

# Supplement C

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

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## 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 *
```

```
## 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_hispanic1
##
## 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

```

```

## 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
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.298098  0.316614   0.942  0.3465
## PDS_score    0.068473  0.028258   2.423  0.0155 *
## interview_age -0.004996  0.002645  -1.889  0.0590 .
## bmi          0.007036  0.004930   1.427  0.1537
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00573
## lmer.REML = 7489.4  Scale est. = 0.75267    n = 2664
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ PDS_score + interview_age + bmi
```

```
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.011225  0.296384  -0.038  0.96979
## PDS_score    0.074705  0.034595   2.159  0.03090 *
## interview_age -0.002485  0.002457  -1.011  0.31202
## bmi          0.014645  0.005014   2.921  0.00352 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00659
## lmer.REML = 7998.1  Scale est. = 0.72246    n = 2889
```

## 2.2 Model : Reaction Time ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.491339  0.326735  -1.504  0.1328
## PDS_score    -0.020361  0.029770  -0.684  0.4941
## interview_age  0.005000  0.002735   1.829  0.0676 .
## bmi          -0.001264  0.005204  -0.243  0.8081
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000347
## lmer.REML = 5863.3  Scale est. = 0.67554    n = 2178
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.197109  0.328554  -0.600  0.549
## PDS_score    -0.016583  0.029859  -0.555  0.579
## interview_age  0.002938  0.002748   1.069  0.285
## bmi          -0.005648  0.005224  -1.081  0.280
##
##
## R-sq.(adj) = -1.97e-05
## lmer.REML = 5897.1  Scale est. = 0.76117    n = 2178
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.1479221  0.3010191   0.491   0.6232
## PDS_score    -0.0674011  0.0363238  -1.856   0.0636 .
## interview_age -0.0006892  0.0024930  -0.276   0.7822
## bmi          0.0007256  0.0051704   0.140   0.8884
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000889
## lmer.REML = 5927.7  Scale est. = 0.66958    n = 2289
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.070592  0.304445   0.232   0.817
## PDS_score    -0.035130  0.036667  -0.958   0.338
## interview_age -0.000712  0.002520  -0.283   0.778
## bmi          0.003681  0.005224   0.705   0.481
##
##
## R-sq.(adj) = -0.00055
## lmer.REML = 5993.8  Scale est. = 0.70498    n = 2289
```

## 2.3 Model: Caudate Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvs_n_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.380798  0.326697  -1.166   0.2439
## PDS_score    -0.038377  0.029682  -1.293   0.1962
```



```
## interview_age 0.004972 0.002747 1.810 0.0704 .
## bmi -0.007080 0.005175 -1.368 0.1714
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0024
## lmer.REML = 5292.9 Scale est. = 0.77206 n = 2024
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.073534 0.350240 -0.210 0.834
## PDS_score    0.010276 0.042528 0.242 0.809
## interview_age 0.002017 0.002900 0.695 0.487
## bmi         -0.009951 0.006090 -1.634 0.102
##
##
## R-sq.(adj) = 9.11e-06
## lmer.REML = 5721.1 Scale est. = 0.73596 n = 2058
```

## 2.4 Model B: Putamen Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.290901 0.318558 -0.913 0.3613
## PDS_score    -0.068519 0.028963 -2.366 0.0181 *
## interview_age 0.004131 0.002677 1.543 0.1229
## bmi         -0.004351 0.005043 -0.863 0.3884
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00336
## lmer.REML = 5181.5 Scale est. = 0.7261 n = 2021
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.367703  0.338755  -1.085   0.2778
## PDS_score    0.026830  0.041233   0.651   0.5153
## interview_age 0.004364  0.002810   1.553   0.1206
## bmi          -0.009957  0.005914  -1.684   0.0924 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00145
## lmer.REML = 5574.7  Scale est. = 0.75951    n = 2055
```

