644
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0125
## lmer.REML =  12358  Scale est. = 6.0774    n = 2447
```

1.16 Model: CBCL Anxious-Depressed ~ Testosterone + Pubertal category

Females

```
##
## Family: gaussian
```

```
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.4174326  1.3483710   1.051   0.2933
## hormone_scr_ert_mean               0.0015165  0.0042948   0.353   0.7240
## hormone_sal_end_min_since_midnight -0.0002695  0.0003929  -0.686   0.4929
## pds_p_ss_categoryEarly             0.4274732  0.1793089   2.384   0.0172 *
## pds_p_ss_categoryLate             -0.0561593  0.4653663  -0.121   0.9040
## pds_p_ss_categoryMid               0.2698784  0.1816560   1.486   0.1375
## race.ethnicity.5levelBlack        -0.2333945  0.5013054  -0.466   0.6416
## race.ethnicity.5levelMixed         0.5496745  0.4879409   1.127   0.2601
## race.ethnicity.5levelOther         0.7757835  0.5556627   1.396   0.1628
## race.ethnicity.5levelWhite         0.7940358  0.4589265   1.730   0.0837 .
## interview_age                      0.0011447  0.0092236   0.124   0.9012
## bmi                                0.0144347  0.0184864   0.781   0.4350
## household.income[>=200K]          -1.1406378  0.4660613  -2.447   0.0145 *
## household.income[100K-200K]       -0.6568266  0.4347502  -1.511   0.1310
## household.income[12K-16K]          0.1097854  0.5813576   0.189   0.8502
## household.income[16K-25K]          0.5208982  0.4880814   1.067   0.2860
## household.income[25K-35K]         -0.0582331  0.4570789  -0.127   0.8986
## household.income[35K-50K]          0.0623067  0.4404661   0.141   0.8875
## household.income[50K-75K]         -0.0790980  0.4386430  -0.180   0.8569
## household.income[5K-12K]           0.0604999  0.5147874   0.118   0.9065
## household.income[75K-100K]        -0.3910966  0.4401312  -0.889   0.3743
## high.educBachelor                  0.2971141  0.4342525   0.684   0.4939
## high.educHS Diploma/GED           -0.2650141  0.4358686  -0.608   0.5432
## high.educPost Graduate Degree      0.6486419  0.4384436   1.479   0.1392
## high.educSome College              0.4660503  0.4085898   1.141   0.2541
## demo_race_hispanic1               -0.0947171  0.2024227  -0.468   0.6399
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0201
## lmer.REML =  11361  Scale est. = 5.1526    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
```

```
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        2.201e+00  1.240e+00   1.776  0.07592 .
## hormone_scr_ert_mean              -2.379e-03  4.217e-03  -0.564  0.57260
## hormone_sal_end_min_since_midnight -3.053e-05  3.707e-04  -0.082  0.93436
## pds_p_ss_categoryEarly             4.541e-01  1.492e-01   3.043  0.00237 **
## pds_p_ss_categoryLate              1.033e+00  1.010e+00   1.023  0.30636
## pds_p_ss_categoryMid               3.600e-01  3.065e-01   1.174  0.24037
## race.ethnicity.5levelBlack         4.701e-01  4.544e-01   1.034  0.30107
## race.ethnicity.5levelMixed         1.197e+00  4.424e-01   2.705  0.00688 **
## race.ethnicity.5levelOther         1.013e+00  5.246e-01   1.931  0.05359 .
## race.ethnicity.5levelWhite         1.172e+00  4.128e-01   2.838  0.00458 **
## interview_age                     -7.241e-03  8.446e-03  -0.857  0.39133
## bmi                                2.262e-02  1.787e-02   1.266  0.20568
## household.income[>=200K]          -9.909e-01  4.458e-01  -2.223  0.02634 *
## household.income[100K-200K]       -9.330e-01  4.144e-01  -2.252  0.02444 *
## household.income[12K-16K]         -2.340e-01  5.608e-01  -0.417  0.67650
## household.income[16K-25K]          3.423e-02  4.606e-01   0.074  0.94076
## household.income[25K-35K]         -3.170e-01  4.479e-01  -0.708  0.47907
## household.income[35K-50K]         -1.792e-01  4.319e-01  -0.415  0.67825
## household.income[50K-75K]         -6.655e-01  4.132e-01  -1.611  0.10742
## household.income[5K-12K]           1.391e-01  4.829e-01   0.288  0.77334
## household.income[75K-100K]        -7.738e-01  4.212e-01  -1.837  0.06632 .
## high.educBachelor                  4.332e-01  4.119e-01   1.052  0.29310
## high.educHS Diploma/GED           -2.095e-01  4.159e-01  -0.504  0.61457
## high.educPost Graduate Degree      4.173e-01  4.178e-01   0.999  0.31794
## high.educSome College              3.509e-01  3.921e-01   0.895  0.37085
## demo_race_hispanic1               -1.191e-01  1.879e-01  -0.634  0.52643
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0102
## lmer.REML =  12362  Scale est. = 6.1849    n = 2447
```

1.17 Model: CBCL Withdrawn-Depressed ~ Testosterone + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      PDS_score + race.ethnicity.5level + interview_age + bmi +
##      household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        5.900e-01  6.322e-01   0.933  0.35079
## hormone_scr_ert_mean              -3.098e-03  2.106e-03  -1.471  0.14140
## hormone_sal_end_min_since_midnight 2.794e-05  1.863e-04   0.150  0.88077
## PDS_score                          1.571e-01  5.040e-02   3.117  0.00185 **
## race.ethnicity.5levelBlack        -1.272e-01  2.405e-01  -0.529  0.59689
## race.ethnicity.5levelMixed         1.737e-01  2.341e-01   0.742  0.45819
```

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```
## race.ethnicity.5levelOther            3.417e-01  2.678e-01   1.276  0.20206
## race.ethnicity.5levelWhite            2.414e-01  2.197e-01   1.099  0.27196
## interview_age                        -1.015e-03  4.384e-03  -0.232  0.81686
## bmi                                   2.444e-02  8.625e-03   2.834  0.00464 **
## household.income[>=200K]             -6.768e-01  2.244e-01  -3.017  0.00258 **
## household.income[100K-200K]          -5.990e-01  2.097e-01  -2.857  0.00432 **
## household.income[12K-16K]            -3.058e-02  2.807e-01  -0.109  0.91326
## household.income[16K-25K]            -3.312e-02  2.357e-01  -0.140  0.88829
## household.income[25K-35K]            -1.957e-01  2.207e-01  -0.887  0.37541
## household.income[35K-50K]            -3.046e-01  2.125e-01  -1.433  0.15196
## household.income[50K-75K]            -3.857e-01  2.117e-01  -1.822  0.06858 .
## household.income[5K-12K]              2.033e-01  2.485e-01   0.818  0.41323
## household.income[75K-100K]           -5.095e-01  2.122e-01  -2.401  0.01643 *
## high.educBachelor                     5.332e-02  2.094e-01   0.255  0.79898
## high.educHS Diploma/GED              -1.409e-01  2.108e-01  -0.669  0.50382
## high.educPost Graduate Degree         3.429e-02  2.114e-01   0.162  0.87115
## high.educSome College                 1.004e-01  1.973e-01   0.509  0.61082
## demo_race_hispanic1                  -1.373e-02  9.557e-02  -0.144  0.88581
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0282
## lmer.REML = 8158.8  Scale est. = 1.4578    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
##     household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        9.655e-01  6.752e-01   1.430 0.152848
## hormone_scr_ert_mean              -7.281e-04  2.299e-03  -0.317 0.751532
## hormone_sal_end_min_since_midnight -2.319e-05  1.945e-04  -0.119 0.905139
## PDS_score                          1.640e-01  6.819e-02   2.405 0.016252 *
## race.ethnicity.5levelBlack         1.081e-01  2.484e-01   0.435 0.663560
## race.ethnicity.5levelMixed         4.619e-01  2.427e-01   1.903 0.057176 .
## race.ethnicity.5levelOther         2.150e-01  2.874e-01   0.748 0.454499
## race.ethnicity.5levelWhite         3.539e-01  2.254e-01   1.570 0.116449
## interview_age                     -2.390e-03  4.634e-03  -0.516 0.606135
## bmi                                2.241e-02  9.895e-03   2.264 0.023634 *
## household.income[>=200K]          -8.714e-01  2.443e-01  -3.566 0.000369 ***
## household.income[100K-200K]       -8.596e-01  2.276e-01  -3.776 0.000163 ***
## household.income[12K-16K]         -3.699e-01  3.088e-01  -1.198 0.231135
## household.income[16K-25K]         -1.196e-01  2.533e-01  -0.472 0.636919
## household.income[25K-35K]         -3.426e-01  2.464e-01  -1.390 0.164666
## household.income[35K-50K]         -3.055e-01  2.376e-01  -1.286 0.198562
```

```
## household.income[50K-75K]               -4.260e-01  2.270e-01  -1.877 0.060705 .
## household.income[5K-12K]                 3.758e-01  2.659e-01   1.413 0.157685
## household.income[75K-100K]              -7.072e-01  2.316e-01  -3.053 0.002289 **
## high.educBachelor                        1.271e-01  2.249e-01   0.565 0.571989
## high.educHS Diploma/GED                  9.240e-03  2.278e-01   0.041 0.967655
## high.educPost Graduate Degree            6.087e-02  2.284e-01   0.266 0.789915
## high.educSome College                    2.022e-01  2.146e-01   0.942 0.346129
## demo_race_hispanic1                     -2.895e-01  9.868e-02  -2.934 0.003382 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0351
## lmer.REML =   9482  Scale est. = 2.1058    n = 2447
```

1.18 Model: CBCL Withdrawn-Depressed ~ Testosterone + Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         8.482e-01  6.521e-01   1.301 0.19351
## hormone_scr_ert_mean               -2.489e-03  2.081e-03  -1.196 0.23179
## hormone_sal_end_min_since_midnight  2.186e-06  1.866e-04   0.012 0.99065
## pds_p_ss_categoryEarly              1.858e-01  8.720e-02   2.131 0.03321 *
## pds_p_ss_categoryLate               3.959e-01  2.265e-01   1.748 0.08060 .
## pds_p_ss_categoryMid                2.494e-01  8.798e-02   2.835 0.00462 **
## race.ethnicity.5levelBlack         -9.481e-02  2.405e-01  -0.394 0.69341
## race.ethnicity.5levelMixed          1.943e-01  2.343e-01   0.829 0.40699
## race.ethnicity.5levelOther          3.723e-01  2.677e-01   1.391 0.16451
## race.ethnicity.5levelWhite          2.609e-01  2.199e-01   1.186 0.23556
## interview_age                      -1.859e-03  4.473e-03  -0.416 0.67768
## bmi                                 2.071e-02  8.957e-03   2.312 0.02088 *
## household.income[>=200K]           -6.820e-01  2.246e-01  -3.037 0.00242 **
## household.income[100K-200K]        -6.190e-01  2.099e-01  -2.949 0.00322 **
## household.income[12K-16K]          -4.658e-02  2.811e-01  -0.166 0.86841
## household.income[16K-25K]          -5.411e-02  2.362e-01  -0.229 0.81882
## household.income[25K-35K]          -2.213e-01  2.210e-01  -1.001 0.31678
## household.income[35K-50K]          -3.320e-01  2.129e-01  -1.559 0.11907
## household.income[50K-75K]          -4.033e-01  2.119e-01  -1.903 0.05718 .
## household.income[5K-12K]            2.024e-01  2.488e-01   0.814 0.41597
## household.income[75K-100K]         -5.240e-01  2.125e-01  -2.466 0.01374 *
## high.educBachelor                   6.139e-02  2.097e-01   0.293 0.76977
## high.educHS Diploma/GED            -1.208e-01  2.110e-01  -0.573 0.56680
## high.educPost Graduate Degree       4.309e-02  2.118e-01   0.204 0.83876
## high.educSome College               1.143e-01  1.974e-01   0.579 0.56250
```

```
## demo_race_hispanic1                      -2.331e-02  9.588e-02  -0.243  0.80791
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0268
## lmer.REML = 8162.8  Scale est. = 1.4412    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         1.055e+00  6.785e-01   1.554 0.120235
## hormone_scr_ert_mean               -5.964e-04  2.295e-03  -0.260 0.795024
## hormone_sal_end_min_since_midnight -1.876e-05  1.946e-04  -0.096 0.923201
## pds_p_ss_categoryEarly              1.334e-01  8.219e-02   1.623 0.104718
## pds_p_ss_categoryLate               3.441e-01  5.586e-01   0.616 0.537977
## pds_p_ss_categoryMid                3.349e-01  1.687e-01   1.985 0.047204 *
## race.ethnicity.5levelBlack          1.040e-01  2.486e-01   0.418 0.675888
## race.ethnicity.5levelMixed          4.647e-01  2.429e-01   1.913 0.055818 .
## race.ethnicity.5levelOther          2.173e-01  2.877e-01   0.755 0.450264
## race.ethnicity.5levelWhite          3.597e-01  2.255e-01   1.595 0.110860
## interview_age                      -2.155e-03  4.631e-03  -0.465 0.641682
## bmi                                 2.406e-02  9.834e-03   2.446 0.014497 *
## household.income[>=200K]           -8.779e-01  2.442e-01  -3.594 0.000332 ***
## household.income[100K-200K]        -8.614e-01  2.277e-01  -3.783 0.000159 ***
## household.income[12K-16K]          -3.694e-01  3.091e-01  -1.195 0.232160
## household.income[16K-25K]          -1.235e-01  2.533e-01  -0.487 0.626000
## household.income[25K-35K]          -3.464e-01  2.465e-01  -1.405 0.160074
## household.income[35K-50K]          -3.039e-01  2.378e-01  -1.278 0.201357
## household.income[50K-75K]          -4.275e-01  2.271e-01  -1.882 0.059915 .
## household.income[5K-12K]            3.595e-01  2.659e-01   1.352 0.176468
## household.income[75K-100K]         -7.100e-01  2.316e-01  -3.065 0.002199 **
## high.educBachelor                   1.426e-01  2.252e-01   0.633 0.526593
## high.educHS Diploma/GED             2.512e-02  2.278e-01   0.110 0.912203
## high.educPost Graduate Degree       8.055e-02  2.287e-01   0.352 0.724673
## high.educSome College               2.192e-01  2.147e-01   1.021 0.307488
## demo_race_hispanic1                -2.999e-01  9.896e-02  -3.030 0.002469 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0345
## lmer.REML = 9482.7  Scale est. = 2.1191    n = 2447
```

1.19 Model: CBCL Depressed DSM-5 ~ Testosterone + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
##     household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       6.077e-01  7.618e-01   0.798  0.42517
## hormone_scr_ert_mean             -3.013e-03  2.531e-03  -1.190  0.23402
## hormone_sal_end_min_since_midnight 4.308e-05  2.236e-04   0.193  0.84728
## PDS_score                         1.670e-01  6.077e-02   2.748  0.00605 **
## race.ethnicity.5levelBlack       -1.114e-01  2.914e-01  -0.382  0.70224
## race.ethnicity.5levelMixed        4.094e-01  2.837e-01   1.443  0.14912
## race.ethnicity.5levelOther        6.471e-01  3.244e-01   1.995  0.04615 *
## race.ethnicity.5levelWhite        5.455e-01  2.659e-01   2.051  0.04036 *
## interview_age                    -2.290e-03  5.274e-03  -0.434  0.66420
## bmi                               2.195e-02  1.041e-02   2.109  0.03508 *
## household.income[>=200K]         -7.471e-01  2.722e-01  -2.745  0.00610 **
## household.income[100K-200K]      -6.105e-01  2.543e-01  -2.401  0.01644 *
## household.income[12K-16K]         9.782e-03  3.402e-01   0.029  0.97706
## household.income[16K-25K]         8.275e-02  2.857e-01   0.290  0.77213
## household.income[25K-35K]        -1.436e-01  2.674e-01  -0.537  0.59128
## household.income[35K-50K]        -7.616e-02  2.578e-01  -0.295  0.76772
## household.income[50K-75K]        -2.470e-01  2.568e-01  -0.962  0.33620
## household.income[5K-12K]         -5.264e-03  3.018e-01  -0.017  0.98608
## household.income[75K-100K]       -3.904e-01  2.574e-01  -1.517  0.12953
## high.educBachelor                 1.016e-01  2.537e-01   0.401  0.68866
## high.educHS Diploma/GED          -6.563e-02  2.550e-01  -0.257  0.79694
## high.educPost Graduate Degree     1.513e-01  2.561e-01   0.591  0.55480
## high.educSome College             1.552e-01  2.390e-01   0.649  0.51614
## demo_race_hispanic1              -6.311e-02  1.153e-01  -0.547  0.58414
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0254
## lmer.REML = 8983.5  Scale est. = 1.6796    n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     PDS_score + race.ethnicity.5level + interview_age + bmi +
```

```
##       household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        0.8102596  0.8402371   0.964  0.33498
## hormone_scr_ert_mean              -0.0003955  0.0028687  -0.138  0.89037
## hormone_sal_end_min_since_midnight 0.0001219  0.0002477   0.492  0.62275
## PDS_score                          0.2308646  0.0847580   2.724  0.00650 **
## race.ethnicity.5levelBlack         0.1664605  0.3091932   0.538  0.59037
## race.ethnicity.5levelMixed         0.6478700  0.3014268   2.149  0.03171 *
## race.ethnicity.5levelOther         0.4382216  0.3577383   1.225  0.22070
## race.ethnicity.5levelWhite         0.5512282  0.2805338   1.965  0.04954 *
## interview_age                     -0.0003744  0.0057583  -0.065  0.94816
## bmi                                0.0021868  0.0122797   0.178  0.85867
## household.income[>=200K]          -0.7840380  0.3052238  -2.569  0.01027 *
## household.income[100K-200K]       -0.7702510  0.2837619  -2.714  0.00669 **
## household.income[12K-16K]          0.1079271  0.3834338   0.281  0.77837
## household.income[16K-25K]          0.1806208  0.3157608   0.572  0.56736
## household.income[25K-35K]         -0.1630719  0.3070860  -0.531  0.59545
## household.income[35K-50K]         -0.0468940  0.2958229  -0.159  0.87406
## household.income[50K-75K]         -0.4232610  0.2830043  -1.496  0.13489
## household.income[5K-12K]           0.5359389  0.3308054   1.620  0.10534
## household.income[75K-100K]        -0.6777671  0.2886040  -2.348  0.01893 *
## high.educBachelor                  0.3767434  0.2813146   1.339  0.18062
## high.educHS Diploma/GED           -0.0168579  0.2845899  -0.059  0.95277
## high.educPost Graduate Degree      0.2165892  0.2855104   0.759  0.44816
## high.educSome College              0.1834715  0.2679703   0.685  0.49362
## demo_race_hispanic1               -0.3269751  0.1259193  -2.597  0.00947 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.019
## lmer.REML =  10511  Scale est. = 2.5106    n = 2447
```

1.20 Model: CBCL Depressed DSM-5 ~ Testosterone + Pubertal category

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        8.541e-01  7.856e-01   1.087  0.27708
## hormone_scr_ert_mean              -2.279e-03  2.501e-03  -0.911  0.36242
## hormone_sal_end_min_since_midnight 1.337e-05  2.242e-04   0.060  0.95247
## pds_p_ss_categoryEarly             2.317e-01  1.048e-01   2.210  0.02723 *
## pds_p_ss_categoryLate              2.386e-01  2.717e-01   0.878  0.37999
```

```
## pds_p_ss_categoryMid                  2.952e-01  1.061e-01   2.782  0.00545 **
## race.ethnicity.5levelBlack           -7.418e-02  2.913e-01  -0.255  0.79903
## race.ethnicity.5levelMixed            4.308e-01  2.839e-01   1.517  0.12930
## race.ethnicity.5levelOther            6.850e-01  3.242e-01   2.113  0.03473 *
## race.ethnicity.5levelWhite            5.655e-01  2.662e-01   2.125  0.03371 *
## interview_age                        -3.037e-03  5.377e-03  -0.565  0.57229
## bmi                                   1.748e-02  1.080e-02   1.618  0.10589
## household.income[>=200K]             -7.557e-01  2.724e-01  -2.774  0.00558 **
## household.income[100K-200K]          -6.368e-01  2.545e-01  -2.502  0.01241 *
## household.income[12K-16K]            -6.812e-03  3.406e-01  -0.020  0.98404
## household.income[16K-25K]             5.342e-02  2.862e-01   0.187  0.85193
## household.income[25K-35K]            -1.738e-01  2.677e-01  -0.649  0.51633
## household.income[35K-50K]            -1.108e-01  2.582e-01  -0.429  0.66788
## household.income[50K-75K]            -2.684e-01  2.570e-01  -1.045  0.29634
## household.income[5K-12K]             -2.340e-03  3.020e-01  -0.008  0.99382
## household.income[75K-100K]           -4.118e-01  2.577e-01  -1.598  0.11021
## high.educBachelor                     1.143e-01  2.540e-01   0.450  0.65274
## high.educHS Diploma/GED              -4.123e-02  2.552e-01  -0.162  0.87163
## high.educPost Graduate Degree         1.656e-01  2.565e-01   0.646  0.51852
## high.educSome College                 1.727e-01  2.391e-01   0.722  0.47023
## demo_race_hispanic1                  -6.657e-02  1.157e-01  -0.575  0.56525
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0245
## lmer.REML = 8985.4  Scale est. = 1.659     n = 2239
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     pds_p_ss_category + race.ethnicity.5level + interview_age +
##     bmi + household.income + high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         0.9465469  0.8445101   1.121  0.26247
## hormone_scr_ert_mean               -0.0001882  0.0028638  -0.066  0.94760
## hormone_sal_end_min_since_midnight  0.0001277  0.0002476   0.516  0.60589
## pds_p_ss_categoryEarly              0.2137942  0.1018543   2.099  0.03592 *
## pds_p_ss_categoryLate               0.3470035  0.6878116   0.505  0.61395
## pds_p_ss_categoryMid                0.3958496  0.2096876   1.888  0.05917 .
## race.ethnicity.5levelBlack          0.1638731  0.3095310   0.529  0.59656
## race.ethnicity.5levelMixed          0.6544939  0.3016113   2.170  0.03010 *
## race.ethnicity.5levelOther          0.4464655  0.3581828   1.246  0.21271
## race.ethnicity.5levelWhite          0.5619372  0.2807026   2.002  0.04541 *
## interview_age                      -0.0001165  0.0057573  -0.020  0.98386
## bmi                                 0.0046120  0.0122095   0.378  0.70566
## household.income[>=200K]           -0.7998930  0.3051593  -2.621  0.00882 **
```

```
## household.income[100K-200K]      -0.7802120  0.2839263  -2.748  0.00604 **
## household.income[12K-16K]         0.1050291  0.3838403   0.274  0.78439
## household.income[16K-25K]         0.1685017  0.3159388   0.533  0.59385
## household.income[25K-35K]        -0.1757329  0.3072856  -0.572  0.56745
## household.income[35K-50K]        -0.0521137  0.2961521  -0.176  0.86033
## household.income[50K-75K]        -0.4309259  0.2831917  -1.522  0.12822
## household.income[5K-12K]          0.5085083  0.3308439   1.537  0.12442
## household.income[75K-100K]       -0.6882601  0.2887201  -2.384  0.01721 *
## high.educBachelor                 0.3947982  0.2817319   1.401  0.16124
## high.educHS Diploma/GED           0.0088914  0.2846865   0.031  0.97509
## high.educPost Graduate Degree     0.2404968  0.2859068   0.841  0.40033
## high.educSome College             0.2052249  0.2682878   0.765  0.44438
## demo_race_hispanic1              -0.3420420  0.1261587  -2.711  0.00675 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0183
## lmer.REML =  10511  Scale est. = 2.4995    n = 2447
```

2—Reward~Puberty—

2.1 Model: BIS-BAS-RR ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.3401013  0.3441704   0.988  0.32316
## PDS_score                 0.0205844  0.0292301   0.704  0.48136
## interview_age            -0.0042256  0.0026675  -1.584  0.11329
## bmi                       0.0025860  0.0050634   0.511  0.60959
## race.ethnicity.5levelBlack  0.2851331  0.1411576   2.020  0.04349 *
## race.ethnicity.5levelMixed -0.0011307  0.1402010  -0.008  0.99357
## race.ethnicity.5levelOther -0.0002771  0.1608066  -0.002  0.99863
## race.ethnicity.5levelWhite -0.0673741  0.1315752  -0.512  0.60865
## demo_race_hispanic1       0.1647942  0.0564948   2.917  0.00356 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0217
## lmer.REML = 7298.7  Scale est. = 0.77732   n = 2603
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -0.0452489  0.3248961  -0.139    0.889
## PDS_score                 0.0519863  0.0357402   1.455    0.146
## interview_age            -0.0019850  0.0024996  -0.794    0.427
## bmi                       0.0121161  0.0052064   2.327    0.020 *
## race.ethnicity.5levelBlack  0.2143348  0.1342784   1.596    0.111
## race.ethnicity.5levelMixed  0.0528083  0.1343602   0.393    0.694
## race.ethnicity.5levelOther -0.0259017  0.1529559  -0.169    0.866
## race.ethnicity.5levelWhite -0.0009366  0.1260815  -0.007    0.994
## demo_race_hispanic1       0.0503232  0.0539452   0.933    0.351
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0116
## lmer.REML = 7835.2  Scale est. = 0.72457   n = 2823
```

2.2 Model : Reaction Time ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -0.3649337  0.3552923  -1.027   0.3045
## PDS_score                -0.0120627  0.0308635  -0.391   0.6960
## interview_age             0.0051738  0.0027653   1.871   0.0615 .
## bmi                       0.0005769  0.0053754   0.107   0.9145
## race.ethnicity.5levelBlack -0.2897883  0.1414853  -2.048   0.0407 *
## race.ethnicity.5levelMixed -0.2260130  0.1407413  -1.606   0.1085
## race.ethnicity.5levelOther -0.1445206  0.1612706  -0.896   0.3703
## race.ethnicity.5levelWhite -0.1825059  0.1301498  -1.402   0.1610
## demo_race_hispanic1      -0.0080354  0.0545198  -0.147   0.8828
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) =  0.00118
## lmer.REML = 5732.6  Scale est. = 0.67863   n = 2130

##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -0.183154   0.358745  -0.511    0.610
## PDS_score                -0.016458   0.031141  -0.528    0.597
## interview_age             0.002963   0.002792   1.061    0.289
## bmi                      -0.004877   0.005424  -0.899    0.369
## race.ethnicity.5levelBlack -0.004010  0.142670  -0.028    0.978
## race.ethnicity.5levelMixed  0.043798  0.141931   0.309    0.758
## race.ethnicity.5levelOther -0.149436  0.162651  -0.919    0.358
## race.ethnicity.5levelWhite -0.033975  0.131261  -0.259    0.796
## demo_race_hispanic1      -0.043322   0.055003  -0.788    0.431
##
##
## R-sq.(adj) =  -0.000173
## lmer.REML = 5775.5  Scale est. = 0.72751   n = 2130
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.371192   0.330390   1.123   0.2613
## PDS_score                -0.077135   0.037392  -2.063   0.0392 *
## interview_age            -0.001124   0.002527  -0.445   0.6565
## bmi                       0.001186   0.005369   0.221   0.8253
## race.ethnicity.5levelBlack -0.117539  0.142183  -0.827   0.4085
## race.ethnicity.5levelMixed -0.204181  0.141248  -1.446   0.1484
## race.ethnicity.5levelOther -0.268565  0.161927  -1.659   0.0973 .
## race.ethnicity.5levelWhite -0.161122  0.133207  -1.210   0.2266
## demo_race_hispanic1      -0.014984   0.052764  -0.284   0.7764
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00106
## lmer.REML = 5817.5  Scale est. = 0.67522   n = 2243
```

