

Supplement D

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 2

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)      0.24585    2.14625   0.115 0.908813
## PDS_score         0.63910    0.16994   3.761 0.000173 ***
## race.ethnicity.5levelBlack -0.59950    0.80357  -0.746 0.455719
## race.ethnicity.5levelMixed  1.16125    0.78203   1.485 0.137698
## race.ethnicity.5levelOther -0.07551    0.91532  -0.082 0.934261
## race.ethnicity.5levelWhite  1.16079    0.72966   1.591 0.111774
## interview_age      0.02398    0.01551   1.546 0.122175
## bmi               0.02183    0.03081   0.708 0.478737
## household.income[>=200K] -2.48695    0.84306  -2.950 0.003210 **
## household.income[100K-200K] -1.53646    0.78498  -1.957 0.050425 .
## household.income[12K-16K]  -0.16447    1.00678  -0.163 0.870247
## household.income[16K-25K]  -1.19402    0.86844  -1.375 0.169291
## household.income[25K-35K]   0.06806    0.82129   0.083 0.933964
## household.income[35K-50K]  -1.23125    0.79766  -1.544 0.122825
## household.income[50K-75K]  -1.17459    0.78183  -1.502 0.133139
## household.income[5K-12K]    0.01842    0.88108   0.021 0.983323
## household.income[75K-100K] -1.20384    0.79552  -1.513 0.130345
## high.educBachelor    0.71480    0.72727   0.983 0.325782
## high.educHS Diploma/GED  0.57208    0.72972   0.784 0.433137
## high.educPost Graduate Degree 1.07092    0.74080   1.446 0.148410
## high.educSome College   0.98398    0.67857   1.450 0.147167
## demo_race_hispanic1     0.01775    0.35033   0.051 0.959598
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0208
## lmer.REML = 14752 Scale est. = 17.681    n = 2393
```

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)      3.044498    2.131388   1.428 0.153296
## PDS_score         0.512599    0.212901   2.408 0.016124 *
## race.ethnicity.5levelBlack -0.568285    0.870652  -0.653 0.514000
## race.ethnicity.5levelMixed  1.136350    0.851619   1.334 0.182211
## race.ethnicity.5levelOther  0.054732    0.970214   0.056 0.955017
## race.ethnicity.5levelWhite  0.882675    0.800878   1.102 0.270507
## interview_age      0.008395    0.014671   0.572 0.567222
## bmi               0.037559    0.030231   1.242 0.214196
## household.income[>=200K] -3.163233    0.817766  -3.868 0.000112 ***
```

```
## household.income[100K-200K] -2.503348 0.762024 -3.285 0.001033 **
## household.income[12K-16K] -0.378147 0.978855 -0.386 0.699295
## household.income[16K-25K] 0.014172 0.819181 0.017 0.986199
## household.income[25K-35K] -0.080763 0.820882 -0.098 0.921634
## household.income[35K-50K] -1.125521 0.777542 -1.448 0.147869
## household.income[50K-75K] -1.612009 0.754947 -2.135 0.032834 *
## household.income[5K-12K] -0.081314 0.858409 -0.095 0.924540
## household.income[75K-100K] -2.674947 0.776687 -3.444 0.000582 ***
## high.educBachelor 1.510458 0.769450 1.963 0.049750 *
## high.educHS Diploma/GED -0.861459 0.762395 -1.130 0.258608
## high.educPost Graduate Degree 0.758055 0.772636 0.981 0.326622
## high.educSome College 0.987835 0.731158 1.351 0.176797
## demo_race_hispanic1 0.139213 0.348535 0.399 0.689615
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0356
## lmer.REML = 16057 Scale est. = 16.188 n = 2582
```