## 2.5 Model: Accumbens Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.0286509  0.2510732   0.114   0.9092
## PDS_score    0.0051654  0.0227507   0.227   0.8204
## interview_age 0.0008251  0.0021102   0.391   0.6958
## bmi          -0.0068322  0.0039745  -1.719   0.0858 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000361
## lmer.REML = 4235.1  Scale est. = 0.44395    n = 2024
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
```

```
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.347689  0.263136  1.321  0.187
## PDS_score    0.016543  0.031742  0.521  0.602
## interview_age -0.002559  0.002180 -1.174  0.241
## bmi         -0.003154  0.004566 -0.691  0.490
##
##
## R-sq.(adj) = -0.000487
## lmer.REML = 4572.2  Scale est. = 0.50879  n = 2057
```

## 2.6 Model: Caudate Feedback ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.921257  0.313893  2.935  0.00337 **
## PDS_score    -0.015936  0.028439 -0.560  0.57530
## interview_age -0.007344  0.002634 -2.788  0.00535 **
## bmi         -0.002236  0.004976 -0.449  0.65320
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00352
## lmer.REML = 5146.5  Scale est. = 0.73665  n = 2022
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.068847  0.315913 -0.218  0.8275
## PDS_score    -0.076038  0.038007 -2.001  0.0456 *
## interview_age 0.001424  0.002617  0.544  0.5863
## bmi         0.002135  0.005483  0.389  0.6970
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.000567
```

```
## lmer.REML = 5312.4  Scale est. = 0.76552  n = 2056
```

## 2.7 Model: Putamen Feedback ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.646281   0.300041   2.154   0.0314 *
## PDS_score      0.014996   0.027092   0.554   0.5800
## interview_age -0.005251   0.002518  -2.085   0.0372 *
## bmi           -0.005039   0.004753  -1.060   0.2892
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  0.00123
## lmer.REML = 4953.2  Scale est. = 0.66748  n = 2022
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.161738   0.314803   0.514   0.6075
## PDS_score     -0.069977   0.037912  -1.846   0.0651 .
## interview_age -0.001043   0.002607  -0.400   0.6892
## bmi           0.007212   0.005468   1.319   0.1873
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  0.000442
## lmer.REML = 5286.7  Scale est. = 0.74566  n = 2060
```

## 2.8 Model: Accumbens Feedback ~ PDS

### Females

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

```
##
## Formula:
## accumbens_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  4.408e-01  2.379e-01   1.853   0.0640 .
## PDS_score     6.486e-05  2.152e-02   0.003   0.9976
## interview_age -4.008e-03  1.999e-03  -2.005   0.0451 *
## bmi           1.222e-03  3.765e-03   0.325   0.7454
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000588
## lmer.REML = 4055.5  Scale est. = 0.42501  n = 2031
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.081125  0.254069  -0.319   0.750
## PDS_score    -0.037463  0.030800  -1.216   0.224
## interview_age  0.001085  0.002104   0.515   0.606
## bmi           0.002754  0.004401   0.626   0.532
##
##
## R-sq.(adj) = -0.00061
## lmer.REML = 4378.5  Scale est. = 0.40094  n = 2053
```

## 2.9 Model: OFC Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  4.874e-02  2.099e-01   0.232   0.816
## PDS_score     8.897e-03  1.900e-02   0.468   0.640
## interview_age -7.427e-05  1.766e-03  -0.042   0.966
## bmi          -2.173e-03  3.330e-03  -0.653   0.514
##
```

```
##
## R-sq.(adj) = -0.00121
## lmer.REML = 3505 Scale est. = 0.29594 n = 2018

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvs_n_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.0192469  0.2413048   0.080   0.936
## PDS_score    0.0017731  0.0218305   0.081   0.935
## interview_age -0.0003229  0.0020284  -0.159   0.874
## bmi          0.0008238  0.0038125   0.216   0.829
##
##
## R-sq.(adj) = -0.00145
## lmer.REML = 4076.9 Scale est. = 0.43488 n = 2019
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvs_n_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.2171326  0.2228721  -0.974   0.330
## PDS_score    0.0352147  0.0272605   1.292   0.197
## interview_age 0.0015830  0.0018474   0.857   0.392
## bmi         -0.0005837  0.0038816  -0.150   0.880
##
##
## R-sq.(adj) = 0.00079
## lmer.REML = 3841.8 Scale est. = 0.30057 n = 2051

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvs_n_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.323e-01  2.422e-01  -0.546  0.58505
## PDS_score    8.068e-02  2.944e-02   2.741  0.00619 **
## interview_age -4.674e-05  2.008e-03  -0.023  0.98143
## bmi          1.611e-03  4.200e-03   0.383  0.70143
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00349
## lmer.REML = 4185.5  Scale est. = 0.38317    n = 2046
```