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## rt_diff_large_small_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
## 
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                0.236400   0.332795   0.710    0.478
## PDS_score                 -0.038846   0.037684  -1.031    0.303
## interview_age             -0.001002   0.002544  -0.394    0.694
## bmi                        0.003612   0.005414   0.667    0.505
## race.ethnicity.5levelBlack -0.049643  0.143228  -0.347    0.729
## race.ethnicity.5levelMixed -0.139113  0.142509  -0.976    0.329
## race.ethnicity.5levelOther -0.238231  0.163342  -1.458    0.145
## race.ethnicity.5levelWhite -0.126784  0.134194  -0.945    0.345
## demo_race_hispanic1       -0.045128   0.052029  -0.867    0.386
## 
## 
## R-sq.(adj) =  -0.000263
## lmer.REML = 5861.2  Scale est. = 0.68856   n = 2243
```

2.3 Model: Caudate Anticipation ~ PDS

Females

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## caudate_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
## 
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               -0.485456   0.357554  -1.358   0.1747
## PDS_score                 -0.024742   0.030629  -0.808   0.4193
## interview_age              0.004977   0.002777   1.793   0.0732 .
## bmi                       -0.003860   0.005332  -0.724   0.4692
## race.ethnicity.5levelBlack -0.051674  0.146647  -0.352   0.7246
## race.ethnicity.5levelMixed  0.130960  0.143803   0.911   0.3626
## race.ethnicity.5levelOther -0.067022  0.163292  -0.410   0.6815
## race.ethnicity.5levelWhite  0.051700  0.134939   0.383   0.7017
## demo_race_hispanic1       -0.101004   0.057017  -1.771   0.0766 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.00576
## lmer.REML = 5161.7  Scale est. = 0.73784   n = 1978
```

Males

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## caudate_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
## 
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                -0.252355   0.381708  -0.661   0.5086
## PDS_score                   0.025125   0.043709   0.575   0.5655
## interview_age               0.003304   0.002929   1.128   0.2594
## bmi                        -0.010429   0.006309  -1.653   0.0985 .
## race.ethnicity.5levelBlack -0.140337   0.162607  -0.863   0.3882
## race.ethnicity.5levelMixed  0.032970   0.161286   0.204   0.8380
## race.ethnicity.5levelOther -0.150540   0.185700  -0.811   0.4177
## race.ethnicity.5levelWhite  0.009760   0.151356   0.064   0.9486
## demo_race_hispanic1         0.142262   0.060354   2.357   0.0185 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.00374
## lmer.REML = 5606.9  Scale est. = 0.72864   n = 2017
```

2.4 Model B: Putamen Anticipation ~ PDS

Females

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## putamen_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
## 
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                -0.370337   0.347707  -1.065  0.28697
## PDS_score                  -0.059494   0.029847  -1.993  0.04637 *
## interview_age               0.004297   0.002699   1.592  0.11153
## bmi                        -0.001872   0.005182  -0.361  0.71797
## race.ethnicity.5levelBlack -0.046971   0.142465  -0.330  0.74166
## race.ethnicity.5levelMixed  0.106078   0.139796   0.759  0.44806
## race.ethnicity.5levelOther  0.006280   0.158927   0.040  0.96848
## race.ethnicity.5levelWhite  0.033372   0.131111   0.255  0.79911
## demo_race_hispanic1        -0.143556   0.055443  -2.589  0.00969 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
```

```
## R-sq.(adj) =  0.00752
## lmer.REML = 5044.5  Scale est. = 0.69748   n = 1975
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -0.605014   0.371086  -1.630   0.1032
## PDS_score                 0.022628   0.042439   0.533   0.5940
## interview_age             0.005453   0.002845   1.917   0.0554 .
## bmi                      -0.007659   0.006140  -1.247   0.2124
## race.ethnicity.5levelBlack  0.006706   0.160984   0.042   0.9668
## race.ethnicity.5levelMixed  0.103802   0.159466   0.651   0.5152
## race.ethnicity.5levelOther  0.086140   0.183131   0.470   0.6381
## race.ethnicity.5levelWhite  0.075070   0.150457   0.499   0.6179
## demo_race_hispanic1       0.009630   0.059716   0.161   0.8719
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000434
## lmer.REML =   5467  Scale est. = 0.7487    n = 2014
```

2.5 Model: Accumbens Anticipation ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.0200313  0.2744437   0.073    0.942
## PDS_score                 0.0073462  0.0235103   0.312    0.755
## interview_age             0.0008919  0.0021318   0.418    0.676
## bmi                      -0.0055945  0.0040912  -1.367    0.172
## race.ethnicity.5levelBlack -0.0327252  0.1119879  -0.292    0.770
## race.ethnicity.5levelMixed  0.0638543  0.1102220   0.579    0.562
## race.ethnicity.5levelOther  0.0103981  0.1254034   0.083    0.934
## race.ethnicity.5levelWhite -0.0197650  0.1030996  -0.192    0.848
## demo_race_hispanic1      -0.0730417  0.0432009  -1.691    0.091 .
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00104
## lmer.REML = 4135.6  Scale est. = 0.44346   n = 1979
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.0900270  0.2868486   0.314    0.754
## PDS_score                0.0234206  0.0327292   0.716    0.474
## interview_age           -0.0021860  0.0022022  -0.993    0.321
## bmi                     -0.0007215  0.0047375  -0.152    0.879
## race.ethnicity.5levelBlack  0.0689768  0.1223497   0.564    0.573
## race.ethnicity.5levelMixed  0.1707431  0.1214531   1.406    0.160
## race.ethnicity.5levelOther  0.1556179  0.1399133   1.112    0.266
## race.ethnicity.5levelWhite  0.1818793  0.1140044   1.595    0.111
## demo_race_hispanic1     -0.0088711  0.0449723  -0.197    0.844
##
##
## R-sq.(adj) =  -0.000206
## lmer.REML = 4469.3  Scale est. = 0.50754   n = 2015
```

2.6 Model: Caudate Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.932562   0.344649   2.706  0.00687 **
## PDS_score               -0.013620   0.029642  -0.460  0.64593
## interview_age           -0.007449   0.002678  -2.782  0.00546 **
## bmi                     -0.000383   0.005153  -0.074  0.94076
## race.ethnicity.5levelBlack -0.086021   0.138840  -0.620  0.53561
## race.ethnicity.5levelMixed -0.072456   0.137118  -0.528  0.59726
## race.ethnicity.5levelOther -0.034614   0.156196  -0.222  0.82464
## race.ethnicity.5levelWhite -0.017734   0.127652  -0.139  0.88952
## demo_race_hispanic1     -0.026299   0.051941  -0.506  0.61268
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.002
## lmer.REML = 5043.9  Scale est. = 0.73647    n = 1977
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##      race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)               -0.1160371  0.3466075  -0.335   0.7378
## PDS_score                 -0.0740967  0.0392935  -1.886   0.0595 .
## interview_age              0.0017526  0.0026492   0.662   0.5083
## bmi                        0.0009847  0.0057062   0.173   0.8630
## race.ethnicity.5levelBlack 0.0011179  0.1484426   0.008   0.9940
## race.ethnicity.5levelMixed 0.0088072  0.1475710   0.060   0.9524
## race.ethnicity.5levelOther -0.0296654  0.1688485  -0.176   0.8606
## race.ethnicity.5levelWhite 0.0206384  0.1386377   0.149   0.8817
## demo_race_hispanic1        0.0419356  0.0536969   0.781   0.4349
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.00145
## lmer.REML = 5208.7  Scale est. = 0.76303    n = 2014
```

2.7 Model: Putamen Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##      race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                0.515774   0.328091   1.572   0.1161
## PDS_score                  0.017515   0.028103   0.623   0.5332
## interview_age             -0.005299   0.002548  -2.079   0.0377 *
## bmi                       -0.003807   0.004902  -0.777   0.4374
## race.ethnicity.5levelBlack 0.098212   0.132876   0.739   0.4599
## race.ethnicity.5levelMixed -0.004631   0.130865  -0.035   0.9718
```

```
## race.ethnicity.5levelOther  0.009275   0.149346   0.062   0.9505
## race.ethnicity.5levelWhite  0.128932   0.122212   1.055   0.2916
## demo_race_hispanic1          0.054657   0.050540   1.081   0.2796
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00292
## lmer.REML = 4837.6  Scale est. = 0.66261   n = 1976
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##      race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.287926   0.344160   0.837   0.4029
## PDS_score                  -0.067761   0.039065  -1.735   0.0830 .
## interview_age              -0.001057   0.002640  -0.400   0.6889
## bmi                         0.006951   0.005664   1.227   0.2199
## race.ethnicity.5levelBlack -0.108475   0.147046  -0.738   0.4608
## race.ethnicity.5levelMixed -0.097317   0.145303  -0.670   0.5031
## race.ethnicity.5levelOther -0.329116   0.166672  -1.975   0.0484 *
## race.ethnicity.5levelWhite -0.133769   0.137047  -0.976   0.3291
## demo_race_hispanic1         0.025493   0.057202   0.446   0.6559
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000848
## lmer.REML = 5194.6  Scale est. = 0.74528   n = 2020
```

2.8 Model: Accumbens Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##      race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.281470   0.260269   1.081   0.2796
## PDS_score                  -0.004762   0.022357  -0.213   0.8314
## interview_age              -0.003867   0.002023  -1.911   0.0561 .
```

```
## bmi                        0.003026   0.003888   0.778   0.4365
## race.ethnicity.5levelBlack  0.111269   0.105064   1.059   0.2897
## race.ethnicity.5levelMixed  0.182236   0.103867   1.755   0.0795 .
## race.ethnicity.5levelOther  0.173718   0.118146   1.470   0.1416
## race.ethnicity.5levelWhite  0.121373   0.096734   1.255   0.2097
## demo_race_hispanic1        -0.044856   0.039370  -1.139   0.2547
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000769
## lmer.REML = 3965.9  Scale est. = 0.4219    n = 1986
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 -0.033962   0.277101  -0.123   0.9025
## PDS_score                   -0.026976   0.031682  -0.851   0.3946
## interview_age                0.001574   0.002129   0.739   0.4597
## bmi                          0.003370   0.004562   0.739   0.4602
## race.ethnicity.5levelBlack  -0.227800   0.118054  -1.930   0.0538 .
## race.ethnicity.5levelMixed  -0.106936   0.116883  -0.915   0.3604
## race.ethnicity.5levelOther  -0.209941   0.134475  -1.561   0.1186
## race.ethnicity.5levelWhite  -0.123982   0.109819  -1.129   0.2590
## demo_race_hispanic1          0.012755   0.044784   0.285   0.7758
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000554
## lmer.REML = 4300.5  Scale est. = 0.40165   n = 2013
```

2.9 Model: OFC Anticipation ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)                     -0.0830133  0.2290189  -0.362    0.717
## PDS_score                        0.0191519  0.0196581   0.974    0.330
## interview_age                    0.0003368  0.0017783   0.189    0.850
## bmi                             -0.0016984  0.0034216  -0.496    0.620
## race.ethnicity.5levelBlack       0.0151496  0.0928484   0.163    0.870
## race.ethnicity.5levelMixed       0.0964930  0.0918569   1.050    0.294
## race.ethnicity.5levelOther       0.0911490  0.1044990   0.872    0.383
## race.ethnicity.5levelWhite       0.0549976  0.0855070   0.643    0.520
## demo_race_hispanic1             -0.0088046  0.0344043  -0.256    0.798
##
##
## R-sq.(adj) =  -0.00199
## lmer.REML = 3408.6  Scale est. = 0.28479   n = 1974

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 4.882e-03  2.656e-01   0.018    0.985
## PDS_score                   1.003e-03  2.277e-02   0.044    0.965
## interview_age               2.745e-05  2.061e-03   0.013    0.989
## bmi                         1.179e-03  3.952e-03   0.298    0.766
## race.ethnicity.5levelBlack -1.105e-02  1.075e-01  -0.103    0.918
## race.ethnicity.5levelMixed  3.566e-02  1.064e-01   0.335    0.738
## race.ethnicity.5levelOther  4.067e-02  1.212e-01   0.336    0.737
## race.ethnicity.5levelWhite -4.817e-02  9.909e-02  -0.486    0.627
## demo_race_hispanic1        -3.724e-02  3.985e-02  -0.934    0.350
##
##
## R-sq.(adj) =  -0.0013
## lmer.REML =   4001  Scale est. = 0.4344    n = 1975
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 -0.3135131  0.2427247  -1.292    0.197
## PDS_score                    0.0362801  0.0280483   1.293    0.196
## interview_age                0.0019770  0.0018653   1.060    0.289
## bmi                         -0.0004756  0.0040253  -0.118    0.906
## race.ethnicity.5levelBlack   0.0232741  0.1033288   0.225    0.822
```

```
## race.ethnicity.5levelMixed  0.0980501  0.1024156   0.957     0.338
## race.ethnicity.5levelOther   0.0003247  0.1178178   0.003     0.998
## race.ethnicity.5levelWhite   0.0375388  0.0960722   0.391     0.696
## demo_race_hispanic1          0.0308405  0.0386556   0.798     0.425
##
##
## R-sq.(adj) =  7.71e-05
## lmer.REML = 3768.4  Scale est. = 0.29552   n = 2012

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ PDS_score + interview_age + bmi + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  -0.314478   0.263841  -1.192  0.23343
## PDS_score                     0.079568   0.030291   2.627  0.00868 **
## interview_age                 0.000308   0.002026   0.152  0.87919
## bmi                           0.001019   0.004365   0.233  0.81550
## race.ethnicity.5levelBlack    0.153692   0.112332   1.368  0.17140
## race.ethnicity.5levelMixed    0.127549   0.111401   1.145  0.25237
## race.ethnicity.5levelOther    0.093833   0.127825   0.734  0.46299
## race.ethnicity.5levelWhite    0.149639   0.104371   1.434  0.15181
## demo_race_hispanic1           0.048204   0.040898   1.179  0.23868
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00326
## lmer.REML = 4099.6  Scale est. = 0.38138   n = 2005
```

2.10 Model: OFC Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   0.2854818  0.2014247   1.417    0.157
## PDS_score                     0.0169904  0.0173019   0.982    0.326
## interview_age                -0.0024870  0.0015664  -1.588    0.113
## bmi                           0.0008841  0.0030134   0.293    0.769
## race.ethnicity.5levelBlack   -0.0915596  0.0813013  -1.126    0.260
## race.ethnicity.5levelMixed   -0.0462932  0.0803046  -0.576    0.564
```

```
## race.ethnicity.5levelOther -0.1357801   0.0919686  -1.476     0.140
## race.ethnicity.5levelWhite -0.0557060   0.0746842  -0.746     0.456
## demo_race_hispanic1          0.0069785   0.0304085   0.229     0.819
##
##
## R-sq.(adj) =  -0.000931
## lmer.REML = 2919.6  Scale est. = 0.22352   n = 1974

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                0.094829   0.249636   0.380    0.704
## PDS_score                  0.019775   0.021394   0.924    0.355
## interview_age             -0.000953   0.001940  -0.491    0.623
## bmi                        0.004291   0.003727   1.151    0.250
## race.ethnicity.5levelBlack -0.202651   0.101480  -1.997    0.046 *
## race.ethnicity.5levelMixed -0.074323   0.099826  -0.745    0.457
## race.ethnicity.5levelOther -0.107162   0.113557  -0.944    0.345
## race.ethnicity.5levelWhite -0.091879   0.093250  -0.985    0.325
## demo_race_hispanic1        -0.006956   0.038919  -0.179    0.858
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  8.4e-05
## lmer.REML = 3743.6  Scale est. = 0.34868   n = 1974
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               -0.182237   0.217730  -0.837   0.4027
## PDS_score                  0.016999   0.024878   0.683   0.4945
## interview_age              0.002728   0.001671   1.633   0.1027
## bmi                       -0.006542   0.003615  -1.810   0.0704 .
## race.ethnicity.5levelBlack  0.002327   0.093060   0.025   0.9801
## race.ethnicity.5levelMixed  0.011522   0.092345   0.125   0.9007
## race.ethnicity.5levelOther  0.058413   0.106520   0.548   0.5835
## race.ethnicity.5levelWhite -0.020024   0.086637  -0.231   0.8172
## demo_race_hispanic1        -0.034843   0.033904  -1.028   0.3042
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000696
## lmer.REML = 3383.2  Scale est. = 0.30093    n = 2020

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -0.0140978  0.2517219  -0.056    0.955
## PDS_score                 0.0114691  0.0289973   0.396    0.692
## interview_age             0.0008004  0.0019324   0.414    0.679
## bmi                      -0.0038587  0.0041819  -0.923    0.356
## race.ethnicity.5levelBlack 0.0194554  0.1073803   0.181    0.856
## race.ethnicity.5levelMixed -0.0196706  0.1065486  -0.185    0.854
## race.ethnicity.5levelOther -0.0026245  0.1227213  -0.021    0.983
## race.ethnicity.5levelWhite  0.0027677  0.0998364   0.028    0.978
## demo_race_hispanic1        0.0350582  0.0393438   0.891    0.373
##
##
## R-sq.(adj) =  -0.0031
## lmer.REML = 3943.8  Scale est. = 0.28493    n = 2018
```

2.11 Model: Caudate Anticipation ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -4.131e-01  3.515e-01  -1.175   0.2401
## hormone_scr_ert_mean               -1.110e-03  1.338e-03  -0.830   0.4069
## hormone_sal_end_min_since_midnight  5.851e-06  1.269e-04   0.046   0.9632
## interview_age                       5.254e-03  2.825e-03   1.860   0.0631 .
## MRI_minus_hormone_date_time        -2.420e-06  2.642e-06  -0.916   0.3599
## bmi                                -8.360e-03  5.319e-03  -1.572   0.1161
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.00114
## lmer.REML = 4945.8  Scale est. = 0.78585   n = 1871
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        9.307e-03  3.751e-01   0.025    0.980
## hormone_scr_ert_mean               7.278e-04  1.490e-03   0.488    0.625
## hormone_sal_end_min_since_midnight 2.113e-05  1.296e-04   0.163    0.871
## interview_age                      5.647e-04  2.950e-03   0.191    0.848
## MRI_minus_hormone_date_time        7.372e-07  2.634e-06   0.280    0.780
## bmi                               -6.497e-03  6.156e-03  -1.055    0.291
##
##
## R-sq.(adj) =  -0.00202
## lmer.REML = 5153.9  Scale est. = 0.64633   n = 1873
```

2.12 Model B: Putamen Anticipation ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -1.629e-01  3.418e-01  -0.477   0.6337
## hormone_scr_ert_mean              -5.084e-04  1.301e-03  -0.391   0.6960
## hormone_sal_end_min_since_midnight -2.539e-05  1.232e-04  -0.206   0.8368
## interview_age                      3.152e-03  2.744e-03   1.149   0.2508
## MRI_minus_hormone_date_time       -1.923e-06  2.611e-06  -0.737   0.4615
## bmi                               -9.126e-03  5.169e-03  -1.765   0.0777 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.000367
## lmer.REML = 4833.3  Scale est. = 0.72897   n = 1869
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -2.662e-01  3.708e-01  -0.718   0.4729
## hormone_scr_ert_mean                2.197e-03  1.478e-03   1.487   0.1373
## hormone_sal_end_min_since_midnight  1.495e-05  1.305e-04   0.115   0.9088
## interview_age                       3.370e-03  2.916e-03   1.156   0.2478
## MRI_minus_hormone_date_time         1.445e-06  2.552e-06   0.566   0.5713
## bmi                                -1.157e-02  6.145e-03  -1.883   0.0599 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00132
## lmer.REML = 5108.6  Scale est. = 0.68918   n = 1873
```

2.13 Model: Accumbens Anticipation ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -6.371e-02  2.674e-01  -0.238   0.8117
## hormone_scr_ert_mean               -1.753e-03  1.018e-03  -1.722   0.0852 .
## hormone_sal_end_min_since_midnight -4.486e-05  9.490e-05  -0.473   0.6365
## interview_age                       2.179e-03  2.148e-03   1.015   0.3104
## MRI_minus_hormone_date_time        -2.284e-06  2.047e-06  -1.116   0.2646
## bmi                                -4.554e-03  4.048e-03  -1.125   0.2608
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00168
## lmer.REML = 3934.2  Scale est. = 0.42606   n = 1872
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      5.377e-01  2.933e-01   1.834    0.0669 .
## hormone_scr_ert_mean            -1.463e-04  1.150e-03  -0.127    0.8988
## hormone_sal_end_min_since_midnight -2.129e-04  9.888e-05  -2.153    0.0314 *
## interview_age                   -2.786e-03  2.303e-03  -1.210    0.2264
## MRI_minus_hormone_date_time      2.837e-06  2.011e-06   1.411    0.1584
## bmi                             -2.028e-03  4.797e-03  -0.423    0.6725
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0012
## lmer.REML = 4261.7  Scale est. = 0.49435   n = 1876
```

2.14 Model: Caudate Feedback ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      1.296e+00  3.374e-01   3.841 0.000127 ***
## hormone_scr_ert_mean             2.761e-03  1.274e-03   2.168 0.030314 *
## hormone_sal_end_min_since_midnight -2.376e-04  1.146e-04  -2.072 0.038379 *
## interview_age                   -9.490e-03  2.702e-03  -3.512 0.000455 ***
```

```
## MRI_minus_hormone_date_time          -2.304e-06  2.511e-06  -0.918 0.358905
## bmi                                   -5.211e-03  5.077e-03  -1.026 0.304867
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00871
## lmer.REML = 4788.9  Scale est. = 0.73183   n = 1868
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.624e-01  3.460e-01   0.469    0.639
## hormone_scr_ert_mean               1.753e-03  1.366e-03   1.284    0.199
## hormone_sal_end_min_since_midnight -1.086e-04  1.187e-04  -0.914    0.361
## interview_age                     -5.888e-04  2.717e-03  -0.217    0.828
## MRI_minus_hormone_date_time        1.094e-06  2.375e-06   0.461    0.645
## bmi                               -1.281e-03  5.672e-03  -0.226    0.821
##
##
## R-sq.(adj) =  -0.00117
## lmer.REML = 4868.1  Scale est. = 0.75737   n = 1873
```

2.15 Model: Putamen Feedback ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.027e+00  3.206e-01   3.203  0.00138 **
## hormone_scr_ert_mean               3.559e-03  1.217e-03   2.924  0.00350 **
## hormone_sal_end_min_since_midnight -3.133e-04  1.115e-04  -2.810  0.00501 **
## interview_age                     -6.831e-03  2.571e-03  -2.657  0.00794 **
```

```
## MRI_minus_hormone_date_time           -9.577e-07  2.411e-06  -0.397   0.69121
## bmi                                    -8.030e-03  4.844e-03  -1.658   0.09752 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0102
## lmer.REML = 4604.2  Scale est. = 0.65935   n = 1870
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        3.480e-01  3.438e-01   1.012    0.312
## hormone_scr_ert_mean               1.334e-03  1.367e-03   0.976    0.329
## hormone_sal_end_min_since_midnight 5.402e-05  1.238e-04   0.436    0.663
## interview_age                     -3.212e-03  2.700e-03  -1.189    0.234
## MRI_minus_hormone_date_time       -6.977e-07  2.398e-06  -0.291    0.771
## bmi                                1.757e-03  5.663e-03   0.310    0.756
##
##
## R-sq.(adj) =  -0.00202
## lmer.REML = 4852.5  Scale est. = 0.69088   n = 1880
```

2.16 Model: Accumbens Feedback ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        6.492e-01  2.479e-01   2.619  0.00889 **
## hormone_scr_ert_mean               9.490e-05  9.387e-04   0.101  0.91948
## hormone_sal_end_min_since_midnight -1.564e-04  8.426e-05  -1.857  0.06351 .
## interview_age                     -4.647e-03  1.988e-03  -2.338  0.01950 *
```

```
## MRI_minus_hormone_date_time          -5.256e-06  1.845e-06  -2.849  0.00443 **
## bmi                                    9.609e-04  3.728e-03   0.258  0.79661
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00765
## lmer.REML =   3671  Scale est. = 0.39826   n = 1876
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.677e-01  2.829e-01   0.593    0.553
## hormone_scr_ert_mean               1.448e-03  1.119e-03   1.294    0.196
## hormone_sal_end_min_since_midnight -1.399e-04  9.810e-05  -1.426    0.154
## interview_age                     -3.174e-04  2.224e-03  -0.143    0.887
## MRI_minus_hormone_date_time        6.789e-07  1.938e-06   0.350    0.726
## bmi                               -7.352e-04  4.630e-03  -0.159    0.874
##
##
## R-sq.(adj) =  -5.26e-05
## lmer.REML =   4092  Scale est. = 0.4067    n = 1872
```

2.17 Model: OFC Anticipation ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -6.118e-02  2.256e-01  -0.271    0.786
## hormone_scr_ert_mean              -6.916e-04  8.561e-04  -0.808    0.419
## hormone_sal_end_min_since_midnight 5.984e-05  7.680e-05   0.779    0.436
## interview_age                      5.826e-04  1.813e-03   0.321    0.748
```

```
## MRI_minus_hormone_date_time              5.911e-08  1.678e-06   0.035   0.972
## bmi                                      -9.242e-04  3.406e-03  -0.271   0.786
##
##
## R-sq.(adj) =  -0.00185
## lmer.REML = 3291.7  Scale est. = 0.3042    n = 1867

## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -1.179e-02  2.585e-01  -0.046    0.964
## hormone_scr_ert_mean              -1.737e-04  9.810e-04  -0.177    0.859
## hormone_sal_end_min_since_midnight 3.276e-06  8.775e-05   0.037    0.970
## interview_age                     -2.118e-04  2.077e-03  -0.102    0.919
## MRI_minus_hormone_date_time        1.985e-06  1.924e-06   1.032    0.302
## bmi                                1.800e-03  3.888e-03   0.463    0.643
##
##
## R-sq.(adj) =  -0.00193
## lmer.REML = 3803.6  Scale est. = 0.43166   n = 1867
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -3.177e-01  2.453e-01  -1.295    0.195
## hormone_scr_ert_mean              -1.506e-03  9.737e-04  -1.547    0.122
## hormone_sal_end_min_since_midnight 1.982e-05  8.419e-05   0.235    0.814
## interview_age                      2.794e-03  1.930e-03   1.448    0.148
## MRI_minus_hormone_date_time        3.174e-06  1.673e-06   1.897    0.058 .
## bmi                                1.067e-03  4.037e-03   0.264    0.792
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) =  0.00214
## lmer.REML = 3564.8  Scale est. = 0.2921    n = 1870

## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -3.041e-01  2.684e-01  -1.133    0.257
## hormone_scr_ert_mean               -1.406e-03  1.058e-03  -1.329    0.184
## hormone_sal_end_min_since_midnight -1.819e-05  9.108e-05  -0.200    0.842
## interview_age                       2.056e-03  2.111e-03   0.974    0.330
## MRI_minus_hormone_date_time         2.571e-06  1.877e-06   1.370    0.171
## bmi                                 6.193e-03  4.390e-03   1.411    0.159
##
##
## R-sq.(adj) =  0.000739
## lmer.REML = 3901.2  Scale est. = 0.3951    n = 1867
```

2.18 Model: OFC Feedback ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         4.104e-01  1.959e-01   2.096   0.0363 *
## hormone_scr_ert_mean                9.438e-04  7.423e-04   1.271   0.2037
## hormone_sal_end_min_since_midnight -1.112e-04  6.693e-05  -1.661   0.0969 .
## interview_age                      -3.061e-03  1.572e-03  -1.947   0.0517 .
## MRI_minus_hormone_date_time        -1.906e-06  1.455e-06  -1.310   0.1905
## bmi                                -8.271e-04  2.957e-03  -0.280   0.7797
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00286
## lmer.REML = 2773.3  Scale est. = 0.21187   n = 1869
```