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) 0.571226 1.208616 0.473 0.6365
## PDS_score 0.289623 0.095677 3.027 0.0025 **
## race.ethnicity.5levelBlack -0.208973 0.450502 -0.464 0.6428
## race.ethnicity.5levelMixed 0.779587 0.438563 1.778 0.0756 .
## race.ethnicity.5levelOther 0.149325 0.513557 0.291 0.7713
## race.ethnicity.5levelWhite 0.701081 0.409125 1.714 0.0867 .
## interview_age 0.009063 0.008759 1.035 0.3009
## bmi -0.010226 0.017333 -0.590 0.5552
## household.income[>=200K] -0.915799 0.472779 -1.937 0.0529 .
## household.income[100K-200K] -0.373934 0.440145 -0.850 0.3957
## household.income[12K-16K] -0.026541 0.564057 -0.047 0.9625
## household.income[16K-25K] -0.526282 0.487490 -1.080 0.2804
## household.income[25K-35K] 0.199691 0.460614 0.434 0.6647
## household.income[35K-50K] -0.325213 0.447435 -0.727 0.4674
## household.income[50K-75K] -0.226284 0.438393 -0.516 0.6058
## household.income[5K-12K] 0.123800 0.494970 0.250 0.8025
## household.income[75K-100K] -0.200656 0.446142 -0.450 0.6529
## high.educBachelor 0.149894 0.407184 0.368 0.7128
## high.educHS Diploma/GED -0.047246 0.408926 -0.116 0.9080
## high.educPost Graduate Degree 0.557669 0.414778 1.344 0.1789
## high.educSome College 0.379274 0.379997 0.998 0.3183
```

```
## demo_race_hispanic1          0.127401   0.195756   0.651   0.5152
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0156
## lmer.REML = 12037   Scale est. = 6.6943    n = 2393
```

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)    2.265806   1.198585   1.890  0.05882 .
## PDS_score       0.266298   0.119891   2.221  0.02643 *
## race.ethnicity.5levelBlack -0.127691   0.484971  -0.263  0.79234
## race.ethnicity.5levelMixed  0.622860   0.474210   1.313  0.18914
## race.ethnicity.5levelOther  0.283154   0.542267   0.522  0.60160
## race.ethnicity.5levelWhite  0.617047   0.445773   1.384  0.16641
## interview_age  -0.006789   0.008280  -0.820  0.41234
## bmi             0.005526   0.017022   0.325  0.74548
## household.income[>=200K] -1.283218   0.457060  -2.808  0.00503 **
## household.income[100K-200K] -0.935027   0.426068  -2.195  0.02829 *
## household.income[12K-16K]  -0.096237   0.547581  -0.176  0.86050
## household.income[16K-25K]  -0.015610   0.458430  -0.034  0.97284
## household.income[25K-35K]   0.059470   0.459643   0.129  0.89706
## household.income[35K-50K]  -0.275088   0.434876  -0.633  0.52707
## household.income[50K-75K]  -0.690488   0.422258  -1.635  0.10212
## household.income[5K-12K]    0.052185   0.480316   0.109  0.91349
## household.income[75K-100K] -0.957038   0.434131  -2.204  0.02758 *
## high.educBachelor    1.193167   0.430813   2.770  0.00565 **
## high.educHS Diploma/GED -0.192115   0.427126  -0.450  0.65290
## high.educPost Graduate Degree 0.852858   0.432532   1.972  0.04874 *
## high.educSome College   0.731303   0.409636   1.785  0.07434 .
## demo_race_hispanic1    0.177569   0.194994   0.911  0.36257
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0194
## lmer.REML = 13124   Scale est. = 6.6679    n = 2582
```