## 2.10 Model: OFC Feedback ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.2537734  0.1839272   1.380   0.168
## PDS_score      0.0126560  0.0166447   0.760   0.447
## interview_age -0.0024151  0.0015445  -1.564   0.118
## bmi           -0.0006546  0.0029147  -0.225   0.822
##
##
## R-sq.(adj) =  -0.00017
## lmer.REML =   2980  Scale est. = 0.22154    n = 2019
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.0070788  0.2264411   0.031   0.975
## PDS_score      0.0060376  0.0205133   0.294   0.769
## interview_age -0.0006626  0.0019026  -0.348   0.728
## bmi           0.0028691  0.0035897   0.799   0.424
##
##
## R-sq.(adj) =  -0.00111
## lmer.REML = 3805.3  Scale est. = 0.3422     n = 2020
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
```

```
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.168888  0.200020  -0.844   0.399
## PDS_score    0.020527  0.024112   0.851   0.395
## interview_age 0.002553  0.001658   1.540   0.124
## bmi          -0.007088  0.003483  -2.035   0.042 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00177
## lmer.REML = 3462.5  Scale est. = 0.30789    n = 2061
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0016524  0.2303347   0.007   0.994
## PDS_score       0.0123902  0.0280608   0.442   0.659
## interview_age   0.0005835  0.0019082   0.306   0.760
## bmi            -0.0028214  0.0040156  -0.703   0.482
##
##
## R-sq.(adj) = -0.00115
## lmer.REML =   4017  Scale est. = 0.29386    n = 2059
```

## 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_rvsnt_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_rvs_n_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_rvs_n_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_rvsnt_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_rvsnt_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_rvs_n_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_rvsnt_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_rvsnt_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_rvsnt_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
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      6.03142    1.86213   3.239  0.00122 **
## accumbens_rvsn_ant_z -0.04281    0.16866  -0.254  0.79968
## interview_age     -0.00972    0.01557  -0.624  0.53257
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000632
## lmer.REML = 12626  Scale est. = 11.232    n = 2044
```

##### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_rvsn_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.25407    1.85660   1.753  0.0798 .
## accumbens_rvsn_ant_z -0.14190    0.15692  -0.904  0.3659
## interview_age      0.01254    0.01546   0.811  0.4174
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000613
## lmer.REML = 12706  Scale est. = 17.308    n = 2066
```

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

##### Females

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

```
## cbcl_scr_syn_internal_r ~ caudate_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      6.09957    1.86424   3.272  0.00109 **
## caudate_rvsnt_ant_z -0.02686    0.12935  -0.208  0.83552
## interview_age     -0.01023    0.01559  -0.656  0.51174
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  -0.000647
## lmer.REML = 12629  Scale est. = 11.292    n = 2044
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.49362    1.85958   1.879  0.0604 .
## caudate_rvsnt_ant_z -0.10783    0.12293  -0.877  0.3805
## interview_age      0.01070    0.01548   0.691  0.4897
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  -0.000819
## lmer.REML = 12691  Scale est. = 17.525    n = 2063
```

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

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      5.934388    1.857662   3.195  0.00142 **
## putamen_rvsnt_ant_z -0.095198    0.132427  -0.719  0.47230
## interview_age     -0.008957    0.015537  -0.577  0.56434
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) = -0.000598
## lmer.REML = 12595 Scale est. = 11.211 n = 2041
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.33869    1.85298   1.802  0.0717 .
## putamen_rvsnt_ant_z -0.15776    0.12263  -1.287  0.1984
## interview_age    0.01190    0.01543   0.771  0.4407
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000462
## lmer.REML = 12682 Scale est. = 17.142 n = 2064
```