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      2.387e-01  2.399e-01   0.995    0.320
## hormone_scr_ert_mean             4.352e-04  9.124e-04   0.477    0.633
## hormone_sal_end_min_since_midnight -1.574e-04  8.400e-05  -1.874    0.061 .
## interview_age                   -1.437e-03  1.928e-03  -0.746    0.456
## MRI_minus_hormone_date_time     -2.352e-06  1.793e-06  -1.312    0.190
## bmi                              1.888e-03  3.632e-03   0.520    0.603
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00157
## lmer.REML = 3524.1  Scale est. = 0.32039   n = 1871
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      4.609e-03  2.187e-01   0.021   0.9832
## hormone_scr_ert_mean             2.594e-04  8.637e-04   0.300   0.7640
## hormone_sal_end_min_since_midnight -6.606e-05  7.396e-05  -0.893   0.3719
## interview_age                    1.791e-03  1.717e-03   1.043   0.2971
## MRI_minus_hormone_date_time      1.302e-06  1.492e-06   0.873   0.3829
## bmi                             -7.605e-03  3.590e-03  -2.118   0.0343 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00101
## lmer.REML = 3186.3  Scale est. = 0.30625   n = 1880

## Warning: Some predictor variables are on very different scales: consider
## rescaling
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.285e-01  2.556e-01   0.503    0.615
## hormone_scr_ert_mean               9.723e-04  1.007e-03   0.966    0.334
## hormone_sal_end_min_since_midnight -8.857e-05  8.637e-05  -1.026    0.305
## interview_age                      1.002e-04  2.008e-03   0.050    0.960
## MRI_minus_hormone_date_time        1.919e-06  1.738e-06   1.104    0.270
## bmi                               -3.600e-03  4.199e-03  -0.857    0.391
##
##
## R-sq.(adj) =  -0.000933
## lmer.REML = 3745.9  Scale est. = 0.31454   n = 1878
```

2.19 Model: MID Reaction Time ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -5.448e-01  3.480e-01  -1.565   0.1176
## hormone_scr_ert_mean              -1.281e-03  1.316e-03  -0.974   0.3303
## hormone_sal_end_min_since_midnight 4.444e-05  1.163e-04   0.382   0.7023
## interview_age                      5.705e-03  2.773e-03   2.057   0.0398 *
## bmi                               -3.899e-03  5.265e-03  -0.741   0.4590
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000947
## lmer.REML = 5482.5  Scale est. = 0.68997   n = 2034

##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + bmi
##
```

```
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -1.687e-01  3.522e-01  -0.479   0.6320
## hormone_scr_ert_mean             -3.370e-04  1.331e-03  -0.253   0.8001
## hormone_sal_end_min_since_midnight  2.681e-06  1.175e-04   0.023   0.9818
## interview_age                     3.043e-03  2.806e-03   1.085   0.2782
## bmi                              -9.075e-03  5.322e-03  -1.705   0.0883 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000203
## lmer.REML = 5530.6  Scale est. = 0.73919   n = 2034
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + bmi
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.879e-01  3.274e-01   0.574    0.566
## hormone_scr_ert_mean             -6.294e-04  1.288e-03  -0.489    0.625
## hormone_sal_end_min_since_midnight -3.181e-05  1.114e-04  -0.285    0.775
## interview_age                    -8.852e-04  2.577e-03  -0.344    0.731
## bmi                              -2.535e-03  5.338e-03  -0.475    0.635
##
##
## R-sq.(adj) =  -0.00126
## lmer.REML = 5515.6  Scale est. = 0.65334   n = 2123
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + bmi
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.674e-01  3.294e-01   0.508    0.611
## hormone_scr_ert_mean             -1.721e-03  1.287e-03  -1.337    0.181
## hormone_sal_end_min_since_midnight -8.187e-06  1.096e-04  -0.075    0.940
## interview_age                    -1.269e-03  2.591e-03  -0.490    0.624
## bmi                               3.180e-03  5.355e-03   0.594    0.553
##
##
## R-sq.(adj) =  -0.000792
## lmer.REML = 5550.1  Scale est. = 0.68014   n = 2123
```

2.20 Model: BIS-BAS-RR ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        2.062e-01  3.390e-01   0.608   0.5431
## hormone_scr_ert_mean              -1.326e-03  1.282e-03  -1.034   0.3011
## hormone_sal_end_min_since_midnight -1.527e-05 1.217e-04  -0.125   0.9002
## interview_age                     -3.200e-03  2.706e-03  -1.182   0.2372
## bmi                                1.009e-02  5.070e-03   1.990   0.0468 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00212
## lmer.REML = 6975.8  Scale est. = 0.70774   n = 2472
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     interview_age + bmi
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -0.1741327  0.3197526  -0.545  0.58608
## hormone_scr_ert_mean                0.0014206  0.0012666   1.122  0.26212
## hormone_sal_end_min_since_midnight  0.0002446  0.0001141   2.143  0.03217 *
## interview_age                      -0.0022701  0.0025301  -0.897  0.36967
## bmi                                 0.0151219  0.0051842   2.917  0.00356 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00677
## lmer.REML = 7406.8  Scale est. = 0.68356   n = 2676
```

3—Int~Reward—

3.1 Model: CBCL internalizing factor ~ Nucleus Accumbens activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_rvsn_ant_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               4.052176   2.071394   1.956  0.05057 .
## accumbens_rvsn_ant_z     -0.043681   0.171115  -0.255  0.79854
## interview_age            -0.006634   0.015772  -0.421  0.67410
## race.ethnicity.5levelBlack  0.961315   0.887252   1.083  0.27873
## race.ethnicity.5levelMixed  2.510150   0.877107   2.862  0.00426 **
## race.ethnicity.5levelOther  2.570818   0.993973   2.586  0.00977 **
## race.ethnicity.5levelWhite  1.391087   0.825806   1.685  0.09224 .
## demo_race_hispanic1       0.551391   0.349161   1.579  0.11445
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00793
## lmer.REML =  12329  Scale est. = 11.287    n = 1999
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_rvsn_ant_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.90981    2.01145   0.452 0.651089
## accumbens_rvsn_ant_z     -0.13397    0.15780  -0.849 0.396000
## interview_age             0.01412    0.01545   0.914 0.361018
## race.ethnicity.5levelBlack  1.42784    0.86544   1.650 0.099129 .
## race.ethnicity.5levelMixed  2.86668    0.86090   3.330 0.000885 ***
## race.ethnicity.5levelOther  2.88778    0.99103   2.914 0.003609 **
## race.ethnicity.5levelWhite  2.12172    0.80947   2.621 0.008830 **
## demo_race_hispanic1       0.09777    0.33410   0.293 0.769826
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) =  0.00616
## lmer.REML =  12392  Scale est. = 17.372    n = 2024
```

3.2 Model: CBCL internalizing factor ~ Caudate activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_rvsn_ant_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              4.160983   2.075918   2.004  0.04516 *
## caudate_rvsn_ant_z      -0.046176   0.131676  -0.351  0.72587
## interview_age           -0.007467   0.015809  -0.472  0.63675
## race.ethnicity.5levelBlack  0.986848   0.888683   1.110  0.26693
## race.ethnicity.5levelMixed  2.487496   0.877216   2.836  0.00462 **
## race.ethnicity.5levelOther  2.540475   0.993072   2.558  0.01060 *
## race.ethnicity.5levelWhite  1.395773   0.826508   1.689  0.09142 .
## demo_race_hispanic1      0.533009   0.348799   1.528  0.12664
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00767
## lmer.REML =  12328  Scale est. = 11.357    n = 1998
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_rvsn_ant_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              1.13846    2.02066   0.563  0.57322
## caudate_rvsn_ant_z      -0.11700    0.12316  -0.950  0.34225
## interview_age            0.01280    0.01548   0.827  0.40846
## race.ethnicity.5levelBlack  1.35206    0.88553   1.527  0.12696
## race.ethnicity.5levelMixed  2.78962    0.88126   3.165  0.00157 **
## race.ethnicity.5levelOther  2.88797    1.00597   2.871  0.00414 **
## race.ethnicity.5levelWhite  2.05860    0.83114   2.477  0.01334 *
## demo_race_hispanic1      0.13001    0.33630   0.387  0.69911
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.00574
## lmer.REML =  12383  Scale est. = 17.514    n = 2022
```

3.3 Model: CBCL internalizing factor ~ Putamen activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_rvsn_ant_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              3.985373   2.067539   1.928  0.05405 .
## putamen_rvsn_ant_z      -0.092672   0.135033  -0.686  0.49261
## interview_age           -0.006113   0.015749  -0.388  0.69797
## race.ethnicity.5levelBlack  1.044319   0.883990   1.181  0.23760
## race.ethnicity.5levelMixed  2.522607   0.873375   2.888  0.00391 **
## race.ethnicity.5levelOther  2.565497   0.990442   2.590  0.00966 **
## race.ethnicity.5levelWhite  1.370892   0.822614   1.667  0.09577 .
## demo_race_hispanic1      0.551256   0.347961   1.584  0.11330
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00803
## lmer.REML =  12293  Scale est. = 11.28     n = 1995
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_rvsn_ant_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.94564    2.01703   0.469  0.63924
## putamen_rvsn_ant_z      -0.16425    0.12296  -1.336  0.18174
## interview_age            0.01425    0.01545   0.922  0.35646
## race.ethnicity.5levelBlack  1.42743    0.88405   1.615  0.10654
## race.ethnicity.5levelMixed  2.82456    0.87774   3.218  0.00131 **
## race.ethnicity.5levelOther  2.75170    1.00721   2.732  0.00635 **
## race.ethnicity.5levelWhite  2.08091    0.82917   2.510  0.01216 *
## demo_race_hispanic1      0.08926    0.33586   0.266  0.79046
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00557
## lmer.REML =  12378  Scale est. = 17.128    n = 2023
```

3.4 Model: CBCL internalizing factor ~ Accumbens activity (feedback stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    3.838930   2.065678   1.858  0.06325 .
## accumbens_posvsneg_feedback_z -0.046257   0.178948  -0.258  0.79605
## interview_age                 -0.004964   0.015734  -0.315  0.75243
## race.ethnicity.5levelBlack     1.004141   0.883574   1.136  0.25590
## race.ethnicity.5levelMixed     2.419609   0.873629   2.770  0.00566 **
## race.ethnicity.5levelOther     2.610210   0.987916   2.642  0.00830 **
## race.ethnicity.5levelWhite     1.417874   0.823111   1.723  0.08512 .
## demo_race_hispanic1            0.471797   0.348750   1.353  0.17626
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00659
## lmer.REML =  12353  Scale est. = 11.268    n = 2005
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    0.77475    1.99660   0.388 0.698032
## accumbens_posvsneg_feedback_z  0.32566    0.16284   2.000 0.045644 *
## interview_age                  0.01477    0.01534   0.963 0.335823
## race.ethnicity.5levelBlack     1.51036    0.85866   1.759 0.078735 .
## race.ethnicity.5levelMixed     2.91146    0.85216   3.417 0.000647 ***
## race.ethnicity.5levelOther     3.04869    0.98188   3.105 0.001930 **
## race.ethnicity.5levelWhite     2.12718    0.80145   2.654 0.008013 **
## demo_race_hispanic1            0.06274    0.33218   0.189 0.850220
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00785
## lmer.REML =  12336  Scale est. = 17.742    n = 2021
```

3.5 Model: CBCL internalizing factor ~ Caudate activity (feedback stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 4.174121   2.078905   2.008  0.04479 *
## caudate_posvsneg_feedback_z -0.178458   0.133986  -1.332  0.18304
## interview_age               -0.007524   0.015835  -0.475  0.63473
## race.ethnicity.5levelBlack   1.026574   0.888082   1.156  0.24784
## race.ethnicity.5levelMixed   2.438043   0.876042   2.783  0.00544 **
## race.ethnicity.5levelOther   2.443722   0.992035   2.463  0.01385 *
## race.ethnicity.5levelWhite   1.358837   0.825732   1.646  0.10000
## demo_race_hispanic1          0.542136   0.350534   1.547  0.12212
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0083
## lmer.REML =  12316  Scale est. = 11.382    n = 1997
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.421202   2.024330   0.702  0.48272
## caudate_posvsneg_feedback_z 0.118954   0.130857   0.909  0.36344
## interview_age               0.009903   0.015487   0.639  0.52261
## race.ethnicity.5levelBlack   1.426455   0.874856   1.631  0.10315
## race.ethnicity.5levelMixed   2.846507   0.869937   3.272  0.00109 **
## race.ethnicity.5levelOther   2.962154   0.995131   2.977  0.00295 **
## race.ethnicity.5levelWhite   2.094779   0.819002   2.558  0.01061 *
```

```
## demo_race_hispanic1            0.154159   0.335180   0.460  0.64562
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00595
## lmer.REML =  12389  Scale est. = 17.501    n = 2023
```

3.6 Model: CBCL internalizing factor ~ Putamen activity (feedback stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  3.937682   2.075294   1.897  0.05792 .
## putamen_posvsneg_feedback_z -0.091652   0.141345  -0.648  0.51678
## interview_age               -0.005695   0.015808  -0.360  0.71870
## race.ethnicity.5levelBlack   1.061865   0.888416   1.195  0.23214
## race.ethnicity.5levelMixed   2.459395   0.876016   2.807  0.00504 **
## race.ethnicity.5levelOther   2.506314   0.994597   2.520  0.01182 *
## race.ethnicity.5levelWhite   1.375676   0.826241   1.665  0.09607 .
## demo_race_hispanic1          0.556521   0.350406   1.588  0.11240
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00756
## lmer.REML =  12310  Scale est. = 11.343    n = 1996
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.05524    2.01873   0.523 0.601223
## putamen_posvsneg_feedback_z  0.14036    0.13237   1.060 0.289116
## interview_age                0.01249    0.01549   0.806 0.420296
## race.ethnicity.5levelBlack   1.46805    0.86859   1.690 0.091153 .
## race.ethnicity.5levelMixed   2.91149    0.86315   3.373 0.000757 ***
## race.ethnicity.5levelOther   2.98856    0.99153   3.014 0.002610 **
```

```
## race.ethnicity.5levelWhite    2.17694    0.81221    2.680 0.007416 **
## demo_race_hispanic1           0.08749    0.33699    0.260 0.795178
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00591
## lmer.REML =  12432  Scale est. = 17.729    n = 2028
```

3.7 Model: CBCL internalizing factor ~ OFC activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              3.945689   2.088229   1.889  0.05897 .
## lOFC_rvsn_ant_z          0.092356   0.206649   0.447  0.65498
## interview_age           -0.005135   0.015862  -0.324  0.74617
## race.ethnicity.5levelBlack 0.949446   0.895071   1.061  0.28893
## race.ethnicity.5levelMixed 2.410749   0.885797   2.722  0.00655 **
## race.ethnicity.5levelOther 2.446597   1.001979   2.442  0.01470 *
## race.ethnicity.5levelWhite 1.303526   0.834533   1.562  0.11845
## demo_race_hispanic1      0.566955   0.349537   1.622  0.10496
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0076
## lmer.REML =  12300  Scale est. = 11.614    n = 1994
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              3.887753   2.085389   1.864  0.06243 .
## mOFC_rvsn_ant_z          0.184766   0.174982   1.056  0.29114
## interview_age           -0.004795   0.015837  -0.303  0.76210
## race.ethnicity.5levelBlack 0.946118   0.895477   1.057  0.29084
## race.ethnicity.5levelMixed 2.424899   0.886298   2.736  0.00627 **
## race.ethnicity.5levelOther 2.516611   1.004105   2.506  0.01228 *
## race.ethnicity.5levelWhite 1.342866   0.835098   1.608  0.10799
```

```
## demo_race_hispanic1          0.557219   0.349619   1.594  0.11114
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0082
## lmer.REML =  12308  Scale est. = 11.42     n = 1995
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                2.649e-01  1.995e+00   0.133  0.89436
## lOFC_rvsn_ant_z            3.840e-03  1.865e-01   0.021  0.98357
## interview_age              1.992e-02  1.533e-02   1.300  0.19371
## race.ethnicity.5levelBlack 1.417e+00  8.574e-01   1.653  0.09856 .
## race.ethnicity.5levelMixed 2.804e+00  8.524e-01   3.290  0.00102 **
## race.ethnicity.5levelOther 2.880e+00  9.798e-01   2.940  0.00332 **
## race.ethnicity.5levelWhite 2.044e+00  8.009e-01   2.552  0.01080 *
## demo_race_hispanic1       -6.687e-05  3.323e-01   0.000  0.99984
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00548
## lmer.REML =  12332  Scale est. = 17.059    n = 2021
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.42987    2.00279   0.215  0.83007
## mOFC_rvsn_ant_z             0.27046    0.17117   1.580  0.11426
## interview_age               0.01874    0.01538   1.218  0.22323
## race.ethnicity.5levelBlack  1.34471    0.86121   1.561  0.11858
## race.ethnicity.5levelMixed  2.73744    0.85492   3.202  0.00139 **
## race.ethnicity.5levelOther  2.86734    0.98038   2.925  0.00349 **
## race.ethnicity.5levelWhite  2.03045    0.80355   2.527  0.01159 *
## demo_race_hispanic1         0.03911    0.33258   0.118  0.90639
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.00707
## lmer.REML =  12301  Scale est. = 17.183    n = 2014
```

3.8 Model: CBCL internalizing factor ~ OFC activity (feedback stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               3.918460   2.071655   1.891  0.05871 .
## lOFC_posvsneg_feedback_z -0.196960   0.231572  -0.851  0.39513
## interview_age            -0.005545   0.015784  -0.351  0.72540
## race.ethnicity.5levelBlack 1.018741  0.883760   1.153  0.24916
## race.ethnicity.5levelMixed 2.433765  0.872756   2.789  0.00534 **
## race.ethnicity.5levelOther 2.741777  0.994022   2.758  0.00586 **
## race.ethnicity.5levelWhite 1.391187  0.822128   1.692  0.09077 .
## demo_race_hispanic1        0.465982  0.348214   1.338  0.18098
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00806
## lmer.REML =  12285  Scale est. = 11.271    n = 1994

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               4.023520   2.074379   1.940  0.05257 .
## mOFC_posvsneg_feedback_z -0.167758   0.189547  -0.885  0.37624
## interview_age            -0.006339   0.015808  -0.401  0.68849
## race.ethnicity.5levelBlack 1.004855  0.886400   1.134  0.25708
## race.ethnicity.5levelMixed 2.433716  0.874753   2.782  0.00545 **
## race.ethnicity.5levelOther 2.575923  0.991115   2.599  0.00942 **
## race.ethnicity.5levelWhite 1.380283  0.823927   1.675  0.09404 .
## demo_race_hispanic1        0.518458  0.348645   1.487  0.13716
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) =  0.00815
## lmer.REML =  12295  Scale est. = 11.469    n = 1994
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.77055    1.99466   0.386 0.699312
## lOFC_posvsneg_feedback_z  0.04810    0.20526   0.234 0.814738
## interview_age             0.01541    0.01532   1.006 0.314405
## race.ethnicity.5levelBlack  1.46420    0.85984   1.703 0.088745 .
## race.ethnicity.5levelMixed  2.88778    0.85380   3.382 0.000733 ***
## race.ethnicity.5levelOther  2.84553    0.98502   2.889 0.003908 **
## race.ethnicity.5levelWhite  2.08630    0.80307   2.598 0.009447 **
## demo_race_hispanic1       0.06155    0.33289   0.185 0.853316
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00565
## lmer.REML =  12392  Scale est. = 17.111    n = 2029

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.80386    1.99379   0.403 0.686858
## mOFC_posvsneg_feedback_z  0.27553    0.17865   1.542 0.123160
## interview_age             0.01508    0.01531   0.985 0.324691
## race.ethnicity.5levelBlack  1.44976    0.85958   1.687 0.091839 .
## race.ethnicity.5levelMixed  2.90987    0.85377   3.408 0.000667 ***
## race.ethnicity.5levelOther  2.90159    0.98245   2.953 0.003179 **
## race.ethnicity.5levelWhite  2.08983    0.80305   2.602 0.009326 **
## demo_race_hispanic1       0.03963    0.33252   0.119 0.905135
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00704
## lmer.REML =  12380  Scale est. = 17.178    n = 2027
```

3.9 Model: CBCL internalizing factor ~ BIS-BAS-RR

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ bisbas_ss_basm_rr + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                2.87599    1.89810   1.515  0.12984
## bisbas_ss_basm_rr         -0.06648    0.04530  -1.468  0.14231
## interview_age              0.01054    0.01412   0.746  0.45561
## race.ethnicity.5levelBlack 0.57633    0.78656   0.733  0.46379
## race.ethnicity.5levelMixed 2.01387    0.78875   2.553  0.01073 *
## race.ethnicity.5levelOther 2.77250    0.90192   3.074  0.00213 **
## race.ethnicity.5levelWhite 1.38776    0.74259   1.869  0.06176 .
## demo_race_hispanic1        0.18709    0.31806   0.588  0.55645
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00746
## lmer.REML =  16337  Scale est. = 13.091    n = 2629
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ bisbas_ss_basm_rr + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               2.183626   1.837663   1.188  0.23483
## bisbas_ss_basm_rr         0.003817   0.044574   0.086  0.93177
## interview_age             0.009560   0.013816   0.692  0.48905
## race.ethnicity.5levelBlack 1.610755   0.750902   2.145  0.03203 *
## race.ethnicity.5levelMixed 2.100595   0.755919   2.779  0.00549 **
## race.ethnicity.5levelOther 1.983774   0.862904   2.299  0.02158 *
## race.ethnicity.5levelWhite 1.502642   0.709067   2.119  0.03416 *
## demo_race_hispanic1       0.317069   0.301590   1.051  0.29320
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000948
## lmer.REML =  17729  Scale est. = 15.738    n = 2847
```

3.10 Model: CBCL internalizing factor ~ MID Reaction Time

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_neutral_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 4.55400    1.98160   2.298  0.02165 *
## rt_diff_large_neutral_z     0.13920    0.12178   1.143  0.25318
## interview_age              -0.01062    0.01514  -0.702  0.48306
## race.ethnicity.5levelBlack  0.95841    0.84017   1.141  0.25411
## race.ethnicity.5levelMixed  2.34332    0.83412   2.809  0.00501 **
## race.ethnicity.5levelOther  2.81105    0.94816   2.965  0.00306 **
## race.ethnicity.5levelWhite  1.38364    0.78299   1.767  0.07735 .
## demo_race_hispanic1         0.49857    0.34170   1.459  0.14470
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00833
## lmer.REML =  13269  Scale est. = 11.8       n = 2153

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_small_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 4.464661   1.980676   2.254  0.02429 *
## rt_diff_large_small_z      -0.123532   0.120640  -1.024  0.30597
## interview_age              -0.009608   0.015124  -0.635  0.52528
## race.ethnicity.5levelBlack  0.926365   0.839755   1.103  0.27009
## race.ethnicity.5levelMixed  2.326042   0.833976   2.789  0.00533 **
## race.ethnicity.5levelOther  2.779393   0.948352   2.931  0.00342 **
## race.ethnicity.5levelWhite  1.364444   0.782899   1.743  0.08151 .
## demo_race_hispanic1         0.485413   0.341768   1.420  0.15567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00793
## lmer.REML =  13269  Scale est. = 11.747    n = 2153
```

Males

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_neutral_z + interview_age +
##      race.ethnicity.5level + demo_race_hispanic
## 
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                1.23765    1.93604   0.639  0.52271
## rt_diff_large_neutral_z    0.07626    0.12536   0.608  0.54304
## interview_age              0.01698    0.01481   1.146  0.25173
## race.ethnicity.5levelBlack 0.95348    0.84099   1.134  0.25702
## race.ethnicity.5levelMixed 2.18027    0.83793   2.602  0.00933 **
## race.ethnicity.5levelOther 2.00082    0.96151   2.081  0.03755 *
## race.ethnicity.5levelWhite 1.45145    0.79076   1.836  0.06656 .
## demo_race_hispanic1        0.16620    0.32281   0.515  0.60671
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.00317
## lmer.REML =  13877  Scale est. = 16.854    n = 2257

## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_small_z + interview_age +
##      race.ethnicity.5level + demo_race_hispanic
## 
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                1.28604    1.93561   0.664  0.5065
## rt_diff_large_small_z     -0.07689    0.12414  -0.619  0.5357
## interview_age              0.01678    0.01481   1.133  0.2574
## race.ethnicity.5levelBlack 0.93933    0.84074   1.117  0.2640
## race.ethnicity.5levelMixed 2.15236    0.83755   2.570  0.0102 *
## race.ethnicity.5levelOther 1.96006    0.96117   2.039  0.0415 *
## race.ethnicity.5levelWhite 1.42757    0.79053   1.806  0.0711 .
## demo_race_hispanic1        0.16026    0.32289   0.496  0.6197
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.00316
## lmer.REML =  13877  Scale est. = 16.926    n = 2257
```

4—Int~Puberty x Reward—

4.1 Model: CBCL internalizing factor ~ PDS x Accumbens activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_rvsn_ant_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 6.11905    2.40102   2.549  0.01090 *
## PDS_score                   0.56881    0.19031   2.989  0.00284 **
## accumbens_rvsn_ant_z       -0.69127    0.44437  -1.556  0.11997
## race.ethnicity.5levelBlack  0.05661    0.97047   0.058  0.95349
## race.ethnicity.5levelMixed  1.95031    0.93531   2.085  0.03719 *
## race.ethnicity.5levelOther  1.86410    1.05100   1.774  0.07629 .
## race.ethnicity.5levelWhite  1.50236    0.88078   1.706  0.08823 .
## demo_race_hispanic1         0.10997    0.37621   0.292  0.77008
## interview_age              -0.02039    0.01679  -1.214  0.22484
## bmi                         0.05012    0.03333   1.504  0.13278
## household.income[>=200K]   -2.92893    0.91834  -3.189  0.00145 **
## household.income[100K-200K]-2.45363    0.86409  -2.840  0.00457 **
## household.income[12K-16K]  -0.22604    1.10943  -0.204  0.83857
## household.income[16K-25K]  -0.48476    0.95778  -0.506  0.61283
## household.income[25K-35K]  -1.66374    0.91189  -1.824  0.06824 .
## household.income[35K-50K]  -1.06164    0.87487  -1.213  0.22510
## household.income[50K-75K]  -1.63166    0.87036  -1.875  0.06099 .
## household.income[5K-12K]   -0.90095    1.01115  -0.891  0.37304
## household.income[75K-100K] -1.83395    0.87483  -2.096  0.03619 *
## high.educBachelor          -0.31676    0.82479  -0.384  0.70099
## high.educHS Diploma/GED    -1.01228    0.84052  -1.204  0.22861
## high.educPost Graduate Degree -0.12652 0.83344  -0.152  0.87936
## high.educSome College       0.08687    0.77796   0.112  0.91110
## PDS_score:accumbens_rvsn_ant_z 0.42314 0.24827   1.704  0.08848 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0311
## lmer.REML =  11259  Scale est. = 11.173    n = 1844
```

Males