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)      0.597114   0.631420   0.946 0.344413
## PDS_score         0.167783   0.049930   3.360 0.000791 ***
## race.ethnicity.5levelBlack -0.405523   0.234501  -1.729 0.083884 .
## race.ethnicity.5levelMixed -0.037332   0.228166  -0.164 0.870046
## race.ethnicity.5levelOther -0.296675   0.267095  -1.111 0.266789
## race.ethnicity.5levelWhite -0.075008   0.213035  -0.352 0.724800
## interview_age      0.003785   0.004588   0.825 0.409541
## bmi               0.010756   0.009034   1.191 0.233957
## household.income[>=200K] -0.790678   0.245498  -3.221 0.001296 **
## household.income[100K-200K] -0.567993   0.228434  -2.486 0.012970 *
## household.income[12K-16K] -0.250379   0.292350  -0.856 0.391845
## household.income[16K-25K] -0.358819   0.253532  -1.415 0.157117
## household.income[25K-35K] -0.008874   0.239098  -0.037 0.970398
## household.income[35K-50K] -0.527085   0.232381  -2.268 0.023407 *
## household.income[50K-75K] -0.477302   0.227514  -2.098 0.036019 *
## household.income[5K-12K] -0.047157   0.257508  -0.183 0.854714
## household.income[75K-100K] -0.483750   0.231611  -2.089 0.036848 *
## high.educBachelor    -0.025672   0.210861  -0.122 0.903110
## high.educHS Diploma/GED  0.204823   0.212147   0.965 0.334405
## high.educPost Graduate Degree -0.006554   0.214832  -0.031 0.975666
## high.educSome College  -0.004270   0.196842  -0.022 0.982694
## demo_race_hispanic1    -0.004556   0.101595  -0.045 0.964235
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0224
## lmer.REML = 8972 Scale est. = 2.2943 n = 2393

```

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)      0.368632   0.692242   0.533 0.594412
## PDS_score         0.128798   0.069425   1.855 0.063681 .
## race.ethnicity.5levelBlack -0.154051   0.281906  -0.546 0.584796
## race.ethnicity.5levelMixed  0.262650   0.276050   0.951 0.341463
## race.ethnicity.5levelOther -0.003209   0.315116  -0.010 0.991875

```

```
## race.ethnicity.5levelWhite      0.099242    0.259284    0.383 0.701935
## interview_age                   0.011062    0.004776    2.316 0.020624 *
## bmi                             0.001353    0.009858    0.137 0.890806
## household.income[>=200K]       -1.037952    0.265073   -3.916 9.25e-05 ***
## household.income[100K-200K]    -0.856957    0.247368   -3.464 0.000540 ***
## household.income[12K-16K]      0.045379    0.318278    0.143 0.886635
## household.income[16K-25K]      0.059945    0.266335    0.225 0.821941
## household.income[25K-35K]     -0.075731    0.266977   -0.284 0.776693
## household.income[35K-50K]     -0.454552    0.252790   -1.798 0.072272 .
## household.income[50K-75K]     -0.597698    0.245365   -2.436 0.014920 *
## household.income[5K-12K]       -0.031072    0.279263   -0.111 0.911414
## household.income[75K-100K]     -0.932095    0.252268   -3.695 0.000225 ***
## high.educBachelor              -0.001929    0.249863   -0.008 0.993840
## high.educHS Diploma/GED       -0.578251    0.247616   -2.335 0.019606 *
## high.educPost Graduate Degree  -0.257339    0.250943   -1.025 0.305230
## high.educSome College          -0.111793    0.237374   -0.471 0.637711
## demo_race_hispanic1            -0.066530    0.110099   -0.604 0.545712
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0378
## lmer.REML = 10320 Scale est. = 1.934      n = 2582
```

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)    1.2070529   0.7372460   1.637   0.1017
## PDS_score       0.1130118   0.0584081   1.935   0.0531 .
## race.ethnicity.5levelBlack -0.1890686   0.2748074  -0.688   0.4915
## race.ethnicity.5levelMixed  0.1951616   0.2676648   0.729   0.4660
## race.ethnicity.5levelOther -0.2411360   0.3135123  -0.769   0.4419
## race.ethnicity.5levelWhite  0.2112751   0.2495603   0.847   0.3973
## interview_age    0.0006124   0.0053434   0.115   0.9088
## bmi              0.0034458   0.0105839   0.326   0.7448
## household.income[>=200K]    -0.7191737   0.2887547  -2.491   0.0128 *
## household.income[100K-200K] -0.5574300   0.2688546  -2.073   0.0382 *
## household.income[12K-16K]   0.0074610   0.3445896   0.022   0.9827
## household.income[16K-25K]  -0.4500986   0.2977632  -1.512   0.1308
## household.income[25K-35K]  -0.0392555   0.2813844  -0.140   0.8891
## household.income[35K-50K]  -0.3336823   0.2732968  -1.221   0.2222
## household.income[50K-75K]  -0.4432217   0.2677925  -1.655   0.0980 .
## household.income[5K-12K]    0.1637256   0.3023181   0.542   0.5882
## household.income[75K-100K] -0.4576971   0.2725190  -1.680   0.0932 .
```