### 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
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    5.830691    1.856144   3.141  0.00171 **
## accumbens_posvsneg_feedback_z -0.050476    0.176282  -0.286  0.77465
## interview_age   -0.008162    0.015527  -0.526  0.59916
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000578
## lmer.REML = 12646 Scale est. = 11.21 n = 2050
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_posvsneg_feedback_z + interview_age
```

```
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.20169    1.84417   1.736  0.0827 .
## accumbens_posvsneg_feedback_z 0.32021    0.16272   1.968  0.0492 *
## interview_age      0.01263    0.01536   0.823  0.4108
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000374
## lmer.REML = 12638 Scale est. = 17.821    n = 2061
```

### 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
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      6.08504    1.86838   3.257  0.00115 **
## caudate_posvsneg_feedback_z -0.18760    0.13267  -1.414  0.15750
## interview_age     -0.01029    0.01562  -0.659  0.51010
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000878
## lmer.REML = 12610 Scale est. = 11.326    n = 2042
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_posvsneg_feedback_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.77298    1.86063   2.028  0.0427 *
## caudate_posvsneg_feedback_z 0.14352    0.13072   1.098  0.2724
## interview_age      0.00821    0.01550   0.530  0.5963
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000875
```



```
## lmer.REML = 12705 Scale est. = 17.456 n = 2065
```

### 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
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      5.870302   1.864372   3.149  0.00166 **
## putamen_posvsneg_feedback_z -0.099433   0.139287  -0.714  0.47539
## interview_age     -0.008449   0.015591  -0.542  0.58795
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) = -0.000157
## lmer.REML = 12610 Scale est. = 11.281 n = 2042
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_posvsneg_feedback_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.53587   1.86387   1.897   0.058 .
## putamen_posvsneg_feedback_z 0.14110   0.13250   1.065   0.287
## interview_age     0.01021   0.01552   0.658   0.511
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) = -0.00111
## lmer.REML = 12736 Scale est. = 17.746 n = 2068
```

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

#### Females

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

```

## cbcl_scr_syn_internal_r ~ l0FC_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    5.886252   1.871858   3.145  0.00169 **
## l0FC_rvsnt_ant_z 0.028463   0.202850   0.140  0.88843
## interview_age  -0.008492   0.015651  -0.543  0.58746
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000729
## lmer.REML = 12589 Scale est. = 11.525 n = 2038
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ m0FC_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    5.859094   1.868796   3.135  0.00174 **
## m0FC_rvsnt_ant_z 0.158153   0.173166   0.913  0.36119
## interview_age  -0.008187   0.015629  -0.524  0.60045
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000132
## lmer.REML = 12597 Scale est. = 11.352 n = 2039

```

## Males

```

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ l0FC_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.593028   1.842144   1.408   0.159
## l0FC_rvsnt_ant_z 0.007046   0.185916   0.038   0.970
## interview_age   0.017786   0.015340   1.159   0.246
##
##
## R-sq.(adj) = -0.000967
## lmer.REML = 12626 Scale est. = 17.099 n = 2060
##
## Family: gaussian
## Link function: identity

```