```
##
## Family: gaussian
## Link function: identity
##
```

```
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_rvsn_ant_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   3.119732   2.296663   1.358  0.17451
## PDS_score                     0.555842   0.240924   2.307  0.02116 *
## accumbens_rvsn_ant_z         -0.358073   0.440048  -0.814  0.41591
## race.ethnicity.5levelBlack    0.270089   0.896812   0.301  0.76332
## race.ethnicity.5levelMixed    2.403627   0.865752   2.776  0.00555 **
## race.ethnicity.5levelOther    1.988673   1.016057   1.957  0.05047 .
## race.ethnicity.5levelWhite    1.907037   0.811070   2.351  0.01881 *
## demo_race_hispanic1          -0.501463   0.358813  -1.398  0.16241
## interview_age                -0.008335   0.015753  -0.529  0.59681
## bmi                           0.062751   0.034656   1.811  0.07035 .
## household.income[>=200K]     -2.102067   0.932868  -2.253  0.02435 *
## household.income[100K-200K]  -1.756031   0.876859  -2.003  0.04536 *
## household.income[12K-16K]    -1.079877   1.126963  -0.958  0.33808
## household.income[16K-25K]     0.338645   0.954206   0.355  0.72271
## household.income[25K-35K]    -0.563766   0.929835  -0.606  0.54439
## household.income[35K-50K]    -0.286395   0.901695  -0.318  0.75081
## household.income[50K-75K]    -1.202248   0.873977  -1.376  0.16911
## household.income[5K-12K]      0.838589   1.025893   0.817  0.41379
## household.income[75K-100K]   -1.492428   0.888267  -1.680  0.09310 .
## high.educBachelor             0.369115   0.800757   0.461  0.64488
## high.educHS Diploma/GED      -0.809165   0.826284  -0.979  0.32757
## high.educPost Graduate Degree 0.165981   0.811362   0.205  0.83793
## high.educSome College         0.621883   0.765796   0.812  0.41685
## PDS_score:accumbens_rvsn_ant_z 0.199877  0.303584   0.658  0.51037
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0244
## lmer.REML =  11333  Scale est. = 15.275    n = 1878
```

4.2 Model: CBCL internalizing factor ~ PDS x Caudate activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)                        6.20089    2.41763    2.565   0.01040 *
## PDS_score                           0.58077    0.19121    3.037   0.00242 **
## caudate_rvsn_ant_z                 -0.14010    0.33814   -0.414   0.67868
## race.ethnicity.5levelBlack          0.08535    0.97324    0.088   0.93013
## race.ethnicity.5levelMixed          1.93044    0.93680    2.061   0.03948 *
## race.ethnicity.5levelOther          1.86084    1.05156    1.770   0.07696 .
## race.ethnicity.5levelWhite          1.49756    0.88263    1.697   0.08993 .
## demo_race_hispanic1                 0.13130    0.37609    0.349   0.72705
## interview_age                      -0.02300    0.01689   -1.362   0.17332
## bmi                                 0.05510    0.03340    1.650   0.09914 .
## household.income[>=200K]           -2.85485    0.92181   -3.097   0.00198 **
## household.income[100K-200K]        -2.35873    0.86574   -2.725   0.00650 **
## household.income[12K-16K]          -0.22727    1.10464   -0.206   0.83702
## household.income[16K-25K]          -0.48754    0.95703   -0.509   0.61051
## household.income[25K-35K]          -1.54976    0.91506   -1.694   0.09051 .
## household.income[35K-50K]          -1.02675    0.87749   -1.170   0.24211
## household.income[50K-75K]          -1.51840    0.87269   -1.740   0.08204 .
## household.income[5K-12K]           -0.80578    1.01393   -0.795   0.42689
## household.income[75K-100K]         -1.75774    0.87749   -2.003   0.04531 *
## high.educBachelor                  -0.28693    0.82785   -0.347   0.72894
## high.educHS Diploma/GED            -0.97129    0.84324   -1.152   0.24953
## high.educPost Graduate Degree      -0.05426    0.83627   -0.065   0.94827
## high.educSome College               0.09622    0.78074    0.123   0.90193
## PDS_score:caudate_rvsn_ant_z        0.11331    0.19071    0.594   0.55249
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0284
## lmer.REML =  11269  Scale est. = 11.324    n = 1844
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 3.128869   2.300919   1.360  0.17405
## PDS_score                   0.600823   0.241429   2.489  0.01291 *
## caudate_rvsn_ant_z          0.352050   0.356635   0.987  0.32370
## race.ethnicity.5levelBlack  0.206526   0.917581   0.225  0.82194
## race.ethnicity.5levelMixed  2.333984   0.889132   2.625  0.00874 **
## race.ethnicity.5levelOther  1.980771   1.035486   1.913  0.05592 .
## race.ethnicity.5levelWhite  1.835324   0.835413   2.197  0.02815 *
## demo_race_hispanic1        -0.485437   0.360203  -1.348  0.17793
## interview_age              -0.009763   0.015795  -0.618  0.53657
## bmi                         0.061468   0.034714   1.771  0.07677 .
```

```
## household.income[>=200K]       -1.856706   0.931523  -1.993   0.04639 *
## household.income[100K-200K]     -1.576178   0.874466  -1.802   0.07164 .
## household.income[12K-16K]       -0.970163   1.126103  -0.862   0.38906
## household.income[16K-25K]        0.395716   0.949740   0.417   0.67698
## household.income[25K-35K]       -0.383289   0.927481  -0.413   0.67947
## household.income[35K-50K]       -0.120093   0.900110  -0.133   0.89388
## household.income[50K-75K]       -1.042046   0.870872  -1.197   0.23163
## household.income[5K-12K]         1.073358   1.019127   1.053   0.29238
## household.income[75K-100K]      -1.276606   0.886423  -1.440   0.14999
## high.educBachelor                0.425814   0.797472   0.534   0.59344
## high.educHS Diploma/GED         -0.682510   0.823435  -0.829   0.40729
## high.educPost Graduate Degree    0.159891   0.808556   0.198   0.84326
## high.educSome College            0.630185   0.761474   0.828   0.40801
## PDS_score:caudate_rvsn_ant_z    -0.301281   0.247904  -1.215   0.22440
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0243
## lmer.REML =  11331  Scale est. = 15.352    n = 1876
```

4.3 Model: CBCL internalizing factor ~ PDS x Putamen activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                5.99889    2.39100   2.509  0.01220 *
## PDS_score                  0.59914    0.19096   3.138  0.00173 **
## putamen_rvsn_ant_z        -0.45726    0.33996  -1.345  0.17878
## race.ethnicity.5levelBlack 0.08926    0.96739   0.092  0.92650
## race.ethnicity.5levelMixed 1.97029    0.93130   2.116  0.03451 *
## race.ethnicity.5levelOther 1.84499    1.04737   1.762  0.07832 .
## race.ethnicity.5levelWhite 1.47228    0.87724   1.678  0.09346 .
## demo_race_hispanic1        0.16397    0.37473   0.438  0.66175
## interview_age             -0.02129    0.01676  -1.270  0.20423
## bmi                        0.05062    0.03323   1.523  0.12788
## household.income[>=200K]  -2.75584    0.91307  -3.018  0.00258 **
## household.income[100K-200K] -2.31366  0.85687  -2.700  0.00700 **
## household.income[12K-16K] -0.14369    1.10118  -0.130  0.89619
## household.income[16K-25K] -0.54056    0.94947  -0.569  0.56921
## household.income[25K-35K] -1.52466    0.90500  -1.685  0.09222 .
## household.income[35K-50K] -0.98046    0.86790  -1.130  0.25875
## household.income[50K-75K] -1.44783    0.86458  -1.675  0.09418 .
```

```
## household.income[5K-12K]        -0.77276     1.00435   -0.769   0.44175
## household.income[75K-100K]      -1.80298     0.86926   -2.074   0.03820 *
## high.educBachelor               -0.24602     0.81815   -0.301   0.76368
## high.educHS Diploma/GED         -0.94372     0.83287   -1.133   0.25732
## high.educPost Graduate Degree   -0.08116     0.82642   -0.098   0.92178
## high.educSome College            0.12851     0.77104    0.167   0.86765
## PDS_score:putamen_rvsn_ant_z     0.31990     0.19028    1.681   0.09289 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0298
## lmer.REML =  11225  Scale est. = 11.253     n = 1840
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_rvsn_ant_z + race.ethnicity.5level +
##      demo_race_hispanic + interview_age + bmi + household.income +
##      high.educ
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     3.005960   2.301749   1.306  0.19173
## PDS_score                       0.644092   0.242073   2.661  0.00786 **
## putamen_rvsn_ant_z              0.669164   0.351648   1.903  0.05720 .
## race.ethnicity.5levelBlack      0.276165   0.915923   0.302  0.76305
## race.ethnicity.5levelMixed      2.382648   0.884834   2.693  0.00715 **
## race.ethnicity.5levelOther      2.031935   1.032982   1.967  0.04933 *
## race.ethnicity.5levelWhite      1.874800   0.833294   2.250  0.02457 *
## demo_race_hispanic1            -0.534592   0.359386  -1.488  0.13705
## interview_age                  -0.008853   0.015781  -0.561  0.57486
## bmi                             0.063711   0.034840   1.829  0.06761 .
## household.income[>=200K]       -1.838006   0.933599  -1.969  0.04913 *
## household.income[100K-200K]    -1.602143   0.877894  -1.825  0.06816 .
## household.income[12K-16K]      -0.973163   1.127097  -0.863  0.38802
## household.income[16K-25K]       0.363721   0.952569   0.382  0.70263
## household.income[25K-35K]      -0.379244   0.929515  -0.408  0.68332
## household.income[35K-50K]      -0.109051   0.903056  -0.121  0.90390
## household.income[50K-75K]      -1.027527   0.874474  -1.175  0.24014
## household.income[5K-12K]        0.999009   1.021123   0.978  0.32803
## household.income[75K-100K]     -1.309832   0.888854  -1.474  0.14075
## high.educBachelor               0.286546   0.799808   0.358  0.72018
## high.educHS Diploma/GED        -0.782417   0.826526  -0.947  0.34395
## high.educPost Graduate Degree   0.088185   0.810771   0.109  0.91340
## high.educSome College           0.524856   0.764657   0.686  0.49255
## PDS_score:putamen_rvsn_ant_z   -0.571162   0.247462  -2.308  0.02110 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) =  0.0264
## lmer.REML =  11338  Scale est. = 14.751    n = 1879
```

4.4 Model: CBCL internalizing factor ~ PDS x Lateral OFC activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  5.90537    2.41442   2.446  0.01454 *
## PDS_score                    0.56567    0.19115   2.959  0.00312 **
## lOFC_rvsn_ant_z              0.41960    0.53771   0.780  0.43529
## race.ethnicity.5levelBlack  -0.03386    0.98288  -0.034  0.97252
## race.ethnicity.5levelMixed   1.81158    0.94787   1.911  0.05613 .
## race.ethnicity.5levelOther   1.74425    1.06299   1.641  0.10099
## race.ethnicity.5levelWhite   1.38472    0.89322   1.550  0.12126
## demo_race_hispanic1          0.13510    0.37773   0.358  0.72065
## interview_age               -0.02166    0.01693  -1.280  0.20085
## bmi                          0.05782    0.03355   1.723  0.08499 .
## household.income[>=200K]    -2.80214    0.91641  -3.058  0.00226 **
## household.income[100K-200K] -2.29921    0.86017  -2.673  0.00759 **
## household.income[12K-16K]   -0.16492    1.09748  -0.150  0.88057
## household.income[16K-25K]   -0.38118    0.95058  -0.401  0.68847
## household.income[25K-35K]   -1.46350    0.90826  -1.611  0.10728
## household.income[35K-50K]   -0.86589    0.87326  -0.992  0.32154
## household.income[50K-75K]   -1.44208    0.86486  -1.667  0.09560 .
## household.income[5K-12K]    -0.68903    1.00797  -0.684  0.49433
## household.income[75K-100K]  -1.72254    0.87173  -1.976  0.04831 *
## high.educBachelor           -0.13652    0.82036  -0.166  0.86785
## high.educHS Diploma/GED     -0.84369    0.83387  -1.012  0.31178
## high.educPost Graduate Degree 0.07235   0.82870   0.087  0.93044
## high.educSome College        0.27419    0.77324   0.355  0.72293
## PDS_score:lOFC_rvsn_ant_z   -0.12883    0.29419  -0.438  0.66149
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0293
## lmer.REML =  11242  Scale est. = 11.723    n = 1840
```

Males

```
##
## Family: gaussian
```

```
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.95923    2.28614   0.857  0.39156
## PDS_score                   0.45781    0.24275   1.886  0.05946 .
## lOFC_rvsn_ant_z            -0.50242    0.50907  -0.987  0.32380
## race.ethnicity.5levelBlack  0.38065    0.88869   0.428  0.66846
## race.ethnicity.5levelMixed  2.38150    0.85728   2.778  0.00552 **
## race.ethnicity.5levelOther  2.09270    1.00470   2.083  0.03740 *
## race.ethnicity.5levelWhite  1.84662    0.80221   2.302  0.02145 *
## demo_race_hispanic1        -0.52910    0.35530  -1.489  0.13662
## interview_age              -0.00021    0.01566  -0.013  0.98930
## bmi                         0.05918    0.03460   1.710  0.08737 .
## household.income[>=200K]   -2.24908    0.92433  -2.433  0.01506 *
## household.income[100K-200K] -1.95927   0.87005  -2.252  0.02445 *
## household.income[12K-16K]  -1.24783    1.11620  -1.118  0.26374
## household.income[16K-25K]   0.05112    0.94807   0.054  0.95700
## household.income[25K-35K]  -0.78619    0.92314  -0.852  0.39452
## household.income[35K-50K]  -0.58074    0.89607  -0.648  0.51700
## household.income[50K-75K]  -1.41000    0.86650  -1.627  0.10386
## household.income[5K-12K]    0.26683    1.02182   0.261  0.79402
## household.income[75K-100K] -1.66041    0.88136  -1.884  0.05973 .
## high.educBachelor           1.03650    0.80098   1.294  0.19581
## high.educHS Diploma/GED    -0.16278    0.82659  -0.197  0.84391
## high.educPost Graduate Degree 0.75911  0.81161   0.935  0.34975
## high.educSome College       1.19626    0.76653   1.561  0.11878
## PDS_score:lOFC_rvsn_ant_z   0.32715    0.34522   0.948  0.34342
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0208
## lmer.REML =  11276  Scale est. = 14.901    n = 1875
```

4.5 Model: CBCL internalizing factor ~ PDS x Medial OFC activity (anticipation stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
```

```
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      5.95284    2.41650   2.463  0.01385 *
## PDS_score                        0.57766    0.19133   3.019  0.00257 **
## mOFC_rvsn_ant_z                  0.17795    0.44916   0.396  0.69201
## race.ethnicity.5levelBlack      -0.01316    0.98477  -0.013  0.98934
## race.ethnicity.5levelMixed       1.86190    0.94960   1.961  0.05006 .
## race.ethnicity.5levelOther       1.82582    1.06741   1.711  0.08734 .
## race.ethnicity.5levelWhite       1.44159    0.89498   1.611  0.10741
## demo_race_hispanic1              0.12548    0.37808   0.332  0.74001
## interview_age                   -0.02118    0.01691  -1.252  0.21061
## bmi                              0.05110    0.03348   1.526  0.12711
## household.income[>=200K]        -2.79648    0.91690  -3.050  0.00232 **
## household.income[100K-200K]     -2.28025    0.86112  -2.648  0.00817 **
## household.income[12K-16K]       -0.14605    1.09907  -0.133  0.89430
## household.income[16K-25K]       -0.36027    0.95274  -0.378  0.70537
## household.income[25K-35K]       -1.39505    0.91116  -1.531  0.12592
## household.income[35K-50K]       -0.85522    0.87352  -0.979  0.32768
## household.income[50K-75K]       -1.47709    0.86620  -1.705  0.08832 .
## household.income[5K-12K]        -0.66847    1.01104  -0.661  0.50859
## household.income[75K-100K]      -1.70540    0.87233  -1.955  0.05074 .
## high.educBachelor               -0.18001    0.82748  -0.218  0.82781
## high.educHS Diploma/GED         -0.87661    0.83934  -1.044  0.29644
## high.educPost Graduate Degree    0.04142    0.83574   0.050  0.96048
## high.educSome College            0.19461    0.78039   0.249  0.80310
## PDS_score:mOFC_rvsn_ant_z       -0.01033    0.25076  -0.041  0.96714
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0286
## lmer.REML =  11248  Scale est. = 11.415    n = 1840
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     1.543555   2.289000   0.674  0.50018
## PDS_score                       0.477932   0.243783   1.960  0.05009 .
## mOFC_rvsn_ant_z                -0.070016   0.471829  -0.148  0.88205
## race.ethnicity.5levelBlack      0.355116   0.893134   0.398  0.69097
## race.ethnicity.5levelMixed      2.350790   0.861607   2.728  0.00643 **
## race.ethnicity.5levelOther      2.078236   1.009045   2.060  0.03958 *
## race.ethnicity.5levelWhite      1.867391   0.806302   2.316  0.02067 *
## demo_race_hispanic1            -0.484897   0.356319  -1.361  0.17373
```

```
## interview_age                    -0.001413   0.015725  -0.090  0.92841
## bmi                               0.068507   0.034642   1.978  0.04813 *
## household.income[>=200K]         -2.058901   0.931194  -2.211  0.02716 *
## household.income[100K-200K]      -1.790913   0.876602  -2.043  0.04119 *
## household.income[12K-16K]        -1.020228   1.123182  -0.908  0.36382
## household.income[16K-25K]         0.247274   0.953288   0.259  0.79536
## household.income[25K-35K]        -0.527067   0.930582  -0.566  0.57120
## household.income[35K-50K]        -0.369723   0.900525  -0.411  0.68144
## household.income[50K-75K]        -1.154633   0.873967  -1.321  0.18662
## household.income[5K-12K]          0.628863   1.033658   0.608  0.54301
## household.income[75K-100K]       -1.493569   0.888301  -1.681  0.09286 .
## high.educBachelor                 1.194500   0.801047   1.491  0.13609
## high.educHS Diploma/GED          -0.054755   0.826896  -0.066  0.94721
## high.educPost Graduate Degree     0.949074   0.811943   1.169  0.24260
## high.educSome College             1.303543   0.767072   1.699  0.08942 .
## PDS_score:mOFC_rvsn_ant_z         0.156530   0.311272   0.503  0.61511
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0222
## lmer.REML =  11236  Scale est. = 15.009    n = 1866
```

4.6 Model: CBCL internalizing factor ~ PDS x Accumbens activity (feedback)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      5.93116    2.39835   2.473  0.01349 *
## PDS_score                        0.57335    0.19027   3.013  0.00262 **
## accumbens_posvsneg_feedback_z   -0.27442    0.45265  -0.606  0.54443
## race.ethnicity.5levelBlack       0.03889    0.97222   0.040  0.96809
## race.ethnicity.5levelMixed       1.90379    0.93599   2.034  0.04210 *
## race.ethnicity.5levelOther       1.86117    1.04954   1.773  0.07634 .
## race.ethnicity.5levelWhite       1.50104    0.88205   1.702  0.08897 .
## demo_race_hispanic1              0.11404    0.37699   0.302  0.76231
## interview_age                   -0.02168    0.01682  -1.289  0.19765
## bmi                              0.05421    0.03328   1.629  0.10343
## household.income[>=200K]        -2.87558    0.91131  -3.155  0.00163 **
## household.income[100K-200K]     -2.31057    0.85440  -2.704  0.00691 **
## household.income[12K-16K]       -0.15670    1.09524  -0.143  0.88624
## household.income[16K-25K]       -0.41900    0.94660  -0.443  0.65808
## household.income[25K-35K]       -1.51328    0.90236  -1.677  0.09371 .
## household.income[35K-50K]       -0.94820    0.86520  -1.096  0.27325
## household.income[50K-75K]       -1.53267    0.86199  -1.778  0.07556 .
```

```
## household.income[5K-12K]                     -0.72344    1.00300   -0.721   0.47083
## household.income[75K-100K]                    -1.74104    0.86572   -2.011   0.04446 *
## high.educBachelor                             -0.17423    0.81983   -0.213   0.83172
## high.educHS Diploma/GED                       -0.82917    0.83226   -0.996   0.31925
## high.educPost Graduate Degree                  0.04705    0.82739    0.057   0.95466
## high.educSome College                          0.18218    0.77180    0.236   0.81342
## PDS_score:accumbens_posvsneg_feedback_z        0.16390    0.24965    0.657   0.51157
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.028
## lmer.REML =  11304   Scale est. = 11.196    n = 1851
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)                                2.321919   2.278816   1.019   0.3084
## PDS_score                                  0.537866   0.238664   2.254   0.0243
## accumbens_posvsneg_feedback_z              0.052812   0.457449   0.115   0.9081
## race.ethnicity.5levelBlack                 0.468186   0.890459   0.526   0.5991
## race.ethnicity.5levelMixed                 2.494388   0.858137   2.907   0.0037
## race.ethnicity.5levelOther                 2.145902   1.009265   2.126   0.0336
## race.ethnicity.5levelWhite                 1.924992   0.803847   2.395   0.0167
## demo_race_hispanic1                       -0.478943   0.356477  -1.344   0.1793
## interview_age                             -0.005712   0.015668  -0.365   0.7155
## bmi                                        0.062093   0.034390   1.806   0.0711
## household.income[>=200K]                  -2.033134   0.922016  -2.205   0.0276
## household.income[100K-200K]               -1.762148   0.865240  -2.037   0.0418
## household.income[12K-16K]                 -1.036357   1.115253  -0.929   0.3529
## household.income[16K-25K]                  0.349603   0.941650   0.371   0.7105
## household.income[25K-35K]                 -0.516825   0.917110  -0.564   0.5731
## household.income[35K-50K]                 -0.362561   0.890292  -0.407   0.6839
## household.income[50K-75K]                 -1.171203   0.863098  -1.357   0.1750
## household.income[5K-12K]                   0.254743   1.011845   0.252   0.8013
## household.income[75K-100K]                -1.460934   0.876299  -1.667   0.0957
## high.educBachelor                          0.852253   0.797709   1.068   0.2855
## high.educHS Diploma/GED                   -0.305500   0.822218  -0.372   0.7103
## high.educPost Graduate Degree              0.624604   0.809713   0.771   0.4406
## high.educSome College                      0.968006   0.761799   1.271   0.2040
## PDS_score:accumbens_posvsneg_feedback_z    0.184505   0.316656   0.583   0.5602
##
## (Intercept)
## PDS_score                                  *
```

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```
## accumbens_posvsneg_feedback_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed                    **
## race.ethnicity.5levelOther                     *
## race.ethnicity.5levelWhite                     *
## demo_race_hispanic1
## interview_age
## bmi                                            .
## household.income[>=200K]                        *
## household.income[100K-200K]                     *
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]
## household.income[5K-12K]
## household.income[75K-100K]                     .
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## PDS_score:accumbens_posvsneg_feedback_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0223
## lmer.REML =  11274  Scale est. = 15.721    n = 1873
```

4.7 Model: CBCL internalizing factor ~ PDS x Caudate activity (feedback)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    5.95495    2.40525   2.476  0.01338 *
## PDS_score                      0.59398    0.19036   3.120  0.00183 **
## caudate_posvsneg_feedback_z   -0.38094    0.34707  -1.098  0.27252
## race.ethnicity.5levelBlack     0.04938    0.97223   0.051  0.95950
## race.ethnicity.5levelMixed     1.88251    0.93509   2.013  0.04424 *
## race.ethnicity.5levelOther     1.78700    1.04934   1.703  0.08874 .
## race.ethnicity.5levelWhite     1.46116    0.88123   1.658  0.09747 .
## demo_race_hispanic1            0.14644    0.37830   0.387  0.69872
## interview_age                 -0.02327    0.01688  -1.379  0.16802
## bmi                            0.05528    0.03327   1.661  0.09680 .
## household.income[>=200K]      -2.79696    0.90931  -3.076  0.00213 **
```

```
## household.income[100K-200K]            -2.31374    0.85389   -2.710   0.00680 **
## household.income[12K-16K]              -0.31789    1.10210   -0.288   0.77305
## household.income[16K-25K]              -0.39380    0.94903   -0.415   0.67823
## household.income[25K-35K]              -1.52636    0.90346   -1.689   0.09130 .
## household.income[35K-50K]              -0.95182    0.86454   -1.101   0.27106
## household.income[50K-75K]              -1.50619    0.86217   -1.747   0.08081 .
## household.income[5K-12K]               -0.76459    1.00742   -0.759   0.44798
## household.income[75K-100K]             -1.76200    0.86544   -2.036   0.04190 *
## high.educBachelor                      -0.04120    0.82261   -0.050   0.96007
## high.educHS Diploma/GED                -0.77545    0.83719   -0.926   0.35444
## high.educPost Graduate Degree           0.17832    0.83028    0.215   0.82997
## high.educSome College                   0.31797    0.77582    0.410   0.68197
## PDS_score:caudate_posvsneg_feedback_z   0.13666    0.19612    0.697   0.48602
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0283
## lmer.REML =  11267  Scale est. = 11.217    n = 1845
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     3.52821    2.30594   1.530   0.12617
## PDS_score                       0.61016    0.24166   2.525   0.01166 *
## caudate_posvsneg_feedback_z     0.03248    0.35800   0.091   0.92771
## race.ethnicity.5levelBlack      0.29316    0.90539   0.324   0.74613
## race.ethnicity.5levelMixed      2.38347    0.87525   2.723   0.00653 **
## race.ethnicity.5levelOther      2.07456    1.02326   2.027   0.04276 *
## race.ethnicity.5levelWhite      1.87788    0.82101   2.287   0.02229 *
## demo_race_hispanic1            -0.43731    0.35838  -1.220   0.22253
## interview_age                  -0.01450    0.01578  -0.919   0.35826
## bmi                             0.06908    0.03474   1.989   0.04687 *
## household.income[>=200K]       -1.84393    0.93537  -1.971   0.04883 *
## household.income[100K-200K]    -1.57069    0.87801  -1.789   0.07379 .
## household.income[12K-16K]      -1.10200    1.13542  -0.971   0.33189
## household.income[16K-25K]       0.43634    0.95332   0.458   0.64722
## household.income[25K-35K]      -0.61205    0.93157  -0.657   0.51126
## household.income[35K-50K]      -0.14900    0.90301  -0.165   0.86896
## household.income[50K-75K]      -0.97359    0.87506  -1.113   0.26603
## household.income[5K-12K]        0.98666    1.02277   0.965   0.33483
## household.income[75K-100K]     -1.31772    0.88937  -1.482   0.13861
## high.educBachelor               0.35883    0.80435   0.446   0.65557
## high.educHS Diploma/GED        -0.74459    0.82951  -0.898   0.36950
```

```
## high.educPost Graduate Degree             0.11147     0.81646    0.137  0.89142
## high.educSome College                     0.58199     0.76830    0.758  0.44884
## PDS_score:caudate_posvsneg_feedback_z     0.04688     0.24090    0.195  0.84571
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.024
## lmer.REML =  11338  Scale est. = 15.418    n = 1878
```

4.8 Model: CBCL internalizing factor ~ PDS x Putamen activity (feedback)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                               5.70200    2.41205   2.364  0.01819 *
## PDS_score                                 0.58110    0.19063   3.048  0.00233 **
## putamen_posvsneg_feedback_z              -0.15032    0.36813  -0.408  0.68308
## race.ethnicity.5levelBlack                0.11982    0.97377   0.123  0.90209
## race.ethnicity.5levelMixed                1.92004    0.93539   2.053  0.04025 *
## race.ethnicity.5levelOther                1.86909    1.05209   1.777  0.07581 .
## race.ethnicity.5levelWhite                1.48359    0.88187   1.682  0.09268 .
## demo_race_hispanic1                       0.15586    0.37857   0.412  0.68061
## interview_age                            -0.02120    0.01684  -1.258  0.20840
## bmi                                       0.05578    0.03336   1.672  0.09468 .
## household.income[>=200K]                 -2.82159    0.91471  -3.085  0.00207 **
## household.income[100K-200K]              -2.32938    0.85988  -2.709  0.00681 **
## household.income[12K-16K]                -0.35123    1.10713  -0.317  0.75110
## household.income[16K-25K]                -0.44649    0.95195  -0.469  0.63911
## household.income[25K-35K]                -1.50449    0.90866  -1.656  0.09795 .
## household.income[35K-50K]                -0.97561    0.87048  -1.121  0.26254
## household.income[50K-75K]                -1.50875    0.86902  -1.736  0.08271 .
## household.income[5K-12K]                 -0.81401    1.01548  -0.802  0.42289
## household.income[75K-100K]               -1.77382    0.87114  -2.036  0.04187 *
## high.educBachelor                        -0.04515    0.82669  -0.055  0.95645
## high.educHS Diploma/GED                  -0.73742    0.84201  -0.876  0.38126
## high.educPost Graduate Degree             0.18641    0.83421   0.223  0.82320
## high.educSome College                     0.31740    0.78016   0.407  0.68418
## PDS_score:putamen_posvsneg_feedback_z     0.02997    0.20789   0.144  0.88540
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0274
## lmer.REML =  11251  Scale est. = 11.22     n = 1842
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          3.23052    2.29755   1.406  0.15987
## PDS_score                            0.58672    0.24125   2.432  0.01511 *
## putamen_posvsneg_feedback_z         -0.28018    0.36285  -0.772  0.44012
## race.ethnicity.5levelBlack           0.32119    0.89959   0.357  0.72110
## race.ethnicity.5levelMixed           2.44525    0.86785   2.818  0.00489 **
## race.ethnicity.5levelOther           2.06836    1.01973   2.028  0.04267 *
## race.ethnicity.5levelWhite           1.95148    0.81388   2.398  0.01659 *
## demo_race_hispanic1                 -0.51317    0.36068  -1.423  0.15496
## interview_age                       -0.01198    0.01580  -0.758  0.44842
## bmi                                  0.07021    0.03478   2.018  0.04368 *
## household.income[>=200K]            -1.95495    0.92951  -2.103  0.03558 *
## household.income[100K-200K]         -1.63796    0.87401  -1.874  0.06108 .
## household.income[12K-16K]           -1.00242    1.12859  -0.888  0.37455
## household.income[16K-25K]            0.38082    0.94809   0.402  0.68797
## household.income[25K-35K]           -0.44244    0.92794  -0.477  0.63356
## household.income[35K-50K]           -0.26143    0.90024  -0.290  0.77154
## household.income[50K-75K]           -1.06862    0.87143  -1.226  0.22024
## household.income[5K-12K]             0.88529    1.01541   0.872  0.38340
## household.income[75K-100K]          -1.39148    0.88578  -1.571  0.11638
## high.educBachelor                    0.39252    0.79445   0.494  0.62131
## high.educHS Diploma/GED             -0.74180    0.82245  -0.902  0.36720
## high.educPost Graduate Degree        0.15509    0.80552   0.193  0.84735
## high.educSome College                0.57010    0.75808   0.752  0.45212
## PDS_score:putamen_posvsneg_feedback_z 0.28293   0.24404   1.159  0.24647
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0243
## lmer.REML =  11381  Scale est. = 15.533    n = 1883
```

4.9 Model: CBCL internalizing factor ~ PDS x Lateral OFC activity (feedback stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_posvsneg_feedback_z +
```

```
##      race.ethnicity.5level + demo_race_hispanic + interview_age +
##      bmi + household.income + high.educ
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      5.60892    2.39866   2.338  0.01948 *
## PDS_score                        0.58998    0.19016   3.103  0.00195 **
## lOFC_posvsneg_feedback_z        -0.57997    0.58602  -0.990  0.32247
## race.ethnicity.5levelBlack       0.09947    0.97027   0.103  0.91836
## race.ethnicity.5levelMixed       1.85916    0.93345   1.992  0.04655 *
## race.ethnicity.5levelOther       2.07810    1.05341   1.973  0.04868 *
## race.ethnicity.5levelWhite       1.48751    0.87909   1.692  0.09080 .
## demo_race_hispanic1              0.03546    0.37627   0.094  0.92494
## interview_age                   -0.02108    0.01681  -1.254  0.21017
## bmi                              0.05356    0.03321   1.613  0.10695
## household.income[>=200K]        -2.49667    0.92153  -2.709  0.00681 **
## household.income[100K-200K]     -2.02343    0.86670  -2.335  0.01967 *
## household.income[12K-16K]        0.09671    1.10456   0.088  0.93024
## household.income[16K-25K]       -0.08282    0.96216  -0.086  0.93141
## household.income[25K-35K]       -1.16589    0.91780  -1.270  0.20414
## household.income[35K-50K]       -0.66086    0.87846  -0.752  0.45197
## household.income[50K-75K]       -1.16443    0.87515  -1.331  0.18351
## household.income[5K-12K]        -0.41258    1.01989  -0.405  0.68587
## household.income[75K-100K]      -1.41608    0.87860  -1.612  0.10719
## high.educBachelor               -0.24887    0.82059  -0.303  0.76171
## high.educHS Diploma/GED         -1.08527    0.83624  -1.298  0.19452
## high.educPost Graduate Degree   -0.02498    0.82749  -0.030  0.97593
## high.educSome College            0.18198    0.77375   0.235  0.81408
## PDS_score:lOFC_posvsneg_feedback_z  0.21813  0.31889   0.684  0.49404
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0291
## lmer.REML =  11223  Scale est. = 11.241    n = 1839
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_posvsneg_feedback_z +
##      race.ethnicity.5level + demo_race_hispanic + interview_age +
##      bmi + household.income + high.educ
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     2.076651   2.278042   0.912  0.36210
## PDS_score                       0.526307   0.240285   2.190  0.02862 *
## lOFC_posvsneg_feedback_z       -0.106378   0.562048  -0.189  0.84990
## race.ethnicity.5levelBlack      0.405993   0.891702   0.455  0.64895
## race.ethnicity.5levelMixed      2.478949   0.859188   2.885  0.00396 **
```

```
## race.ethnicity.5levelOther             2.073273   1.010299    2.052   0.04030 *
## race.ethnicity.5levelWhite             1.886019   0.804986    2.343   0.01924 *
## demo_race_hispanic1                    -0.518486   0.356762   -1.453   0.14631
## interview_age                          -0.006615   0.015636   -0.423   0.67231
## bmi                                     0.075254   0.034617    2.174   0.02984 *
## household.income[>=200K]               -2.100907   0.921226   -2.281   0.02269 *
## household.income[100K-200K]            -1.838441   0.866857   -2.121   0.03407 *
## household.income[12K-16K]              -1.152397   1.117207   -1.031   0.30244
## household.income[16K-25K]               0.247615   0.948468    0.261   0.79407
## household.income[25K-35K]              -0.564917   0.920701   -0.614   0.53957
## household.income[35K-50K]              -0.429699   0.891223   -0.482   0.62976
## household.income[50K-75K]              -1.196039   0.863923   -1.384   0.16639
## household.income[5K-12K]                0.287642   1.010211    0.285   0.77588
## household.income[75K-100K]             -1.526850   0.877851   -1.739   0.08215 .
## high.educBachelor                       1.149716   0.794560    1.447   0.14807
## high.educHS Diploma/GED                -0.026587   0.821585   -0.032   0.97419
## high.educPost Graduate Degree           0.880706   0.805336    1.094   0.27428
## high.educSome College                   1.242806   0.760109    1.635   0.10221
## PDS_score:lOFC_posvsneg_feedback_z      0.084041   0.380583    0.221   0.82526
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0215
## lmer.REML =  11331  Scale est. = 14.98     n = 1882
```

4.10 Model: CBCL internalizing factor ~ PDS x Medial OFC activity (feedback stage)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       6.00726    2.40169   2.501  0.01246 *
## PDS_score                         0.60093    0.19079   3.150  0.00166 **
## mOFC_posvsneg_feedback_z         -0.55843    0.50297  -1.110  0.26703
## race.ethnicity.5levelBlack        0.07234    0.97308   0.074  0.94075
## race.ethnicity.5levelMixed        1.85068    0.93641   1.976  0.04827 *
## race.ethnicity.5levelOther        1.91635    1.05082   1.824  0.06837 .
## race.ethnicity.5levelWhite        1.46991    0.88142   1.668  0.09555 .
## demo_race_hispanic1               0.09371    0.37709   0.249  0.80377
## interview_age                    -0.02328    0.01687  -1.380  0.16790
## bmi                               0.05185    0.03343   1.551  0.12106
## household.income[>=200K]         -2.76246    0.91490  -3.019  0.00257 **
## household.income[100K-200K]      -2.26204    0.85933  -2.632  0.00855 **
```

```
## household.income[12K-16K]          -0.39986    1.10498  -0.362  0.71749
## household.income[16K-25K]          -0.32530    0.95575  -0.340  0.73363
## household.income[25K-35K]          -1.34975    0.91223  -1.480  0.13915
## household.income[35K-50K]          -0.87015    0.87076  -0.999  0.31778
## household.income[50K-75K]          -1.45739    0.86729  -1.680  0.09305 .
## household.income[5K-12K]           -0.64304    1.01385  -0.634  0.52599
## household.income[75K-100K]         -1.67708    0.87056  -1.926  0.05421 .
## high.educBachelor                  -0.09457    0.82140  -0.115  0.90835
## high.educHS Diploma/GED            -0.83901    0.83421  -1.006  0.31467
## high.educPost Graduate Degree       0.13520    0.82795   0.163  0.87030
## high.educSome College               0.25943    0.77362   0.335  0.73740
## PDS_score:mOFC_posvsneg_feedback_z  0.19606    0.27841   0.704  0.48139
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0286
## lmer.REML =  11233  Scale est. = 11.429     n = 1839
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_posvsneg_feedback_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    2.070877   2.276814   0.910  0.36318
## PDS_score                      0.521117   0.240408   2.168  0.03031 *
## mOFC_posvsneg_feedback_z      -0.030359   0.515375  -0.059  0.95303
## race.ethnicity.5levelBlack     0.374329   0.891370   0.420  0.67457
## race.ethnicity.5levelMixed     2.483319   0.859193   2.890  0.00389 **
## race.ethnicity.5levelOther     2.065843   1.010293   2.045  0.04102 *
## race.ethnicity.5levelWhite     1.879578   0.804949   2.335  0.01965 *
## demo_race_hispanic1           -0.519073   0.356897  -1.454  0.14600
## interview_age                 -0.006693   0.015638  -0.428  0.66868
## bmi                            0.075365   0.034604   2.178  0.02954 *
## household.income[>=200K]      -2.064983   0.920529  -2.243  0.02500 *
## household.income[100K-200K]   -1.808736   0.865531  -2.090  0.03678 *
## household.income[12K-16K]     -1.111659   1.116011  -0.996  0.31933
## household.income[16K-25K]      0.294257   0.947219   0.311  0.75610
## household.income[25K-35K]     -0.554850   0.920329  -0.603  0.54666
## household.income[35K-50K]     -0.412524   0.890470  -0.463  0.64323
## household.income[50K-75K]     -1.171400   0.862685  -1.358  0.17468
## household.income[5K-12K]       0.314480   1.009274   0.312  0.75539
## household.income[75K-100K]    -1.505014   0.876971  -1.716  0.08630 .
## high.educBachelor              1.135032   0.793837   1.430  0.15294
## high.educHS Diploma/GED       -0.026025   0.820618  -0.032  0.97470
## high.educPost Graduate Degree  0.877592   0.804765   1.090  0.27564
```

```
## high.educSome College                  1.237776    0.759229    1.630  0.10321
## PDS_score:mOFC_posvsneg_feedback_z 0.203409   0.357804    0.568  0.56977
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0226
## lmer.REML =  11314  Scale est. = 14.994    n = 1879
```

4.11 Model: CBCL internalizing factor ~ PDS x BIS-BAS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * bisbas_ss_basm_rr + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    3.637801   2.358714   1.542 0.123138
## PDS_score                      1.334748   0.574777   2.322 0.020306 *
## bisbas_ss_basm_rr              0.057824   0.114880   0.503 0.614773
## race.ethnicity.5levelBlack    -0.712311   0.865482  -0.823 0.410577
## race.ethnicity.5levelMixed     1.216392   0.845298   1.439 0.150279
## race.ethnicity.5levelOther     1.831253   0.961528   1.905 0.056962 .
## race.ethnicity.5levelWhite     1.241210   0.796866   1.558 0.119458
## demo_race_hispanic1           -0.200009   0.342610  -0.584 0.559423
## interview_age                 -0.008781   0.015087  -0.582 0.560618
## bmi                            0.068690   0.029543   2.325 0.020152 *
## household.income[>=200K]      -2.700557   0.775868  -3.481 0.000509 ***
## household.income[100K-200K]   -2.087601   0.721582  -2.893 0.003849 **
## household.income[12K-16K]     -0.149027   0.964289  -0.155 0.877192
## household.income[16K-25K]      0.225764   0.801051   0.282 0.778095
## household.income[25K-35K]     -0.912321   0.760485  -1.200 0.230392
## household.income[35K-50K]     -1.048597   0.730909  -1.435 0.151519
## household.income[50K-75K]     -1.082009   0.726901  -1.489 0.136745
## household.income[5K-12K]      -0.543702   0.844069  -0.644 0.519544
## household.income[75K-100K]    -1.490177   0.731175  -2.038 0.041654 *
## high.educBachelor              0.177135   0.732186   0.242 0.808858
## high.educHS Diploma/GED       -0.586376   0.730046  -0.803 0.421937
## high.educPost Graduate Degree  0.376779   0.738616   0.510 0.610018
## high.educSome College          0.552591   0.689514   0.801 0.422968
## PDS_score:bisbas_ss_basm_rr   -0.092385   0.062092  -1.488 0.136920
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0314
## lmer.REML =  14840  Scale est. = 13.442    n = 2409
```

Males

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * bisbas_ss_basm_rr + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
## 
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    5.90223    2.30009   2.566 0.010341 *
## PDS_score                     -0.62015    0.81007  -0.766 0.444009
## bisbas_ss_basm_rr             -0.22290    0.12258  -1.818 0.069113 .
## race.ethnicity.5levelBlack     0.41942    0.78556   0.534 0.593446
## race.ethnicity.5levelMixed     1.86947    0.76646   2.439 0.014791 *
## race.ethnicity.5levelOther     1.43417    0.90234   1.589 0.112094
## race.ethnicity.5levelWhite     1.59211    0.71709   2.220 0.026489 *
## demo_race_hispanic1           -0.37716    0.32200  -1.171 0.241581
## interview_age                 -0.01011    0.01420  -0.712 0.476253
## bmi                            0.06666    0.03033   2.198 0.028047 *
## household.income[>=200K]      -2.57430    0.75376  -3.415 0.000647 ***
## household.income[100K-200K]   -2.42627    0.69700  -3.481 0.000508 ***
## household.income[12K-16K]     -1.23855    0.93595  -1.323 0.185851
## household.income[16K-25K]     -0.44621    0.76918  -0.580 0.561888
## household.income[25K-35K]     -1.26810    0.75388  -1.682 0.092669 .
## household.income[35K-50K]     -0.93893    0.72475  -1.296 0.195257
## household.income[50K-75K]     -1.67275    0.69329  -2.413 0.015900 *
## household.income[5K-12K]       0.58956    0.82064   0.718 0.472570
## household.income[75K-100K]    -2.10889    0.70888  -2.975 0.002957 **
## high.educBachelor              0.56851    0.69619   0.817 0.414228
## high.educHS Diploma/GED       -0.31780    0.70562  -0.450 0.652473
## high.educPost Graduate Degree  0.47620    0.70780   0.673 0.501142
## high.educSome College          0.69775    0.66330   1.052 0.292923
## PDS_score:bisbas_ss_basm_rr    0.14959    0.08546   1.750 0.080176 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## 
## R-sq.(adj) =  0.0246
## lmer.REML =  16125  Scale est. = 14.139    n = 2619
```

4.12 Model: CBCL internalizing factor ~ PDS x MID reaction time (large reward vs. neutral)

Females

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * rt_diff_large_neutral_z +
```

```
##       race.ethnicity.5level + demo_race_hispanic + interview_age +
##       bmi + household.income + high.educ
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     7.00216    2.30559   3.037  0.00242 **
## PDS_score                       0.60107    0.18441   3.259  0.00114 **
## rt_diff_large_neutral_z         0.25972    0.32280   0.805  0.42115
## race.ethnicity.5levelBlack      0.06072    0.92742   0.065  0.94781
## race.ethnicity.5levelMixed      1.67326    0.89776   1.864  0.06250 .
## race.ethnicity.5levelOther      2.11732    1.00913   2.098  0.03602 *
## race.ethnicity.5levelWhite      1.44877    0.84351   1.718  0.08604 .
## demo_race_hispanic1             0.13356    0.36730   0.364  0.71618
## interview_age                  -0.03391    0.01620  -2.093  0.03645 *
## bmi                             0.06141    0.03217   1.909  0.05644 .
## household.income[>=200K]       -2.33399    0.87062  -2.681  0.00741 **
## household.income[100K-200K]    -1.79326    0.81630  -2.197  0.02815 *
## household.income[12K-16K]      -0.52649    1.04709  -0.503  0.61515
## household.income[16K-25K]       0.28969    0.91306   0.317  0.75107
## household.income[25K-35K]      -0.98540    0.86444  -1.140  0.25446
## household.income[35K-50K]      -0.94460    0.82358  -1.147  0.25154
## household.income[50K-75K]      -1.13876    0.82599  -1.379  0.16816
## household.income[5K-12K]       -0.38560    0.96890  -0.398  0.69069
## household.income[75K-100K]     -1.33344    0.82533  -1.616  0.10633
## high.educBachelor              -0.22552    0.79915  -0.282  0.77782
## high.educHS Diploma/GED        -0.95627    0.81444  -1.174  0.24048
## high.educPost Graduate Degree  -0.13244    0.80540  -0.164  0.86941
## high.educSome College          -0.07357    0.75177  -0.098  0.92205
## PDS_score:rt_diff_large_neutral_z -0.09663  0.18014  -0.536  0.59172
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0242
## lmer.REML =  12059  Scale est. = 11.823    n = 1977
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * rt_diff_large_neutral_z +
##       race.ethnicity.5level + demo_race_hispanic + interview_age +
##       bmi + household.income + high.educ
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     2.38960    2.21203   1.080  0.28015
## PDS_score                       0.48032    0.23064   2.083  0.03742 *
## rt_diff_large_neutral_z         0.62976    0.34756   1.812  0.07014 .
## race.ethnicity.5levelBlack      0.08898    0.88240   0.101  0.91969
## race.ethnicity.5levelMixed      2.03249    0.85231   2.385  0.01718 *
```

```
## race.ethnicity.5levelOther          1.57746   1.00288   1.573  0.11589
## race.ethnicity.5levelWhite          1.60541   0.80291   1.999  0.04569 *
## demo_race_hispanic1                 -0.49564   0.34400  -1.441  0.14980
## interview_age                       -0.00439   0.01520  -0.289  0.77271
## bmi                                  0.08740   0.03302   2.647  0.00819 **
## household.income[>=200K]            -2.36419   0.89834  -2.632  0.00856 **
## household.income[100K-200K]         -1.94915   0.84284  -2.313  0.02084 *
## household.income[12K-16K]           -1.51229   1.08791  -1.390  0.16465
## household.income[16K-25K]           -0.11832   0.91196  -0.130  0.89678
## household.income[25K-35K]           -0.60152   0.88949  -0.676  0.49896
## household.income[35K-50K]           -0.38339   0.86632  -0.443  0.65814
## household.income[50K-75K]           -1.45832   0.83823  -1.740  0.08205 .
## household.income[5K-12K]             0.86916   0.97887   0.888  0.37468
## household.income[75K-100K]          -1.78641   0.85315  -2.094  0.03639 *
## high.educBachelor                    0.87225   0.75687   1.152  0.24927
## high.educHS Diploma/GED             -0.42925   0.78331  -0.548  0.58375
## high.educPost Graduate Degree        0.63880   0.77130   0.828  0.40765
## high.educSome College                1.02754   0.72389   1.419  0.15591
## PDS_score:rt_diff_large_neutral_z   -0.36599   0.24028  -1.523  0.12786
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.026
## lmer.REML =  12690  Scale est. = 15.491    n = 2090
```

4.13 Model: CBCL internalizing factor ~ PDS x MID reaction time (large vs. small reward)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * rt_diff_large_small_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  6.98556    2.30398   3.032  0.00246 **
## PDS_score                    0.58197    0.18361   3.170  0.00155 **
## rt_diff_large_small_z       -0.53226    0.30551  -1.742  0.08163 .
## race.ethnicity.5levelBlack   0.07460    0.92575   0.081  0.93578
## race.ethnicity.5levelMixed   1.65014    0.89701   1.840  0.06598 .
## race.ethnicity.5levelOther   2.05364    1.00846   2.036  0.04184 *
## race.ethnicity.5levelWhite   1.42485    0.84282   1.691  0.09108 .
## demo_race_hispanic1          0.12354    0.36711   0.337  0.73652
## interview_age               -0.03281    0.01618  -2.027  0.04278 *
## bmi                          0.05937    0.03216   1.846  0.06498 .
## household.income[>=200K]    -2.34575    0.87019  -2.696  0.00708 **
## household.income[100K-200K] -1.80710    0.81608  -2.214  0.02692 *
```

```
## household.income[12K-16K]        -0.47048   1.04401  -0.451  0.65229
## household.income[16K-25K]         0.29011   0.91289   0.318  0.75068
## household.income[25K-35K]        -1.02569   0.86370  -1.188  0.23515
## household.income[35K-50K]        -0.96106   0.82356  -1.167  0.24337
## household.income[50K-75K]        -1.13576   0.82601  -1.375  0.16929
## household.income[5K-12K]         -0.37612   0.96780  -0.389  0.69759
## household.income[75K-100K]       -1.33375   0.82479  -1.617  0.10602
## high.educBachelor                -0.25051   0.79829  -0.314  0.75370
## high.educHS Diploma/GED          -0.95139   0.81449  -1.168  0.24292
## high.educPost Graduate Degree    -0.14216   0.80484  -0.177  0.85982
## high.educSome College            -0.05981   0.75150  -0.080  0.93657
## PDS_score:rt_diff_large_small_z   0.22482   0.16976   1.324  0.18554
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0257
## lmer.REML =  12057  Scale est. = 11.814    n = 1977
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * rt_diff_large_small_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    2.429531   2.213704   1.097  0.27255
## PDS_score                      0.476580   0.230584   2.067  0.03887 *
## rt_diff_large_small_z          0.105837   0.352229   0.300  0.76384
## race.ethnicity.5levelBlack     0.024639   0.882584   0.028  0.97773
## race.ethnicity.5levelMixed     1.968446   0.852765   2.308  0.02108 *
## race.ethnicity.5levelOther     1.443333   1.002003   1.440  0.14989
## race.ethnicity.5levelWhite     1.531783   0.803079   1.907  0.05661 .
## demo_race_hispanic1           -0.498029   0.344472  -1.446  0.14839
## interview_age                 -0.003954   0.015203  -0.260  0.79482
## bmi                            0.089059   0.033061   2.694  0.00712 **
## household.income[>=200K]      -2.367285   0.898787  -2.634  0.00850 **
## household.income[100K-200K]   -1.977474   0.843431  -2.345  0.01914 *
## household.income[12K-16K]     -1.493591   1.088891  -1.372  0.17032
## household.income[16K-25K]     -0.137150   0.912719  -0.150  0.88057
## household.income[25K-35K]     -0.664207   0.889629  -0.747  0.45538
## household.income[35K-50K]     -0.398470   0.866786  -0.460  0.64577
## household.income[50K-75K]     -1.480902   0.838824  -1.765  0.07764 .
## household.income[5K-12K]       0.799986   0.979275   0.817  0.41407
## household.income[75K-100K]    -1.802799   0.854018  -2.111  0.03490 *
## high.educBachelor              0.856264   0.757727   1.130  0.25859
## high.educHS Diploma/GED       -0.427386   0.784842  -0.545  0.58612
## high.educPost Graduate Degree  0.626285   0.772102   0.811  0.41738
```