```
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvsn_ant_z + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)   2.66407    1.85004   1.440   0.150
## mOFC_rvsn_ant_z 0.25061    0.17062   1.469   0.142
## interview_age  0.01727    0.01541   1.121   0.263
##
##
## R-sq.(adj) =  0.000242
## lmer.REML = 12610  Scale est. = 17.21    n = 2055
```

### 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
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)   5.888613    1.861224   3.164 0.00158 **
## lOFC_posvsneg_feedback_z -0.237566    0.228693  -1.039 0.29902
## interview_age  -0.008663    0.015572  -0.556 0.57803
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  4.13e-05
## lmer.REML = 12579  Scale est. = 11.213    n = 2039
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_posvsneg_feedback_z + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)   5.973940    1.863262   3.206 0.00137 **
## mOFC_posvsneg_feedback_z -0.159334    0.188165  -0.847 0.39722
## interview_age  -0.009333    0.015591  -0.599 0.54951
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000255
## lmer.REML = 12595  Scale est. = 11.397    n = 2040
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ l0FC_posvsneg_feedback_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.12257    1.83917   1.698   0.0897 .
## l0FC_posvsneg_feedback_z 0.07077    0.20388   0.347   0.7285
## interview_age   0.01352    0.01532   0.882   0.3776
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.00109
## lmer.REML = 12698 Scale est. = 17.083    n = 2070
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ m0FC_posvsneg_feedback_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.16469    1.83836   1.721   0.0853 .
## m0FC_posvsneg_feedback_z 0.26531    0.17840   1.487   0.1371
## interview_age   0.01313    0.01531   0.857   0.3914
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000202
## lmer.REML = 12686 Scale est. = 17.165    n = 2068
```

## 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
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    4.576754   1.717826   2.664 0.00776 **
## bisbas_ss_basm_rr -0.070300   0.044419  -1.583 0.11362
```

```
## interview_age      0.008269   0.013933   0.593  0.55293
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000292
## lmer.REML = 16721  Scale est. = 12.884    n = 2690
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ bisbas_ss_basm_rr + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.61899    1.68931   2.142   0.0323 *
## bisbas_ss_basm_rr 0.01085    0.04423   0.245   0.8063
## interview_age    0.01093    0.01369   0.798   0.4249
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000781
## lmer.REML = 18172  Scale est. = 15.86    n = 2913
```

## 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
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    6.34830    1.78963   3.547 0.000397 ***
## rt_diff_large_neutral_z 0.13667    0.12027   1.136 0.255921
## interview_age   -0.01246    0.01495  -0.833 0.404751
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -5.14e-06
## lmer.REML = 13581  Scale est. = 11.707    n = 2201
##
## Family: gaussian
## Link function: identity
```

```
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_small_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      6.25255    1.78792   3.497  0.00048 ***
## rt_diff_large_small_z -0.15737    0.11916  -1.321  0.18675
## interview_age     -0.01158    0.01493  -0.775  0.43813
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000251
## lmer.REML = 13580 Scale est. = 11.639 n = 2201
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_neutral_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.91887    1.77504   1.644   0.100
## rt_diff_large_neutral_z 0.04631    0.12505   0.370   0.711
## interview_age     0.01577    0.01479   1.066   0.286
##
##
## R-sq.(adj) = -0.000786
## lmer.REML = 14210 Scale est. = 16.839 n = 2303
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_small_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.93006    1.77494   1.651  0.0989 .
## rt_diff_large_small_z -0.06836    0.12321  -0.555  0.5790
## interview_age     0.01568    0.01478   1.060  0.2891
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000745
## lmer.REML = 14210 Scale est. = 16.895 n = 2303
```

## 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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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:m0FC_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 *
```



```

## 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 **
## l0FC_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:l0FC_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 * l0FC_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 *
## l0FC_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:m0FC_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvsnt_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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 (Feed-back 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 (Feed-back 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_rvs_n_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_rvs_n_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_rvs_n_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 * l0FC_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
## l0FC_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:l0FC_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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_rvs_n_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:l0FC_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 * l0FC_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
## l0FC_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

```