```
## high.educSome College                 1.004051    0.723724    1.387   0.16549
## PDS_score:rt_diff_large_small_z -0.144298   0.246962   -0.584   0.55909
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0244
## lmer.REML =  12693  Scale est. = 15.339    n = 2090
```

4.14 Model: CBCL internalizing factor ~ Testosterone x Accumbens activity (anticipation stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * accumbens_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                      Estimate Std. Error t value
## (Intercept)                          5.279e+00  2.556e+00   2.065
## PDS_score                            5.956e-01  2.049e-01   2.907
## hormone_sal_end_min_since_midnight  -9.280e-04  7.799e-04  -1.190
## hormone_scr_ert_mean                -3.058e-03  8.509e-03  -0.359
## accumbens_rvsn_ant_z                -8.694e-03  4.353e-01  -0.020
## race.ethnicity.5levelBlack          -1.827e-01  9.900e-01  -0.185
## race.ethnicity.5levelMixed           1.838e+00  9.455e-01   1.944
## race.ethnicity.5levelOther           1.737e+00  1.068e+00   1.626
## race.ethnicity.5levelWhite           1.427e+00  8.882e-01   1.606
## demo_race_hispanic1                  5.809e-02  3.919e-01   0.148
## interview_age                       -9.907e-03  1.750e-02  -0.566
## MRI_minus_hormone_date_time         -8.526e-06  1.650e-05  -0.517
## bmi                                  5.772e-02  3.493e-02   1.653
## household.income[>=200K]            -2.604e+00  9.644e-01  -2.700
## household.income[100K-200K]         -2.085e+00  9.092e-01  -2.293
## household.income[12K-16K]           -3.059e-02  1.183e+00  -0.026
## household.income[16K-25K]           -1.599e-01  1.015e+00  -0.158
## household.income[25K-35K]           -1.345e+00  9.604e-01  -1.400
## household.income[35K-50K]           -4.544e-01  9.183e-01  -0.495
## household.income[50K-75K]           -1.252e+00  9.197e-01  -1.361
## household.income[5K-12K]            -1.912e-01  1.073e+00  -0.178
## household.income[75K-100K]          -1.626e+00  9.202e-01  -1.767
## high.educBachelor                   -3.254e-01  8.576e-01  -0.379
## high.educHS Diploma/GED             -1.150e+00  8.773e-01  -1.311
## high.educPost Graduate Degree       -7.276e-03  8.659e-01  -0.008
## high.educSome College               -1.040e-01  8.114e-01  -0.128
```

```
## hormone_scr_ert_mean:accumbens_rvsn_ant_z  1.553e-04  1.171e-02   0.013
##                                         Pr(>|t|)
## (Intercept)                              0.03904 *
## PDS_score                                0.00370 **
## hormone_sal_end_min_since_midnight       0.23421
## hormone_scr_ert_mean                     0.71935
## accumbens_rvsn_ant_z                     0.98407
## race.ethnicity.5levelBlack               0.85363
## race.ethnicity.5levelMixed               0.05209 .
## race.ethnicity.5levelOther               0.10408
## race.ethnicity.5levelWhite               0.10844
## demo_race_hispanic1                      0.88218
## interview_age                            0.57136
## MRI_minus_hormone_date_time              0.60542
## bmi                                      0.09861 .
## household.income[>=200K]                 0.00701 **
## household.income[100K-200K]              0.02198 *
## household.income[12K-16K]                0.97938
## household.income[16K-25K]                0.87476
## household.income[25K-35K]                0.16168
## household.income[35K-50K]                0.62081
## household.income[50K-75K]                0.17369
## household.income[5K-12K]                 0.85854
## household.income[75K-100K]               0.07733 .
## high.educBachelor                        0.70445
## high.educHS Diploma/GED                  0.19001
## high.educPost Graduate Degree            0.99330
## high.educSome College                    0.89803
## hormone_scr_ert_mean:accumbens_rvsn_ant_z  0.98943
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0256
## lmer.REML =  10430  Scale est. = 10.943    n = 1703
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * accumbens_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                   Estimate Std. Error t value
## (Intercept)                      2.238e+00  2.544e+00   0.880
## PDS_score                        6.966e-01  2.603e-01   2.676
```

```
## hormone_sal_end_min_since_midnight          3.245e-04  7.573e-04   0.428
## hormone_scr_ert_mean                        -4.390e-03  8.493e-03  -0.517
## accumbens_rvsn_ant_z                        -8.697e-02  3.700e-01  -0.235
## race.ethnicity.5levelBlack                   2.295e-02  9.767e-01   0.024
## race.ethnicity.5levelMixed                   2.285e+00  9.388e-01   2.434
## race.ethnicity.5levelOther                   1.832e+00  1.092e+00   1.677
## race.ethnicity.5levelWhite                   1.718e+00  8.823e-01   1.948
## demo_race_hispanic1                         -4.728e-01  3.757e-01  -1.258
## interview_age                               -3.933e-03  1.682e-02  -0.234
## MRI_minus_hormone_date_time                 -6.743e-06  1.439e-05  -0.469
## bmi                                          5.337e-02  3.709e-02   1.439
## household.income[>=200K]                    -1.348e+00  1.020e+00  -1.321
## household.income[100K-200K]                 -8.884e-01  9.659e-01  -0.920
## household.income[12K-16K]                   -2.986e-01  1.255e+00  -0.238
## household.income[16K-25K]                    1.171e+00  1.051e+00   1.114
## household.income[25K-35K]                    1.711e-01  1.021e+00   0.167
## household.income[35K-50K]                    6.409e-01  9.906e-01   0.647
## household.income[50K-75K]                   -1.913e-01  9.642e-01  -0.198
## household.income[5K-12K]                     1.686e+00  1.102e+00   1.530
## household.income[75K-100K]                  -6.232e-01  9.774e-01  -0.638
## high.educBachelor                            4.360e-02  8.511e-01   0.051
## high.educHS Diploma/GED                     -1.251e+00  8.732e-01  -1.433
## high.educPost Graduate Degree               -1.906e-01  8.616e-01  -0.221
## high.educSome College                        2.166e-01  8.130e-01   0.266
## hormone_scr_ert_mean:accumbens_rvsn_ant_z   -1.506e-05  1.094e-02  -0.001
##                                             Pr(>|t|)
## (Intercept)                                  0.37925
## PDS_score                                    0.00752 **
## hormone_sal_end_min_since_midnight           0.66835
## hormone_scr_ert_mean                         0.60527
## accumbens_rvsn_ant_z                         0.81423
## race.ethnicity.5levelBlack                   0.98125
## race.ethnicity.5levelMixed                   0.01502 *
## race.ethnicity.5levelOther                   0.09371 .
## race.ethnicity.5levelWhite                   0.05162 .
## demo_race_hispanic1                          0.20844
## interview_age                                0.81518
## MRI_minus_hormone_date_time                  0.63940
## bmi                                          0.15043
## household.income[>=200K]                     0.18658
## household.income[100K-200K]                  0.35785
## household.income[12K-16K]                    0.81200
## household.income[16K-25K]                    0.26530
## household.income[25K-35K]                    0.86700
## household.income[35K-50K]                    0.51771
## household.income[50K-75K]                    0.84272
## household.income[5K-12K]                     0.12622
## household.income[75K-100K]                   0.52380
## high.educBachelor                            0.95915
## high.educHS Diploma/GED                      0.15214
## high.educPost Graduate Degree                0.82494
## high.educSome College                        0.78993
## hormone_scr_ert_mean:accumbens_rvsn_ant_z    0.99890
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0238
## lmer.REML =  10464  Scale est. = 15.447    n = 1719
```

4.15 Model: CBCL internalizing factor ~ Testosterone x Caudate activity (anticipation stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * caudate_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                             5.159e+00  2.556e+00   2.018  0.04372
## PDS_score                               6.056e-01  2.048e-01   2.956  0.00316
## hormone_sal_end_min_since_midnight     -9.235e-04  7.788e-04  -1.186  0.23584
## hormone_scr_ert_mean                   -3.121e-03  8.517e-03  -0.366  0.71410
## caudate_rvsn_ant_z                      1.692e-03  3.383e-01   0.005  0.99601
## race.ethnicity.5levelBlack             -1.365e-01  9.902e-01  -0.138  0.89041
## race.ethnicity.5levelMixed              1.805e+00  9.441e-01   1.912  0.05603
## race.ethnicity.5levelOther              1.719e+00  1.064e+00   1.616  0.10631
## race.ethnicity.5levelWhite              1.418e+00  8.876e-01   1.598  0.11022
## demo_race_hispanic1                     7.176e-02  3.904e-01   0.184  0.85419
## interview_age                          -1.092e-02  1.753e-02  -0.623  0.53353
## MRI_minus_hormone_date_time            -8.086e-06  1.610e-05  -0.502  0.61566
## bmi                                     5.899e-02  3.493e-02   1.689  0.09146
## household.income[>=200K]               -2.451e+00  9.602e-01  -2.552  0.01079
## household.income[100K-200K]            -1.923e+00  9.036e-01  -2.128  0.03349
## household.income[12K-16K]               9.423e-02  1.170e+00   0.081  0.93580
## household.income[16K-25K]              -8.698e-02  1.007e+00  -0.086  0.93118
## household.income[25K-35K]              -1.217e+00  9.556e-01  -1.274  0.20297
## household.income[35K-50K]              -3.272e-01  9.125e-01  -0.359  0.71994
## household.income[50K-75K]              -1.083e+00  9.143e-01  -1.185  0.23620
## household.income[5K-12K]               -8.135e-02  1.066e+00  -0.076  0.93920
## household.income[75K-100K]             -1.486e+00  9.153e-01  -1.623  0.10468
## high.educBachelor                      -2.666e-01  8.553e-01  -0.312  0.75528
## high.educHS Diploma/GED                -1.074e+00  8.734e-01  -1.230  0.21880
## high.educPost Graduate Degree           5.179e-02  8.638e-01   0.060  0.95219
## high.educSome College                  -5.037e-02  8.082e-01  -0.062  0.95032
## hormone_scr_ert_mean:caudate_rvsn_ant_z 2.527e-03  9.086e-03   0.278  0.78098
##
## (Intercept)                             *
```

```
## PDS_score                                    **
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
## caudate_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed               .
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## MRI_minus_hormone_date_time
## bmi                                       .
## household.income[>=200K]                  *
## household.income[100K-200K]               *
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]
## household.income[5K-12K]
## household.income[75K-100K]
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## hormone_scr_ert_mean:caudate_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0251
## lmer.REML =  10426  Scale est. = 11.089    n = 1702
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * caudate_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         2.396e+00  2.546e+00   0.941  0.34683
## PDS_score                           7.155e-01  2.606e-01   2.745  0.00611
## hormone_sal_end_min_since_midnight  3.751e-04  7.576e-04   0.495  0.62058
## hormone_scr_ert_mean               -4.419e-03  8.560e-03  -0.516  0.60581
## caudate_rvsn_ant_z                  3.488e-01  2.934e-01   1.189  0.23469
```

```
## race.ethnicity.5levelBlack               -5.991e-02  9.874e-01  -0.061  0.95163
## race.ethnicity.5levelMixed                2.237e+00  9.514e-01   2.351  0.01885
## race.ethnicity.5levelOther                1.753e+00  1.102e+00   1.590  0.11196
## race.ethnicity.5levelWhite                1.641e+00  8.953e-01   1.833  0.06703
## demo_race_hispanic1                       -4.747e-01  3.772e-01  -1.258  0.20843
## interview_age                             -5.807e-03  1.688e-02  -0.344  0.73084
## MRI_minus_hormone_date_time               -1.054e-05  1.469e-05  -0.717  0.47321
## bmi                                        5.208e-02  3.715e-02   1.402  0.16111
## household.income[>=200K]                  -1.190e+00  1.015e+00  -1.172  0.24148
## household.income[100K-200K]               -7.729e-01  9.602e-01  -0.805  0.42092
## household.income[12K-16K]                 -2.845e-01  1.251e+00  -0.227  0.82021
## household.income[16K-25K]                  1.211e+00  1.044e+00   1.160  0.24617
## household.income[25K-35K]                  3.837e-01  1.017e+00   0.377  0.70597
## household.income[35K-50K]                  7.693e-01  9.861e-01   0.780  0.43545
## household.income[50K-75K]                 -9.186e-02  9.588e-01  -0.096  0.92369
## household.income[5K-12K]                   1.906e+00  1.091e+00   1.747  0.08088
## household.income[75K-100K]                -4.684e-01  9.721e-01  -0.482  0.62995
## high.educBachelor                          8.615e-02  8.483e-01   0.102  0.91912
## high.educHS Diploma/GED                   -1.211e+00  8.715e-01  -1.389  0.16499
## high.educPost Graduate Degree             -2.247e-01  8.588e-01  -0.262  0.79360
## high.educSome College                      2.012e-01  8.090e-01   0.249  0.80358
## hormone_scr_ert_mean:caudate_rvsn_ant_z   -1.162e-02  8.222e-03  -1.414  0.15761
##
## (Intercept)
## PDS_score                                 **
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
## caudate_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed                *
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite                .
## demo_race_hispanic1
## interview_age
## MRI_minus_hormone_date_time
## bmi
## household.income[>=200K]
## household.income[100K-200K]
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]
## household.income[5K-12K]                   .
## household.income[75K-100K]
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## hormone_scr_ert_mean:caudate_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) =  0.0249
## lmer.REML =  10459  Scale est. = 15.547    n = 1717
```

4.16 Model: CBCL internalizing factor ~ Testosterone x Putamen activity (anticipation stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * putamen_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)                            4.932e+00  2.545e+00   1.938  0.05279
## PDS_score                              6.166e-01  2.048e-01   3.010  0.00265
## hormone_sal_end_min_since_midnight    -8.270e-04  7.747e-04  -1.068  0.28586
## hormone_scr_ert_mean                  -4.339e-03  8.477e-03  -0.512  0.60881
## putamen_rvsn_ant_z                    -1.880e-01  3.407e-01  -0.552  0.58112
## race.ethnicity.5levelBlack            -1.232e-01  9.857e-01  -0.125  0.90054
## race.ethnicity.5levelMixed             1.862e+00  9.400e-01   1.980  0.04781
## race.ethnicity.5levelOther             1.760e+00  1.063e+00   1.656  0.09794
## race.ethnicity.5levelWhite             1.421e+00  8.835e-01   1.609  0.10787
## demo_race_hispanic1                    9.851e-02  3.896e-01   0.253  0.80041
## interview_age                         -9.099e-03  1.747e-02  -0.521  0.60258
## MRI_minus_hormone_date_time           -6.753e-06  1.632e-05  -0.414  0.67905
## bmi                                    5.753e-02  3.482e-02   1.652  0.09867
## household.income[>=200K]              -2.448e+00  9.575e-01  -2.557  0.01065
## household.income[100K-200K]           -1.944e+00  9.006e-01  -2.159  0.03100
## household.income[12K-16K]              7.050e-02  1.174e+00   0.060  0.95213
## household.income[16K-25K]             -1.732e-01  1.006e+00  -0.172  0.86337
## household.income[25K-35K]             -1.267e+00  9.520e-01  -1.330  0.18354
## household.income[35K-50K]             -3.538e-01  9.090e-01  -0.389  0.69720
## household.income[50K-75K]             -1.063e+00  9.123e-01  -1.165  0.24431
## household.income[5K-12K]              -9.828e-02  1.064e+00  -0.092  0.92643
## household.income[75K-100K]            -1.616e+00  9.131e-01  -1.770  0.07686
## high.educBachelor                     -2.591e-01  8.495e-01  -0.305  0.76041
## high.educHS Diploma/GED               -1.087e+00  8.677e-01  -1.253  0.21038
## high.educPost Graduate Degree          2.023e-02  8.583e-01   0.024  0.98120
## high.educSome College                 -6.760e-02  8.029e-01  -0.084  0.93291
## hormone_scr_ert_mean:putamen_rvsn_ant_z 8.131e-03 9.010e-03   0.902  0.36694
##
## (Intercept)                             .
## PDS_score                               **
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
```

```
## putamen_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed            *
## race.ethnicity.5levelOther            .
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## MRI_minus_hormone_date_time
## bmi                                   .
## household.income[>=200K]              *
## household.income[100K-200K]           *
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]
## household.income[5K-12K]
## household.income[75K-100K]            .
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## hormone_scr_ert_mean:putamen_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0253
## lmer.REML =  10394  Scale est. = 11.009    n = 1699
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * putamen_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       2.205e+00  2.550e+00   0.865  0.38733
## PDS_score                         7.422e-01  2.613e-01   2.841  0.00455
## hormone_sal_end_min_since_midnight 5.210e-04 7.558e-04   0.689  0.49068
## hormone_scr_ert_mean             -4.664e-03  8.549e-03  -0.546  0.58542
## putamen_rvsn_ant_z                4.860e-01  2.896e-01   1.678  0.09350
## race.ethnicity.5levelBlack       -3.605e-02  9.863e-01  -0.037  0.97085
## race.ethnicity.5levelMixed        2.260e+00  9.476e-01   2.385  0.01718
## race.ethnicity.5levelOther        1.726e+00  1.101e+00   1.568  0.11717
```

```
## race.ethnicity.5levelWhite                     1.635e+00  8.937e-01   1.830  0.06746
## demo_race_hispanic1                            -5.145e-01  3.757e-01  -1.369  0.17104
## interview_age                                  -4.998e-03  1.685e-02  -0.297  0.76682
## MRI_minus_hormone_date_time                    -1.026e-05  1.428e-05  -0.718  0.47274
## bmi                                             5.650e-02  3.732e-02   1.514  0.13018
## household.income[>=200K]                       -1.200e+00  1.020e+00  -1.177  0.23952
## household.income[100K-200K]                    -8.037e-01  9.663e-01  -0.832  0.40570
## household.income[12K-16K]                      -3.475e-01  1.254e+00  -0.277  0.78168
## household.income[16K-25K]                       1.176e+00  1.049e+00   1.121  0.26240
## household.income[25K-35K]                       3.816e-01  1.021e+00   0.374  0.70859
## household.income[35K-50K]                       7.889e-01  9.918e-01   0.795  0.42648
## household.income[50K-75K]                      -6.526e-02  9.653e-01  -0.068  0.94610
## household.income[5K-12K]                        1.812e+00  1.097e+00   1.652  0.09879
## household.income[75K-100K]                     -5.056e-01  9.778e-01  -0.517  0.60519
## high.educBachelor                              -3.217e-02  8.513e-01  -0.038  0.96986
## high.educHS Diploma/GED                        -1.332e+00  8.760e-01  -1.520  0.12866
## high.educPost Graduate Degree                  -2.852e-01  8.618e-01  -0.331  0.74069
## high.educSome College                           1.033e-01  8.129e-01   0.127  0.89887
## hormone_scr_ert_mean:putamen_rvsn_ant_z        -1.724e-02  8.046e-03  -2.142  0.03231
##
## (Intercept)
## PDS_score                                    **
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
## putamen_rvsn_ant_z                            .
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed                   *
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite                    .
## demo_race_hispanic1
## interview_age
## MRI_minus_hormone_date_time
## bmi
## household.income[>=200K]
## household.income[100K-200K]
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]
## household.income[5K-12K]                      .
## household.income[75K-100K]
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## hormone_scr_ert_mean:putamen_rvsn_ant_z *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0269
## lmer.REML =  10462  Scale est. = 15.067    n = 1719
```

4.17 Model: CBCL internalizing factor ~ Testosterone x Accumbens activity (feedback stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * accumbens_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                                  Estimate Std. Error
## (Intercept)                                      4.994e+00  2.546e+00
## PDS_score                                        5.976e-01  2.045e-01
## hormone_sal_end_min_since_midnight              -9.425e-04  7.782e-04
## hormone_scr_ert_mean                            -1.890e-03  8.499e-03
## accumbens_posvsneg_feedback_z                   -1.059e-01  4.934e-01
## race.ethnicity.5levelBlack                      -1.750e-01  9.889e-01
## race.ethnicity.5levelMixed                       1.799e+00  9.435e-01
## race.ethnicity.5levelOther                       1.716e+00  1.063e+00
## race.ethnicity.5levelWhite                       1.426e+00  8.875e-01
## demo_race_hispanic1                              6.992e-02  3.914e-01
## interview_age                                   -1.016e-02  1.749e-02
## MRI_minus_hormone_date_time                     -1.032e-05  1.617e-05
## bmi                                              5.750e-02  3.491e-02
## household.income[>=200K]                        -2.467e+00  9.552e-01
## household.income[100K-200K]                     -1.885e+00  8.972e-01
## household.income[12K-16K]                        1.893e-01  1.164e+00
## household.income[16K-25K]                       -1.957e-02  1.001e+00
## household.income[25K-35K]                       -1.174e+00  9.482e-01
## household.income[35K-50K]                       -2.583e-01  9.050e-01
## household.income[50K-75K]                       -1.115e+00  9.076e-01
## household.income[5K-12K]                          8.564e-03  1.060e+00
## household.income[75K-100K]                      -1.461e+00  9.083e-01
## high.educBachelor                               -2.091e-01  8.512e-01
## high.educHS Diploma/GED                         -1.000e+00  8.664e-01
## high.educPost Graduate Degree                    1.044e-01  8.597e-01
## high.educSome College                           -2.553e-02  8.052e-01
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z  3.276e-03  1.306e-02
##                                                  t value Pr(>|t|)
## (Intercept)                                        1.962  0.04997 *
## PDS_score                                          2.922  0.00352 **
## hormone_sal_end_min_since_midnight                -1.211  0.22603
## hormone_scr_ert_mean                              -0.222  0.82407
## accumbens_posvsneg_feedback_z                     -0.215  0.83009
## race.ethnicity.5levelBlack                        -0.177  0.85958
## race.ethnicity.5levelMixed                         1.907  0.05675 .
```

```
## race.ethnicity.5levelOther                                    1.614  0.10673
## race.ethnicity.5levelWhite                                    1.607  0.10820
## demo_race_hispanic1                                           0.179  0.85823
## interview_age                                                -0.581  0.56152
## MRI_minus_hormone_date_time                                  -0.639  0.52319
## bmi                                                           1.647  0.09970 .
## household.income[>=200K]                                     -2.582  0.00990 **
## household.income[100K-200K]                                  -2.101  0.03577 *
## household.income[12K-16K]                                     0.163  0.87091
## household.income[16K-25K]                                    -0.020  0.98440
## household.income[25K-35K]                                    -1.238  0.21599
## household.income[35K-50K]                                    -0.285  0.77534
## household.income[50K-75K]                                    -1.228  0.21943
## household.income[5K-12K]                                      0.008  0.99355
## household.income[75K-100K]                                   -1.608  0.10800
## high.educBachelor                                            -0.246  0.80594
## high.educHS Diploma/GED                                      -1.154  0.24850
## high.educPost Graduate Degree                                 0.121  0.90339
## high.educSome College                                        -0.032  0.97471
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z   0.251  0.80200
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0249
## lmer.REML =  10450  Scale est. = 10.927    n = 1707
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##      hormone_scr_ert_mean * accumbens_posvsneg_feedback_z + race.ethnicity.5level +
##      demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##      bmi + household.income + high.educ
##
## Parametric coefficients:
##                                           Estimate Std. Error
## (Intercept)                               1.143e+00  2.523e+00
## PDS_score                                 6.634e-01  2.581e-01
## hormone_sal_end_min_since_midnight        4.669e-04  7.510e-04
## hormone_scr_ert_mean                     -5.728e-03  8.547e-03
## accumbens_posvsneg_feedback_z             2.481e-01  3.778e-01
## race.ethnicity.5levelBlack                2.615e-01  9.677e-01
## race.ethnicity.5levelMixed                2.423e+00  9.293e-01
## race.ethnicity.5levelOther                2.027e+00  1.083e+00
## race.ethnicity.5levelWhite                1.764e+00  8.731e-01
## demo_race_hispanic1                      -4.347e-01  3.731e-01
## interview_age                            -1.667e-05  1.675e-02
```

```
## MRI_minus_hormone_date_time                                 -1.100e-05  1.419e-05
## bmi                                                          5.483e-02  3.675e-02
## household.income[>=200K]                                    -1.301e+00  1.005e+00
## household.income[100K-200K]                                 -9.195e-01  9.496e-01
## household.income[12K-16K]                                   -3.245e-01  1.238e+00
## household.income[16K-25K]                                    1.185e+00  1.034e+00
## household.income[25K-35K]                                    2.207e-01  1.004e+00
## household.income[35K-50K]                                    5.371e-01  9.754e-01
## household.income[50K-75K]                                   -1.794e-01  9.484e-01
## household.income[5K-12K]                                     1.095e+00  1.084e+00
## household.income[75K-100K]                                  -6.124e-01  9.611e-01
## high.educBachelor                                            5.897e-01  8.496e-01
## high.educHS Diploma/GED                                     -6.984e-01  8.698e-01
## high.educPost Graduate Degree                                3.240e-01  8.608e-01
## high.educSome College                                        6.103e-01  8.104e-01
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z           2.346e-03  1.067e-02
##                                                              t value Pr(>|t|)
## (Intercept)                                                    0.453   0.6508
## PDS_score                                                      2.570   0.0102 *
## hormone_sal_end_min_since_midnight                             0.622   0.5342
## hormone_scr_ert_mean                                          -0.670   0.5028
## accumbens_posvsneg_feedback_z                                  0.657   0.5114
## race.ethnicity.5levelBlack                                     0.270   0.7870
## race.ethnicity.5levelMixed                                     2.608   0.0092 **
## race.ethnicity.5levelOther                                     1.872   0.0613 .
## race.ethnicity.5levelWhite                                     2.020   0.0435 *
## demo_race_hispanic1                                           -1.165   0.2441
## interview_age                                                 -0.001   0.9992
## MRI_minus_hormone_date_time                                   -0.775   0.4383
## bmi                                                            1.492   0.1359
## household.income[>=200K]                                      -1.295   0.1955
## household.income[100K-200K]                                   -0.968   0.3331
## household.income[12K-16K]                                     -0.262   0.7933
## household.income[16K-25K]                                      1.147   0.2517
## household.income[25K-35K]                                      0.220   0.8261
## household.income[35K-50K]                                      0.551   0.5819
## household.income[50K-75K]                                     -0.189   0.8499
## household.income[5K-12K]                                       1.010   0.3127
## household.income[75K-100K]                                    -0.637   0.5241
## high.educBachelor                                              0.694   0.4877
## high.educHS Diploma/GED                                       -0.803   0.4221
## high.educPost Graduate Degree                                  0.376   0.7066
## high.educSome College                                          0.753   0.4515
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z             0.220   0.8260
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0223
## lmer.REML =  10411  Scale est. = 16.009    n = 1715
```

4.18 Model: CBCL internalizing factor ~ Testosterone x Caudate activity (Feedback stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * caudate_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                                       Estimate Std. Error t value
## (Intercept)                                           5.175e+00  2.559e+00   2.022
## PDS_score                                             6.181e-01  2.047e-01   3.020
## hormone_sal_end_min_since_midnight                   -9.966e-04  7.788e-04  -1.280
## hormone_scr_ert_mean                                 -3.057e-03  8.506e-03  -0.359
## caudate_posvsneg_feedback_z                          -3.740e-01  3.370e-01  -1.110
## race.ethnicity.5levelBlack                           -1.421e-01  9.891e-01  -0.144
## race.ethnicity.5levelMixed                            1.767e+00  9.429e-01   1.874
## race.ethnicity.5levelOther                            1.703e+00  1.062e+00   1.603
## race.ethnicity.5levelWhite                            1.387e+00  8.866e-01   1.564
## demo_race_hispanic1                                   9.372e-02  3.936e-01   0.238
## interview_age                                        -1.162e-02  1.756e-02  -0.661
## MRI_minus_hormone_date_time                          -9.672e-06  1.610e-05  -0.601
## bmi                                                   5.878e-02  3.488e-02   1.685
## household.income[>=200K]                             -2.335e+00  9.547e-01  -2.446
## household.income[100K-200K]                          -1.841e+00  8.980e-01  -2.051
## household.income[12K-16K]                             2.154e-01  1.165e+00   0.185
## household.income[16K-25K]                             2.589e-02  1.005e+00   0.026
## household.income[25K-35K]                            -1.175e+00  9.508e-01  -1.236
## household.income[35K-50K]                            -2.233e-01  9.062e-01  -0.246
## household.income[50K-75K]                            -1.046e+00  9.097e-01  -1.150
## household.income[5K-12K]                             -1.899e-02  1.067e+00  -0.018
## household.income[75K-100K]                           -1.442e+00  9.092e-01  -1.585
## high.educBachelor                                    -2.154e-01  8.499e-01  -0.253
## high.educHS Diploma/GED                              -1.091e+00  8.688e-01  -1.255
## high.educPost Graduate Degree                         8.680e-02  8.588e-01   0.101
## high.educSome College                                -4.970e-02  8.040e-01  -0.062
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z      5.414e-03  8.759e-03   0.618
##                                                       Pr(>|t|)
## (Intercept)                                           0.04333 *
## PDS_score                                             0.00257 **
## hormone_sal_end_min_since_midnight                    0.20086
## hormone_scr_ert_mean                                  0.71939
## caudate_posvsneg_feedback_z                           0.26735
## race.ethnicity.5levelBlack                            0.88577
## race.ethnicity.5levelMixed                            0.06105 .
```

```
## race.ethnicity.5levelOther                        0.10904
## race.ethnicity.5levelWhite                        0.11804
## demo_race_hispanic1                               0.81185
## interview_age                                     0.50845
## MRI_minus_hormone_date_time                       0.54794
## bmi                                               0.09215 .
## household.income[>=200K]                          0.01454 *
## household.income[100K-200K]                       0.04046 *
## household.income[12K-16K]                         0.85338
## household.income[16K-25K]                         0.97945
## household.income[25K-35K]                         0.21650
## household.income[35K-50K]                         0.80537
## household.income[50K-75K]                         0.25019
## household.income[5K-12K]                          0.98580
## household.income[75K-100K]                        0.11306
## high.educBachelor                                 0.79997
## high.educHS Diploma/GED                           0.20954
## high.educPost Graduate Degree                     0.91951
## high.educSome College                             0.95071
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z  0.53657
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0261
## lmer.REML =  10420  Scale est. = 10.986    n = 1702
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * caudate_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                     Estimate Std. Error t value
## (Intercept)                        2.492e+00  2.559e+00   0.974
## PDS_score                          7.403e-01  2.611e-01   2.836
## hormone_sal_end_min_since_midnight 5.311e-04  7.602e-04   0.699
## hormone_scr_ert_mean              -3.433e-03  8.587e-03  -0.400
## caudate_posvsneg_feedback_z        8.194e-02  3.274e-01   0.250
## race.ethnicity.5levelBlack         5.414e-02  9.864e-01   0.055
## race.ethnicity.5levelMixed         2.288e+00  9.498e-01   2.409
## race.ethnicity.5levelOther         1.861e+00  1.101e+00   1.689
## race.ethnicity.5levelWhite         1.714e+00  8.938e-01   1.917
## demo_race_hispanic1               -4.047e-01  3.752e-01  -1.079
## interview_age                     -1.012e-02  1.687e-02  -0.600
```

```
## MRI_minus_hormone_date_time                           -1.451e-05  1.439e-05  -1.008
## bmi                                                     5.836e-02  3.720e-02   1.569
## household.income[>=200K]                               -1.104e+00  1.022e+00  -1.080
## household.income[100K-200K]                            -7.093e-01  9.660e-01  -0.734
## household.income[12K-16K]                              -3.454e-01  1.266e+00  -0.273
## household.income[16K-25K]                               1.300e+00  1.049e+00   1.240
## household.income[25K-35K]                               1.253e-01  1.022e+00   0.123
## household.income[35K-50K]                               7.837e-01  9.917e-01   0.790
## household.income[50K-75K]                               1.968e-02  9.643e-01   0.020
## household.income[5K-12K]                                1.852e+00  1.098e+00   1.687
## household.income[75K-100K]                             -4.615e-01  9.778e-01  -0.472
## high.educBachelor                                       5.587e-02  8.555e-01   0.065
## high.educHS Diploma/GED                                -1.222e+00  8.774e-01  -1.393
## high.educPost Graduate Degree                          -2.315e-01  8.671e-01  -0.267
## high.educSome College                                   1.938e-01  8.156e-01   0.238
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z        1.640e-03  9.314e-03   0.176
##                                                        Pr(>|t|)
## (Intercept)                                             0.33041
## PDS_score                                               0.00463 **
## hormone_sal_end_min_since_midnight                      0.48491
## hormone_scr_ert_mean                                    0.68933
## caudate_posvsneg_feedback_z                             0.80243
## race.ethnicity.5levelBlack                              0.95623
## race.ethnicity.5levelMixed                              0.01608 *
## race.ethnicity.5levelOther                              0.09134 .
## race.ethnicity.5levelWhite                              0.05539 .
## demo_race_hispanic1                                     0.28091
## interview_age                                           0.54872
## MRI_minus_hormone_date_time                             0.31338
## bmi                                                     0.11690
## household.income[>=200K]                                0.28019
## household.income[100K-200K]                             0.46288
## household.income[12K-16K]                               0.78496
## household.income[16K-25K]                               0.21523
## household.income[25K-35K]                               0.90243
## household.income[35K-50K]                               0.42950
## household.income[50K-75K]                               0.98372
## household.income[5K-12K]                                0.09179 .
## household.income[75K-100K]                              0.63696
## high.educBachelor                                       0.94794
## high.educHS Diploma/GED                                 0.16376
## high.educPost Graduate Degree                           0.78953
## high.educSome College                                   0.81218
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z        0.86029
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0249
## lmer.REML =  10455  Scale est. = 15.714    n = 1717
```

4.19 Model: CBCL internalizing factor ~ Testosterone x Putamen activity (Feedback stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * putamen_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                                     Estimate Std. Error t value
## (Intercept)                                         4.916e+00  2.552e+00   1.926
## PDS_score                                           6.013e-01  2.045e-01   2.940
## hormone_sal_end_min_since_midnight                 -1.044e-03  7.807e-04  -1.338
## hormone_scr_ert_mean                               -2.401e-03  8.539e-03  -0.281
## putamen_posvsneg_feedback_z                        -2.752e-01  3.756e-01  -0.733
## race.ethnicity.5levelBlack                         -6.006e-02  9.909e-01  -0.061
## race.ethnicity.5levelMixed                          1.811e+00  9.425e-01   1.922
## race.ethnicity.5levelOther                          1.776e+00  1.064e+00   1.669
## race.ethnicity.5levelWhite                          1.420e+00  8.867e-01   1.601
## demo_race_hispanic1                                 1.089e-01  3.935e-01   0.277
## interview_age                                      -1.005e-02  1.752e-02  -0.574
## MRI_minus_hormone_date_time                        -7.194e-06  1.625e-05  -0.443
## bmi                                                 5.874e-02  3.493e-02   1.682
## household.income[>=200K]                           -2.325e+00  9.550e-01  -2.434
## household.income[100K-200K]                        -1.825e+00  8.986e-01  -2.031
## household.income[12K-16K]                           2.221e-01  1.165e+00   0.191
## household.income[16K-25K]                           8.697e-03  1.002e+00   0.009
## household.income[25K-35K]                          -1.117e+00  9.505e-01  -1.175
## household.income[35K-50K]                          -2.129e-01  9.059e-01  -0.235
## household.income[50K-75K]                          -1.007e+00  9.111e-01  -1.105
## household.income[5K-12K]                            -4.703e-02  1.070e+00  -0.044
## household.income[75K-100K]                         -1.419e+00  9.097e-01  -1.559
## high.educBachelor                                  -1.730e-01  8.509e-01  -0.203
## high.educHS Diploma/GED                            -1.003e+00  8.704e-01  -1.152
## high.educPost Graduate Degree                       1.353e-01  8.595e-01   0.157
## high.educSome College                               4.060e-03  8.044e-01   0.005
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z    3.155e-03  9.716e-03   0.325
##                                                     Pr(>|t|)
## (Intercept)                                         0.05428 .
## PDS_score                                           0.00332 **
## hormone_sal_end_min_since_midnight                  0.18117
## hormone_scr_ert_mean                                0.77857
## putamen_posvsneg_feedback_z                         0.46394
## race.ethnicity.5levelBlack                          0.95167
## race.ethnicity.5levelMixed                          0.05480 .
```

```
## race.ethnicity.5levelOther                         0.09524 .
## race.ethnicity.5levelWhite                         0.10955
## demo_race_hispanic1                                0.78203
## interview_age                                      0.56617
## MRI_minus_hormone_date_time                        0.65813
## bmi                                                0.09283 .
## household.income[>=200K]                           0.01502 *
## household.income[100K-200K]                        0.04240 *
## household.income[12K-16K]                          0.84883
## household.income[16K-25K]                          0.99308
## household.income[25K-35K]                          0.24013
## household.income[35K-50K]                          0.81423
## household.income[50K-75K]                          0.26923
## household.income[5K-12K]                           0.96493
## household.income[75K-100K]                         0.11907
## high.educBachelor                                  0.83895
## high.educHS Diploma/GED                            0.24937
## high.educPost Graduate Degree                      0.87493
## high.educSome College                              0.99597
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z   0.74540
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0252
## lmer.REML =  10413  Scale est. = 10.985    n = 1701
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * putamen_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                    Estimate Std. Error t value
## (Intercept)                       1.993e+00  2.548e+00   0.782
## PDS_score                         7.162e-01  2.608e-01   2.747
## hormone_sal_end_min_since_midnight 4.175e-04 7.599e-04   0.549
## hormone_scr_ert_mean             -2.905e-03  8.562e-03  -0.339
## putamen_posvsneg_feedback_z       3.226e-01  3.326e-01   0.970
## race.ethnicity.5levelBlack        9.293e-02  9.781e-01   0.095
## race.ethnicity.5levelMixed        2.349e+00  9.404e-01   2.498
## race.ethnicity.5levelOther        1.912e+00  1.094e+00   1.747
## race.ethnicity.5levelWhite        1.787e+00  8.847e-01   2.020
## demo_race_hispanic1              -4.683e-01  3.779e-01  -1.239
## interview_age                    -6.123e-03  1.689e-02  -0.363
```

```
## MRI_minus_hormone_date_time                               -1.155e-05  1.443e-05  -0.801
## bmi                                                         6.244e-02  3.720e-02   1.679
## household.income[>=200K]                                   -1.213e+00  1.015e+00  -1.196
## household.income[100K-200K]                                -8.020e-01  9.604e-01  -0.835
## household.income[12K-16K]                                  -2.484e-01  1.255e+00  -0.198
## household.income[16K-25K]                                   1.218e+00  1.042e+00   1.169
## household.income[25K-35K]                                   3.097e-01  1.017e+00   0.305
## household.income[35K-50K]                                   6.650e-01  9.878e-01   0.673
## household.income[50K-75K]                                  -7.668e-02  9.591e-01  -0.080
## household.income[5K-12K]                                    1.734e+00  1.089e+00   1.592
## household.income[75K-100K]                                 -5.555e-01  9.722e-01  -0.571
## high.educBachelor                                           1.357e-01  8.437e-01   0.161
## high.educHS Diploma/GED                                    -1.172e+00  8.684e-01  -1.350
## high.educPost Graduate Degree                              -1.433e-01  8.542e-01  -0.168
## high.educSome College                                       1.989e-01  8.042e-01   0.247
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z           -5.414e-03  9.382e-03  -0.577
##                                                            Pr(>|t|)
## (Intercept)                                                 0.43409
## PDS_score                                                   0.00609 **
## hormone_sal_end_min_since_midnight                          0.58277
## hormone_scr_ert_mean                                        0.73447
## putamen_posvsneg_feedback_z                                 0.33207
## race.ethnicity.5levelBlack                                  0.92431
## race.ethnicity.5levelMixed                                  0.01260 *
## race.ethnicity.5levelOther                                  0.08077 .
## race.ethnicity.5levelWhite                                  0.04352 *
## demo_race_hispanic1                                         0.21535
## interview_age                                               0.71700
## MRI_minus_hormone_date_time                                 0.42342
## bmi                                                         0.09343 .
## household.income[>=200K]                                    0.23199
## household.income[100K-200K]                                 0.40379
## household.income[12K-16K]                                   0.84312
## household.income[16K-25K]                                   0.24245
## household.income[25K-35K]                                   0.76074
## household.income[35K-50K]                                   0.50094
## household.income[50K-75K]                                   0.93628
## household.income[5K-12K]                                    0.11162
## household.income[75K-100K]                                  0.56785
## high.educBachelor                                           0.87229
## high.educHS Diploma/GED                                     0.17734
## high.educPost Graduate Degree                               0.86682
## high.educSome College                                       0.80468
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z            0.56399
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0239
## lmer.REML =  10516  Scale est. = 15.834    n = 1725
```

4.20 Model: CBCL internalizing factor ~ Testosterone x Lateral OFC activity (anticipation stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * lOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         5.131e+00  2.566e+00   2.000  0.04570 *
## PDS_score                           5.964e-01  2.054e-01   2.903  0.00374 **
## hormone_sal_end_min_since_midnight -8.785e-04  7.813e-04  -1.124  0.26099
## hormone_scr_ert_mean               -2.288e-03  8.571e-03  -0.267  0.78952
## lOFC_rvsn_ant_z                     1.243e-01  5.066e-01   0.245  0.80622
## race.ethnicity.5levelBlack         -2.778e-01  1.001e+00  -0.277  0.78149
## race.ethnicity.5levelMixed          1.697e+00  9.579e-01   1.771  0.07667 .
## race.ethnicity.5levelOther          1.621e+00  1.079e+00   1.502  0.13340
## race.ethnicity.5levelWhite          1.312e+00  9.004e-01   1.457  0.14524
## demo_race_hispanic1                 5.646e-02  3.924e-01   0.144  0.88560
## interview_age                      -1.172e-02  1.765e-02  -0.664  0.50671
## MRI_minus_hormone_date_time        -9.065e-06  1.623e-05  -0.559  0.57644
## bmi                                 5.995e-02  3.510e-02   1.708  0.08788 .
## household.income[>=200K]           -2.371e+00  9.569e-01  -2.478  0.01333 *
## household.income[100K-200K]        -1.840e+00  9.008e-01  -2.042  0.04129 *
## household.income[12K-16K]           1.688e-01  1.167e+00   0.145  0.88503
## household.income[16K-25K]           2.115e-02  1.004e+00   0.021  0.98320
## household.income[25K-35K]          -1.113e+00  9.547e-01  -1.165  0.24406
## household.income[35K-50K]          -1.623e-01  9.111e-01  -0.178  0.85864
## household.income[50K-75K]          -1.034e+00  9.106e-01  -1.136  0.25618
## household.income[5K-12K]            5.106e-02  1.066e+00   0.048  0.96181
## household.income[75K-100K]         -1.419e+00  9.115e-01  -1.557  0.11965
## high.educBachelor                  -1.806e-01  8.510e-01  -0.212  0.83201
## high.educHS Diploma/GED            -1.007e+00  8.677e-01  -1.160  0.24607
## high.educPost Graduate Degree       1.270e-01  8.596e-01   0.148  0.88261
## high.educSome College               4.265e-02  8.048e-01   0.053  0.95774
## hormone_scr_ert_mean:lOFC_rvsn_ant_z 2.043e-03 1.341e-02   0.152  0.87892
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0256
## lmer.REML =  10410  Scale est. = 11.459    n = 1699
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * lOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         7.039e-01  2.530e+00   0.278   0.7809
## PDS_score                           6.109e-01  2.603e-01   2.347   0.0190 *
## hormone_sal_end_min_since_midnight  4.348e-04  7.479e-04   0.581   0.5611
## hormone_scr_ert_mean               -6.202e-03  8.479e-03  -0.731   0.4646
## lOFC_rvsn_ant_z                     3.728e-01  4.276e-01   0.872   0.3835
## race.ethnicity.5levelBlack          1.279e-01  9.652e-01   0.132   0.8946
## race.ethnicity.5levelMixed          2.254e+00  9.277e-01   2.430   0.0152 *
## race.ethnicity.5levelOther          1.863e+00  1.079e+00   1.726   0.0845 .
## race.ethnicity.5levelWhite          1.637e+00  8.710e-01   1.879   0.0604 .
## demo_race_hispanic1                -5.222e-01  3.714e-01  -1.406   0.1599
## interview_age                       5.405e-03  1.670e-02   0.324   0.7463
## MRI_minus_hormone_date_time        -7.334e-06  1.411e-05  -0.520   0.6034
## bmi                                 5.055e-02  3.689e-02   1.371   0.1707
## household.income[>=200K]           -1.442e+00  1.010e+00  -1.428   0.1534
## household.income[100K-200K]        -1.023e+00  9.577e-01  -1.068   0.2856
## household.income[12K-16K]          -4.487e-01  1.243e+00  -0.361   0.7181
## household.income[16K-25K]           9.787e-01  1.044e+00   0.937   0.3487
## household.income[25K-35K]           5.922e-02  1.012e+00   0.059   0.9534
## household.income[35K-50K]           4.422e-01  9.825e-01   0.450   0.6527
## household.income[50K-75K]          -3.559e-01  9.567e-01  -0.372   0.7099
## household.income[5K-12K]            1.206e+00  1.096e+00   1.100   0.2713
## household.income[75K-100K]         -6.958e-01  9.703e-01  -0.717   0.4734
## high.educBachelor                   8.428e-01  8.523e-01   0.989   0.3229
## high.educHS Diploma/GED            -5.357e-01  8.739e-01  -0.613   0.5400
## high.educPost Graduate Degree       5.276e-01  8.623e-01   0.612   0.5408
## high.educSome College               9.222e-01  8.143e-01   1.133   0.2576
## hormone_scr_ert_mean:lOFC_rvsn_ant_z -1.417e-02  1.242e-02  -1.141   0.2542
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.021
## lmer.REML =  10408   Scale est. = 15.188    n = 1716
```

4.21 Model: CBCL internalizing factor ~ Testosterone x Medial OFC activity (anticipation stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * mOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        5.172e+00  2.563e+00   2.018  0.04373 *
## PDS_score                          6.211e-01  2.055e-01   3.022  0.00255 **
## hormone_sal_end_min_since_midnight -9.234e-04  7.789e-04  -1.185  0.23600
## hormone_scr_ert_mean              -2.977e-03  8.547e-03  -0.348  0.72768
## mOFC_rvsn_ant_z                   -4.594e-02  4.442e-01  -0.103  0.91765
## race.ethnicity.5levelBlack        -2.799e-01  1.002e+00  -0.279  0.78003
## race.ethnicity.5levelMixed         1.723e+00  9.584e-01   1.798  0.07238 .
## race.ethnicity.5levelOther         1.613e+00  1.080e+00   1.493  0.13562
## race.ethnicity.5levelWhite         1.346e+00  9.010e-01   1.493  0.13552
## demo_race_hispanic1                6.120e-02  3.926e-01   0.156  0.87615
## interview_age                     -1.035e-02  1.760e-02  -0.588  0.55655
## MRI_minus_hormone_date_time       -9.179e-06  1.622e-05  -0.566  0.57161
## bmi                                5.397e-02  3.498e-02   1.543  0.12309
## household.income[>=200K]          -2.386e+00  9.588e-01  -2.489  0.01291 *
## household.income[100K-200K]       -1.875e+00  9.019e-01  -2.079  0.03777 *
## household.income[12K-16K]          1.706e-01  1.169e+00   0.146  0.88397
## household.income[16K-25K]         -2.987e-03  1.005e+00  -0.003  0.99763
## household.income[25K-35K]         -1.081e+00  9.568e-01  -1.130  0.25852
## household.income[35K-50K]         -1.945e-01  9.117e-01  -0.213  0.83110
## household.income[50K-75K]         -1.052e+00  9.115e-01  -1.154  0.24880
## household.income[5K-12K]           4.250e-02  1.068e+00   0.040  0.96826
## household.income[75K-100K]        -1.436e+00  9.129e-01  -1.573  0.11581
## high.educBachelor                 -2.383e-01  8.588e-01  -0.277  0.78144
## high.educHS Diploma/GED           -1.051e+00  8.732e-01  -1.203  0.22896
## high.educPost Graduate Degree      5.442e-02  8.675e-01   0.063  0.94998
## high.educSome College             -4.671e-02  8.121e-01  -0.058  0.95414
## hormone_scr_ert_mean:mOFC_rvsn_ant_z 3.782e-03  1.164e-02  0.325  0.74528
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0252
## lmer.REML =  10405  Scale est. = 10.993    n = 1698
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * mOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        6.021e-01  2.528e+00   0.238   0.8118
## PDS_score                          6.228e-01  2.610e-01   2.386   0.0171 *
## hormone_sal_end_min_since_midnight 3.788e-04  7.538e-04   0.503   0.6154
## hormone_scr_ert_mean              -8.270e-03  8.487e-03  -0.974   0.3300
## mOFC_rvsn_ant_z                    1.288e-01  3.893e-01   0.331   0.7409
## race.ethnicity.5levelBlack         1.570e-01  9.707e-01   0.162   0.8715
## race.ethnicity.5levelMixed         2.235e+00  9.320e-01   2.398   0.0166 *
## race.ethnicity.5levelOther         1.849e+00  1.084e+00   1.706   0.0882 .
## race.ethnicity.5levelWhite         1.685e+00  8.754e-01   1.925   0.0544 .
## demo_race_hispanic1               -4.515e-01  3.735e-01  -1.209   0.2269
## interview_age                      4.414e-03  1.678e-02   0.263   0.7925
## MRI_minus_hormone_date_time       -7.918e-06  1.458e-05  -0.543   0.5872
## bmi                                6.196e-02  3.696e-02   1.677   0.0938 .
## household.income[>=200K]          -1.519e+00  1.008e+00  -1.507   0.1319
## household.income[100K-200K]       -1.134e+00  9.539e-01  -1.188   0.2348
## household.income[12K-16K]         -4.674e-01  1.241e+00  -0.377   0.7066
## household.income[16K-25K]          8.844e-01  1.039e+00   0.851   0.3948
## household.income[25K-35K]          2.682e-02  1.012e+00   0.027   0.9789
## household.income[35K-50K]          3.470e-01  9.787e-01   0.355   0.7230
## household.income[50K-75K]         -3.718e-01  9.536e-01  -0.390   0.6967
## household.income[5K-12K]           1.345e+00  1.102e+00   1.221   0.2222
## household.income[75K-100K]        -8.445e-01  9.673e-01  -0.873   0.3828
## high.educBachelor                  1.001e+00  8.518e-01   1.176   0.2400
## high.educHS Diploma/GED           -4.558e-01  8.756e-01  -0.521   0.6027
## high.educPost Graduate Degree      7.071e-01  8.623e-01   0.820   0.4123
## high.educSome College              1.030e+00  8.144e-01   1.264   0.2063
## hormone_scr_ert_mean:mOFC_rvsn_ant_z -4.547e-04  1.093e-02  -0.042   0.9668
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0217
## lmer.REML =  10379  Scale est. = 15.181    n = 1709
```

4.22 Model: CBCL internalizing factor ~ Testosterone x Lateral OFC activity (feedback stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * lOFC_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                                 Estimate Std. Error t value
## (Intercept)                                    4.700e+00  2.550e+00   1.843
## PDS_score                                      6.250e-01  2.042e-01   3.061
## hormone_sal_end_min_since_midnight            -8.060e-04  7.769e-04  -1.037
## hormone_scr_ert_mean                          -3.921e-03  8.505e-03  -0.461
## lOFC_posvsneg_feedback_z                      -1.178e-01  6.282e-01  -0.187
## race.ethnicity.5levelBlack                    -1.230e-01  9.875e-01  -0.125
## race.ethnicity.5levelMixed                     1.767e+00  9.418e-01   1.876
## race.ethnicity.5levelOther                     1.986e+00  1.069e+00   1.857
## race.ethnicity.5levelWhite                     1.433e+00  8.849e-01   1.619
## demo_race_hispanic1                           -5.829e-02  3.910e-01  -0.149
## interview_age                                 -1.062e-02  1.750e-02  -0.607
## MRI_minus_hormone_date_time                   -9.137e-06  1.613e-05  -0.567
## bmi                                            5.760e-02  3.480e-02   1.655
## household.income[>=200K]                      -2.060e+00  9.693e-01  -2.126
## household.income[100K-200K]                   -1.528e+00  9.137e-01  -1.672
## household.income[12K-16K]                      4.918e-01  1.178e+00   0.418
## household.income[16K-25K]                      3.301e-01  1.019e+00   0.324
## household.income[25K-35K]                     -7.743e-01  9.688e-01  -0.799
## household.income[35K-50K]                      7.026e-02  9.223e-01   0.076
## household.income[50K-75K]                     -7.315e-01  9.257e-01  -0.790
## household.income[5K-12K]                       3.934e-01  1.083e+00   0.363
## household.income[75K-100K]                    -1.091e+00  9.257e-01  -1.179
## high.educBachelor                             -3.065e-01  8.529e-01  -0.359
## high.educHS Diploma/GED                       -1.269e+00  8.721e-01  -1.455
## high.educPost Graduate Degree                  2.273e-02  8.601e-01   0.026
## high.educSome College                         -6.160e-02  8.061e-01  -0.076
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z  4.257e-04  1.740e-02   0.024
##                                                Pr(>|t|)
## (Intercept)                                     0.06550 .
## PDS_score                                       0.00224 **
## hormone_sal_end_min_since_midnight              0.29968
## hormone_scr_ert_mean                            0.64483
## lOFC_posvsneg_feedback_z                        0.85130
## race.ethnicity.5levelBlack                      0.90088
## race.ethnicity.5levelMixed                      0.06077 .
```

```
## race.ethnicity.5levelOther                        0.06352 .
## race.ethnicity.5levelWhite                        0.10561
## demo_race_hispanic1                               0.88152
## interview_age                                     0.54414
## MRI_minus_hormone_date_time                       0.57107
## bmi                                               0.09805 .
## household.income[>=200K]                          0.03369 *
## household.income[100K-200K]                       0.09476 .
## household.income[12K-16K]                         0.67634
## household.income[16K-25K]                         0.74598
## household.income[25K-35K]                         0.42426
## household.income[35K-50K]                         0.93928
## household.income[50K-75K]                         0.42955
## household.income[5K-12K]                          0.71637
## household.income[75K-100K]                        0.23875
## high.educBachelor                                 0.71939
## high.educHS Diploma/GED                           0.14595
## high.educPost Graduate Degree                     0.97892
## high.educSome College                             0.93909
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z     0.98048
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0253
## lmer.REML =  10396  Scale est. = 10.994     n = 1699
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##      hormone_scr_ert_mean * lOFC_posvsneg_feedback_z + race.ethnicity.5level +
##      demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##      bmi + household.income + high.educ
##
## Parametric coefficients:
##                                     Estimate Std. Error t value
## (Intercept)                        9.721e-01  2.520e+00   0.386
## PDS_score                          6.597e-01  2.582e-01   2.555
## hormone_sal_end_min_since_midnight 4.072e-04  7.498e-04   0.543
## hormone_scr_ert_mean              -7.437e-03  8.508e-03  -0.874
## lOFC_posvsneg_feedback_z           1.431e-01  4.719e-01   0.303
## race.ethnicity.5levelBlack         1.998e-01  9.685e-01   0.206
## race.ethnicity.5levelMixed         2.400e+00  9.298e-01   2.581
## race.ethnicity.5levelOther         1.872e+00  1.085e+00   1.725
## race.ethnicity.5levelWhite         1.719e+00  8.741e-01   1.966
## demo_race_hispanic1               -4.950e-01  3.734e-01  -1.326
## interview_age                     -7.271e-04  1.671e-02  -0.044
```

```
## MRI_minus_hormone_date_time                   -8.063e-06  1.418e-05  -0.569
## bmi                                             6.871e-02  3.695e-02   1.860
## household.income[>=200K]                       -1.424e+00  1.004e+00  -1.419
## household.income[100K-200K]                    -1.043e+00  9.507e-01  -1.097
## household.income[12K-16K]                      -4.490e-01  1.240e+00  -0.362
## household.income[16K-25K]                       1.083e+00  1.042e+00   1.039
## household.income[25K-35K]                       1.417e-01  1.008e+00   0.141
## household.income[35K-50K]                       4.254e-01  9.763e-01   0.436
## household.income[50K-75K]                      -2.556e-01  9.495e-01  -0.269
## household.income[5K-12K]                        1.127e+00  1.082e+00   1.041
## household.income[75K-100K]                     -7.276e-01  9.624e-01  -0.756
## high.educBachelor                               9.171e-01  8.461e-01   1.084
## high.educHS Diploma/GED                        -4.400e-01  8.705e-01  -0.505
## high.educPost Graduate Degree                   6.080e-01  8.572e-01   0.709
## high.educSome College                           9.038e-01  8.093e-01   1.117
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z  -7.454e-04  1.326e-02  -0.056
##                                                Pr(>|t|)
## (Intercept)                                     0.69969
## PDS_score                                       0.01070 *
## hormone_sal_end_min_since_midnight              0.58717
## hormone_scr_ert_mean                            0.38219
## lOFC_posvsneg_feedback_z                        0.76166
## race.ethnicity.5levelBlack                      0.83659
## race.ethnicity.5levelMixed                      0.00993 **
## race.ethnicity.5levelOther                      0.08478 .
## race.ethnicity.5levelWhite                      0.04944 *
## demo_race_hispanic1                             0.18513
## interview_age                                   0.96530
## MRI_minus_hormone_date_time                     0.56955
## bmi                                             0.06313 .
## household.income[>=200K]                        0.15621
## household.income[100K-200K]                     0.27278
## household.income[12K-16K]                       0.71733
## household.income[16K-25K]                       0.29881
## household.income[25K-35K]                       0.88825
## household.income[35K-50K]                       0.66312
## household.income[50K-75K]                       0.78783
## household.income[5K-12K]                        0.29796
## household.income[75K-100K]                      0.44973
## high.educBachelor                               0.27853
## high.educHS Diploma/GED                         0.61336
## high.educPost Graduate Degree                   0.47822
## high.educSome College                           0.26427
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z   0.95517
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0213
## lmer.REML =  10461  Scale est. = 15.185    n = 1723
```

4.23 Model: CBCL internalizing factor ~ Testosterone x Medial OFC activity (feedback stage) + PDS

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * mOFC_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                              Estimate Std. Error t value
## (Intercept)                                  5.301e+00  2.548e+00   2.080
## PDS_score                                    6.422e-01  2.047e-01   3.137
## hormone_sal_end_min_since_midnight          -9.980e-04  7.776e-04  -1.283
## hormone_scr_ert_mean                        -3.441e-03  8.515e-03  -0.404
## mOFC_posvsneg_feedback_z                     1.454e-01  5.121e-01   0.284
## race.ethnicity.5levelBlack                  -1.715e-01  9.895e-01  -0.173
## race.ethnicity.5levelMixed                   1.776e+00  9.429e-01   1.884
## race.ethnicity.5levelOther                   1.807e+00  1.063e+00   1.699
## race.ethnicity.5levelWhite                   1.406e+00  8.861e-01   1.586
## demo_race_hispanic1                          2.899e-02  3.914e-01   0.074
## interview_age                               -1.308e-02  1.752e-02  -0.746
## MRI_minus_hormone_date_time                 -8.831e-06  1.613e-05  -0.548
## bmi                                          5.568e-02  3.493e-02   1.594
## household.income[>=200K]                    -2.382e+00  9.589e-01  -2.484
## household.income[100K-200K]                 -1.848e+00  9.028e-01  -2.047
## household.income[12K-16K]                   -1.297e-01  1.176e+00  -0.110
## household.income[16K-25K]                    1.151e-02  1.007e+00   0.011
## household.income[25K-35K]                   -1.042e+00  9.603e-01  -1.085
## household.income[35K-50K]                   -2.186e-01  9.105e-01  -0.240
## household.income[50K-75K]                   -1.090e+00  9.135e-01  -1.194
## household.income[5K-12K]                     8.755e-02  1.072e+00   0.082
## household.income[75K-100K]                  -1.422e+00  9.135e-01  -1.557
## high.educBachelor                           -1.252e-01  8.517e-01  -0.147
## high.educHS Diploma/GED                     -1.005e+00  8.666e-01  -1.160
## high.educPost Graduate Degree                1.912e-01  8.586e-01   0.223
## high.educSome College                        4.857e-02  8.039e-01   0.060
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z -8.351e-03 1.401e-02  -0.596
##                                              Pr(>|t|)
## (Intercept)                                   0.03764 *
## PDS_score                                     0.00174 **
## hormone_sal_end_min_since_midnight            0.19951
## hormone_scr_ert_mean                          0.68618
## mOFC_posvsneg_feedback_z                      0.77647
## race.ethnicity.5levelBlack                    0.86243
## race.ethnicity.5levelMixed                    0.05979 .
```

```
## race.ethnicity.5levelOther                    0.08954 .
## race.ethnicity.5levelWhite                    0.11288
## demo_race_hispanic1                           0.94097
## interview_age                                 0.45555
## MRI_minus_hormone_date_time                   0.58406
## bmi                                           0.11108
## household.income[>=200K]                      0.01307 *
## household.income[100K-200K]                   0.04079 *
## household.income[12K-16K]                     0.91224
## household.income[16K-25K]                     0.99088
## household.income[25K-35K]                     0.27806
## household.income[35K-50K]                     0.81025
## household.income[50K-75K]                     0.23277
## household.income[5K-12K]                      0.93490
## household.income[75K-100K]                    0.11978
## high.educBachelor                            0.88317
## high.educHS Diploma/GED                      0.24626
## high.educPost Graduate Degree                0.82383
## high.educSome College                        0.95182
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z  0.55111
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.025
## lmer.REML =  10407  Scale est. = 11.145    n = 1700
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * mOFC_posvsneg_feedback_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##     bmi + household.income + high.educ
##
## Parametric coefficients:
##                                       Estimate Std. Error t value
## (Intercept)                           9.396e-01  2.520e+00   0.373
## PDS_score                             6.654e-01  2.585e-01   2.574
## hormone_sal_end_min_since_midnight    4.146e-04  7.514e-04   0.552
## hormone_scr_ert_mean                 -7.076e-03  8.521e-03  -0.831
## mOFC_posvsneg_feedback_z              4.756e-01  4.262e-01   1.116
## race.ethnicity.5levelBlack            1.615e-01  9.684e-01   0.167
## race.ethnicity.5levelMixed            2.423e+00  9.301e-01   2.605
## race.ethnicity.5levelOther            1.858e+00  1.086e+00   1.711
## race.ethnicity.5levelWhite            1.710e+00  8.742e-01   1.957
## demo_race_hispanic1                  -4.966e-01  3.733e-01  -1.330
## interview_age                        -4.385e-04  1.669e-02  -0.026
```

```
## MRI_minus_hormone_date_time                          -8.978e-06  1.417e-05  -0.634
## bmi                                                    6.840e-02  3.693e-02   1.852
## household.income[>=200K]                              -1.406e+00  1.004e+00  -1.400
## household.income[100K-200K]                           -1.027e+00  9.508e-01  -1.080
## household.income[12K-16K]                             -4.413e-01  1.241e+00  -0.356
## household.income[16K-25K]                              1.101e+00  1.042e+00   1.057
## household.income[25K-35K]                              1.299e-01  1.008e+00   0.129
## household.income[35K-50K]                              4.233e-01  9.764e-01   0.434
## household.income[50K-75K]                             -2.634e-01  9.496e-01  -0.277
## household.income[5K-12K]                               1.134e+00  1.082e+00   1.048
## household.income[75K-100K]                            -7.189e-01  9.626e-01  -0.747
## high.educBachelor                                      8.872e-01  8.444e-01   1.051
## high.educHS Diploma/GED                               -4.643e-01  8.684e-01  -0.535
## high.educPost Graduate Degree                          5.892e-01  8.552e-01   0.689
## high.educSome College                                  8.745e-01  8.074e-01   1.083
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z         -5.820e-03  1.228e-02  -0.474
##                                                       Pr(>|t|)
## (Intercept)                                            0.70929
## PDS_score                                              0.01013 *
## hormone_sal_end_min_since_midnight                     0.58120
## hormone_scr_ert_mean                                   0.40637
## mOFC_posvsneg_feedback_z                               0.26463
## race.ethnicity.5levelBlack                             0.86759
## race.ethnicity.5levelMixed                             0.00926 **
## race.ethnicity.5levelOther                             0.08731 .
## race.ethnicity.5levelWhite                             0.05056 .
## demo_race_hispanic1                                    0.18356
## interview_age                                          0.97904
## MRI_minus_hormone_date_time                            0.52636
## bmi                                                    0.06416 .
## household.income[>=200K]                               0.16166
## household.income[100K-200K]                            0.28047
## household.income[12K-16K]                              0.72222
## household.income[16K-25K]                              0.29053
## household.income[25K-35K]                              0.89751
## household.income[35K-50K]                              0.66467
## household.income[50K-75K]                              0.78152
## household.income[5K-12K]                               0.29489
## household.income[75K-100K]                             0.45525
## high.educBachelor                                      0.29354
## high.educHS Diploma/GED                                0.59297
## high.educPost Graduate Degree                          0.49095
## high.educSome College                                  0.27892
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z          0.63563
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0225
## lmer.REML =  10444  Scale est. = 15.237    n = 1720
```

4.24 Model: CBCL internalizing factor ~ Testosterone x BIS-BAS RR + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * bisbas_ss_basm_rr + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                                        Estimate Std. Error t value Pr(>|t|)
## (Intercept)                           2.5733616  2.4827380   1.037  0.30008
## PDS_score                             0.5419974  0.1807518   2.999  0.00274
## hormone_sal_end_min_since_midnight   -0.0001384  0.0006846  -0.202  0.83981
## hormone_scr_ert_mean                 -0.0035476  0.0262828  -0.135  0.89264
## bisbas_ss_basm_rr                    -0.0625266  0.1139654  -0.549  0.58330
## race.ethnicity.5levelBlack           -0.7915837  0.8747433  -0.905  0.36560
## race.ethnicity.5levelMixed            0.9786799  0.8494547   1.152  0.24939
## race.ethnicity.5levelOther            1.8781297  0.9701226   1.936  0.05300
## race.ethnicity.5levelWhite            1.2030182  0.7992739   1.505  0.13243
## demo_race_hispanic1                  -0.2824106  0.3533951  -0.799  0.42430
## interview_age                         0.0033422  0.0157035   0.213  0.83148
## bmi                                   0.0813539  0.0309720   2.627  0.00868
## household.income[>=200K]             -2.0418215  0.8203184  -2.489  0.01288
## household.income[100K-200K]          -1.4328992  0.7659654  -1.871  0.06152
## household.income[12K-16K]             0.4741226  1.0246572   0.463  0.64362
## household.income[16K-25K]             0.9595029  0.8552890   1.122  0.26205
## household.income[25K-35K]            -0.3037771  0.8049072  -0.377  0.70591
## household.income[35K-50K]            -0.0097083  0.7744048  -0.013  0.99000
## household.income[50K-75K]            -0.4143656  0.7725939  -0.536  0.59178
## household.income[5K-12K]              0.3385735  0.9017917   0.375  0.70737
## household.income[75K-100K]           -0.8689576  0.7748511  -1.121  0.26222
## high.educBachelor                     0.3964730  0.7581573   0.523  0.60107
## high.educHS Diploma/GED              -0.6478445  0.7611177  -0.851  0.39476
## high.educPost Graduate Degree         0.6376835  0.7654442   0.833  0.40488
## high.educSome College                 0.5901610  0.7149730   0.825  0.40922
## hormone_scr_ert_mean:bisbas_ss_basm_rr -0.0004832 0.0029170 -0.166 0.86845
##
## (Intercept)
## PDS_score                           **
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
## bisbas_ss_basm_rr
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther          .
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## bmi                                 **
```

```
## household.income[>=200K]                        *
## household.income[100K-200K]                      .
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]
## household.income[5K-12K]
## household.income[75K-100K]
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## hormone_scr_ert_mean:bisbas_ss_basm_rr
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0294
## lmer.REML =  13745  Scale est. = 13.519    n = 2229
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##      hormone_scr_ert_mean * bisbas_ss_basm_rr + race.ethnicity.5level +
##      demo_race_hispanic + interview_age + bmi + household.income +
##      high.educ
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       3.3839892  2.3993113    1.410 0.158551
## PDS_score                         0.8511471  0.2211921    3.848 0.000122
## hormone_sal_end_min_since_midnight 0.0005700  0.0006591    0.865 0.387243
## hormone_scr_ert_mean             -0.0002024  0.0278512   -0.007 0.994204
## bisbas_ss_basm_rr                -0.0300510  0.1040531   -0.289 0.772756
## race.ethnicity.5levelBlack        0.3487304  0.8179575    0.426 0.669896
## race.ethnicity.5levelMixed        1.8706957  0.7958054    2.351 0.018819
## race.ethnicity.5levelOther        1.2671190  0.9423335    1.345 0.178861
## race.ethnicity.5levelWhite        1.6060553  0.7438342    2.159 0.030936
## demo_race_hispanic1              -0.4239360  0.3348809   -1.266 0.205660
## interview_age                    -0.0103760  0.0150105   -0.691 0.489476
## bmi                               0.0711737  0.0320786    2.219 0.026598
## household.income[>=200K]         -2.3776546  0.7980722   -2.979 0.002918
## household.income[100K-200K]      -2.3032757  0.7406205   -3.110 0.001893
## household.income[12K-16K]        -0.8994562  1.0037377   -0.896 0.370285
## household.income[16K-25K]        -0.2309265  0.8254126   -0.280 0.779677
## household.income[25K-35K]        -1.1055246  0.8013538   -1.380 0.167847
## household.income[35K-50K]        -0.7054097  0.7717216   -0.914 0.360770
## household.income[50K-75K]        -1.4159238  0.7390252   -1.916 0.055492
```

```
## household.income[5K-12K]                     0.9304879  0.8647829   1.076 0.282045
## household.income[75K-100K]                   -1.9531278  0.7528949  -2.594 0.009540
## high.educBachelor                             0.7633027  0.7361979   1.037 0.299925
## high.educHS Diploma/GED                      -0.2355167  0.7451140  -0.316 0.751968
## high.educPost Graduate Degree                 0.6200012  0.7469888   0.830 0.406621
## high.educSome College                         0.8610074  0.7008856   1.228 0.219396
## hormone_scr_ert_mean:bisbas_ss_basm_rr       -0.0004547  0.0029835  -0.152 0.878882
##
## (Intercept)
## PDS_score                                    ***
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
## bisbas_ss_basm_rr
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed                    *
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite                    *
## demo_race_hispanic1
## interview_age
## bmi                                           *
## household.income[>=200K]                      **
## household.income[100K-200K]                   **
## household.income[12K-16K]
## household.income[16K-25K]
## household.income[25K-35K]
## household.income[35K-50K]
## household.income[50K-75K]                     .
## household.income[5K-12K]
## household.income[75K-100K]                    **
## high.educBachelor
## high.educHS Diploma/GED
## high.educPost Graduate Degree
## high.educSome College
## hormone_scr_ert_mean:bisbas_ss_basm_rr
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0237
## lmer.REML =  15054  Scale est. = 13.765    n = 2433
```

4.25 Model: CBCL internalizing factor ~ Testosterone x MID Reaction Time + PDS (large reward vs. neutral)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * rt_diff_large_neutral_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
```

```
##      high.educ
##
## Parametric coefficients:
##                                               Estimate Std. Error t value
## (Intercept)                                  6.5414322  2.4427370   2.678
## PDS_score                                    0.6396860  0.1967267   3.252
## hormone_sal_end_min_since_midnight          -0.0008488  0.0007362  -1.153
## hormone_scr_ert_mean                        -0.0060969  0.0081335  -0.750
## rt_diff_large_neutral_z                     -0.0604759  0.3089831  -0.196
## race.ethnicity.5levelBlack                  -0.1737481  0.9346733  -0.186
## race.ethnicity.5levelMixed                   1.4835060  0.9004032   1.648
## race.ethnicity.5levelOther                   2.0454507  1.0145698   2.016
## race.ethnicity.5levelWhite                   1.3912211  0.8439108   1.649
## demo_race_hispanic1                          0.0320287  0.3781033   0.085
## interview_age                               -0.0250939  0.0167438  -1.499
## bmi                                          0.0681206  0.0334878   2.034
## household.income[>=200K]                    -1.9388609  0.9064784  -2.139
## household.income[100K-200K]                 -1.3959074  0.8513444  -1.640
## household.income[12K-16K]                   -0.1381205  1.1020988  -0.125
## household.income[16K-25K]                    0.5341098  0.9564338   0.558
## household.income[25K-35K]                   -0.7422370  0.9005217  -0.824
## household.income[35K-50K]                   -0.2891681  0.8567313  -0.338
## household.income[50K-75K]                   -0.7458736  0.8628224  -0.864
## household.income[5K-12K]                     0.1412259  1.0154006   0.139
## household.income[75K-100K]                  -1.0553524  0.8596646  -1.228
## high.educBachelor                           -0.4078834  0.8222157  -0.496
## high.educHS Diploma/GED                     -1.3051980  0.8395918  -1.555
## high.educPost Graduate Degree               -0.2660409  0.8292069  -0.321
## high.educSome College                       -0.4513730  0.7743815  -0.583
## hormone_scr_ert_mean:rt_diff_large_neutral_z 0.0048660  0.0080172   0.607
##                                             Pr(>|t|)
## (Intercept)                                  0.00747 **
## PDS_score                                    0.00117 **
## hormone_sal_end_min_since_midnight           0.24913
## hormone_scr_ert_mean                         0.45359
## rt_diff_large_neutral_z                      0.84485
## race.ethnicity.5levelBlack                   0.85255
## race.ethnicity.5levelMixed                   0.09961 .
## race.ethnicity.5levelOther                   0.04394 *
## race.ethnicity.5levelWhite                   0.09941 .
## demo_race_hispanic1                          0.93250
## interview_age                                0.13413
## bmi                                          0.04208 *
## household.income[>=200K]                     0.03258 *
## household.income[100K-200K]                  0.10125
## household.income[12K-16K]                    0.90028
## household.income[16K-25K]                    0.57661
## household.income[25K-35K]                    0.40992
## household.income[35K-50K]                    0.73576
## household.income[50K-75K]                    0.38745
## household.income[5K-12K]                     0.88940
## household.income[75K-100K]                   0.21974
## high.educBachelor                            0.61990
## high.educHS Diploma/GED                      0.12022
```

```
## high.educPost Graduate Degree             0.74837
## high.educSome College                     0.56004
## hormone_scr_ert_mean:rt_diff_large_neutral_z  0.54397
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0221
## lmer.REML =  11257  Scale est. = 11.55      n = 1845
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * rt_diff_large_neutral_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                                              Estimate Std. Error t value
## (Intercept)                                 2.1777277  2.4081152   0.904
## PDS_score                                   0.5958218  0.2469344   2.413
## hormone_sal_end_min_since_midnight          0.0003050  0.0007074   0.431
## hormone_scr_ert_mean                       -0.0042269  0.0080727  -0.524
## rt_diff_large_neutral_z                     0.5799325  0.2933430   1.977
## race.ethnicity.5levelBlack                  0.0293058  0.9288631   0.032
## race.ethnicity.5levelMixed                  2.0191209  0.8951375   2.256
## race.ethnicity.5levelOther                  1.3748782  1.0500420   1.309
## race.ethnicity.5levelWhite                  1.5178652  0.8429727   1.801
## demo_race_hispanic1                        -0.4695823  0.3592975  -1.307
## interview_age                              -0.0019780  0.0160674  -0.123
## bmi                                         0.0857497  0.0351032   2.443
## household.income[>=200K]                   -2.3411336  0.9553933  -2.450
## household.income[100K-200K]                -1.8680104  0.9000369  -2.075
## household.income[12K-16K]                  -1.4412206  1.1862925  -1.215
## household.income[16K-25K]                  -0.0241122  0.9798893  -0.025
## household.income[25K-35K]                  -0.6430399  0.9488089  -0.678
## household.income[35K-50K]                  -0.2338404  0.9248632  -0.253
## household.income[50K-75K]                  -1.3557080  0.8969476  -1.511
## household.income[5K-12K]                    0.9543913  1.0370798   0.920
## household.income[75K-100K]                 -1.7134737  0.9107209  -1.881
## high.educBachelor                           0.6508055  0.8018255   0.812
## high.educHS Diploma/GED                    -0.8876013  0.8295060  -1.070
## high.educPost Graduate Degree               0.3730810  0.8158533   0.457
## high.educSome College                       0.7647753  0.7661878   0.998
## hormone_scr_ert_mean:rt_diff_large_neutral_z -0.0115119  0.0081287  -1.416
##                                              Pr(>|t|)
## (Intercept)                                    0.3659
## PDS_score                                      0.0159 *
## hormone_sal_end_min_since_midnight             0.6663
```

```
## hormone_scr_ert_mean                          0.6006
## rt_diff_large_neutral_z                        0.0482 *
## race.ethnicity.5levelBlack                     0.9748
## race.ethnicity.5levelMixed                     0.0242 *
## race.ethnicity.5levelOther                     0.1906
## race.ethnicity.5levelWhite                     0.0719 .
## demo_race_hispanic1                            0.1914
## interview_age                                  0.9020
## bmi                                            0.0147 *
## household.income[>=200K]                       0.0144 *
## household.income[100K-200K]                    0.0381 *
## household.income[12K-16K]                      0.2246
## household.income[16K-25K]                      0.9804
## household.income[25K-35K]                      0.4980
## household.income[35K-50K]                      0.8004
## household.income[50K-75K]                      0.1308
## household.income[5K-12K]                       0.3575
## household.income[75K-100K]                     0.0601 .
## high.educBachelor                              0.4171
## high.educHS Diploma/GED                        0.2847
## high.educPost Graduate Degree                  0.6475
## high.educSome College                          0.3183
## hormone_scr_ert_mean:rt_diff_large_neutral_z   0.1569
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0261
## lmer.REML =  11893  Scale est. = 15.033    n = 1947
```

4.26 Model: CBCL internalizing factor ~ Testosterone x MID Reaction Time + PDS (large vs. small reward)

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * rt_diff_large_small_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
##
## Parametric coefficients:
##                                     Estimate Std. Error t value
## (Intercept)                        6.5140715  2.4416107   2.668
## PDS_score                          0.6459282  0.1966569   3.285
## hormone_sal_end_min_since_midnight -0.0008263  0.0007359  -1.123
## hormone_scr_ert_mean               -0.0064771  0.0081317  -0.797
## rt_diff_large_small_z              -0.2988725  0.3011579  -0.992
## race.ethnicity.5levelBlack         -0.1727935  0.9343065  -0.185
## race.ethnicity.5levelMixed          1.4831680  0.9001886   1.648
```

```
## race.ethnicity.5levelOther                    2.0112018  1.0144435   1.983
## race.ethnicity.5levelWhite                     1.3910547  0.8438130   1.649
## demo_race_hispanic1                           -0.0017022  0.3781363  -0.005
## interview_age                                 -0.0245902  0.0167264  -1.470
## bmi                                            0.0667401  0.0334825   1.993
## household.income[>=200K]                      -1.9178829  0.9066466  -2.115
## household.income[100K-200K]                   -1.3697516  0.8518457  -1.608
## household.income[12K-16K]                     -0.1397710  1.1017579  -0.127
## household.income[16K-25K]                      0.5818334  0.9561320   0.609
## household.income[25K-35K]                     -0.7095187  0.9007144  -0.788
## household.income[35K-50K]                     -0.2580339  0.8569849  -0.301
## household.income[50K-75K]                     -0.7013218  0.8633823  -0.812
## household.income[5K-12K]                       0.1541572  1.0155816   0.152
## household.income[75K-100K]                    -1.0437494  0.8600931  -1.214
## high.educBachelor                             -0.4476021  0.8217406  -0.545
## high.educHS Diploma/GED                       -1.3216781  0.8394559  -1.574
## high.educPost Graduate Degree                 -0.3044644  0.8280769  -0.368
## high.educSome College                         -0.4763828  0.7742828  -0.615
## hormone_scr_ert_mean:rt_diff_large_small_z     0.0032303  0.0079257   0.408
##                                               Pr(>|t|)
## (Intercept)                                    0.00770 **
## PDS_score                                      0.00104 **
## hormone_sal_end_min_since_midnight             0.26167
## hormone_scr_ert_mean                           0.42583
## rt_diff_large_small_z                          0.32113
## race.ethnicity.5levelBlack                     0.85329
## race.ethnicity.5levelMixed                     0.09960 .
## race.ethnicity.5levelOther                     0.04757 *
## race.ethnicity.5levelWhite                     0.09942 .
## demo_race_hispanic1                            0.99641
## interview_age                                  0.14170
## bmi                                            0.04638 *
## household.income[>=200K]                       0.03453 *
## household.income[100K-200K]                    0.10801
## household.income[12K-16K]                      0.89906
## household.income[16K-25K]                      0.54291
## household.income[25K-35K]                      0.43096
## household.income[35K-50K]                      0.76338
## household.income[50K-75K]                      0.41673
## household.income[5K-12K]                       0.87937
## household.income[75K-100K]                     0.22508
## high.educBachelor                              0.58603
## high.educHS Diploma/GED                        0.11556
## high.educPost Graduate Degree                  0.71316
## high.educSome College                          0.53846
## hormone_scr_ert_mean:rt_diff_large_small_z     0.68363
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0225
## lmer.REML =  11256  Scale est. = 11.441    n = 1845
```

Males

```
## 
## Family: gaussian
## Link function: identity
## 
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * rt_diff_large_small_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age + bmi + household.income +
##     high.educ
## 
## Parametric coefficients:
##                                               Estimate Std. Error t value
## (Intercept)                                  2.1849181  2.4120058   0.906
## PDS_score                                    0.5767673  0.2469426   2.336
## hormone_sal_end_min_since_midnight           0.0002983  0.0007075   0.422
## hormone_scr_ert_mean                        -0.0046387  0.0080886  -0.573
## rt_diff_large_small_z                        0.0904791  0.2904800   0.311
## race.ethnicity.5levelBlack                  -0.0081943  0.9296427  -0.009
## race.ethnicity.5levelMixed                   1.9550634  0.8957650   2.183
## race.ethnicity.5levelOther                   1.2908993  1.0504880   1.229
## race.ethnicity.5levelWhite                   1.4664610  0.8436568   1.738
## demo_race_hispanic1                         -0.4788881  0.3596627  -1.331
## interview_age                               -0.0015451  0.0160923  -0.096
## bmi                                          0.0875574  0.0351957   2.488
## household.income[>=200K]                    -2.3162025  0.9561336  -2.422
## household.income[100K-200K]                 -1.8773434  0.9010754  -2.083
## household.income[12K-16K]                   -1.4598547  1.1866589  -1.230
## household.income[16K-25K]                   -0.0258189  0.9807362  -0.026
## household.income[25K-35K]                   -0.6582071  0.9498936  -0.693
## household.income[35K-50K]                   -0.2208893  0.9257496  -0.239
## household.income[50K-75K]                   -1.3303612  0.8978281  -1.482
## household.income[5K-12K]                     0.9181333  1.0380431   0.884
## household.income[75K-100K]                  -1.7239354  0.9120367  -1.890
## high.educBachelor                            0.6537210  0.8031793   0.814
## high.educHS Diploma/GED                     -0.8449910  0.8314412  -1.016
## high.educPost Graduate Degree                0.3835839  0.8172061   0.469
## high.educSome College                        0.7610650  0.7657631   0.994
## hormone_scr_ert_mean:rt_diff_large_small_z  -0.0045196  0.0082942  -0.545
##                                             Pr(>|t|)
## (Intercept)                                   0.3651
## PDS_score                                     0.0196 *
## hormone_sal_end_min_since_midnight            0.6733
## hormone_scr_ert_mean                          0.5664
## rt_diff_large_small_z                         0.7555
## race.ethnicity.5levelBlack                    0.9930
## race.ethnicity.5levelMixed                    0.0292 *
## race.ethnicity.5levelOther                    0.2193
## race.ethnicity.5levelWhite                    0.0823 .
## demo_race_hispanic1                           0.1832
## interview_age                                 0.9235
## bmi                                           0.0129 *
## household.income[>=200K]                      0.0155 *
```

```
## household.income[100K-200K]                0.0373 *
## household.income[12K-16K]                  0.2188
## household.income[16K-25K]                  0.9790
## household.income[25K-35K]                  0.4884
## household.income[35K-50K]                  0.8114
## household.income[50K-75K]                  0.1386
## household.income[5K-12K]                   0.3765
## household.income[75K-100K]                 0.0589 .
## high.educBachelor                          0.4158
## high.educHS Diploma/GED                    0.3096
## high.educPost Graduate Degree              0.6388
## high.educSome College                      0.3204
## hormone_scr_ert_mean:rt_diff_large_small_z 0.5859
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0242
## lmer.REML =  11897  Scale est. = 15.119    n = 1947
```