```
## high.educBachelor          -0.2115200  0.2487655  -0.850   0.3953
## high.educHS Diploma/GED    -0.1026540  0.2497984  -0.411   0.6811
## high.educPost Graduate Degree -0.0302769  0.2533932  -0.119   0.9049
## high.educSome College      -0.0896484  0.2321673  -0.386   0.6994
## demo_race_hispanic1        -0.0097103  0.1192277  -0.081   0.9351
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0104
## lmer.REML = 9694.8  Scale est. = 2.4385    n = 2393
```

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)    0.8033870  0.8131741   0.988 0.323263
## PDS_score       0.0908213  0.0813154   1.117 0.264141
## race.ethnicity.5levelBlack -0.1267356  0.3321863  -0.382 0.702849
## race.ethnicity.5levelMixed  0.2784719  0.3250375   0.857 0.391670
## race.ethnicity.5levelOther  0.0003667  0.3703911   0.001 0.999210
## race.ethnicity.5levelWhite  0.1817621  0.3055718   0.595 0.552012
## interview_age   0.0075637  0.0055997   1.351 0.176899
## bmi            0.0015252  0.0115460   0.132 0.894918
## household.income[>=200K] -1.1521616  0.3120584  -3.692 0.000227 ***
## household.income[100K-200K] -1.0612508  0.2908991  -3.648 0.000269 ***
## household.income[12K-16K]   0.0674931  0.3738249   0.181 0.856737
## household.income[16K-25K]  -0.3948729  0.3128216  -1.262 0.206958
## household.income[25K-35K]  -0.3160483  0.3134866  -1.008 0.313467
## household.income[35K-50K]  -0.6684687  0.2969372  -2.251 0.024457 *
## household.income[50K-75K]  -0.7471650  0.2882832  -2.592 0.009603 **
## household.income[5K-12K]   -0.1624691  0.3278675  -0.496 0.620267
## household.income[75K-100K] -0.9749691  0.2965469  -3.288 0.001024 **
## high.educBachelor    0.4172216  0.2937254   1.420 0.155599
## high.educHS Diploma/GED -0.3359809  0.2910287  -1.154 0.248419
## high.educPost Graduate Degree 0.0912923  0.2949600   0.310 0.756961
## high.educSome College  0.3801381  0.2790734   1.362 0.173272
## demo_race_hispanic1  -0.0621657  0.1320675  -0.471 0.637887
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0255
## lmer.REML = 11128  Scale est. = 2.376    n = 2582
```

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)      0.515354   2.220846   0.232  0.81652
## pds_p_ss_categoryEarly    0.181819   0.304480   0.597  0.55047
## pds_p_ss_categoryLate    0.690550   0.770801   0.896  0.37040
## pds_p_ss_categoryMid     0.756328   0.295630   2.558  0.01058 *
## race.ethnicity.5levelBlack -0.489177   0.804046  -0.608  0.54298
## race.ethnicity.5levelMixed  1.186664   0.783467   1.515  0.13000
## race.ethnicity.5levelOther -0.048921   0.916861  -0.053  0.95745
## race.ethnicity.5levelWhite  1.170397   0.730940   1.601  0.10946
## interview_age          0.028234   0.015801   1.787  0.07409 .
## bmi                   0.018041   0.032035   0.563  0.57337
## household.income[>=200K] -2.484994   0.845716  -2.938  0.00333 **
## household.income[100K-200K] -1.530520   0.787420  -1.944  0.05205 .
## household.income[12K-16K]  -0.296461   1.008385  -0.294  0.76879
## household.income[16K-25K]  -1.203397   0.870334  -1.383  0.16689
## household.income[25K-35K]  -0.007737   0.823128  -0.009  0.99250
## household.income[35K-50K]  -1.280262   0.799148  -1.602  0.10928
## household.income[50K-75K]  -1.178881   0.783712  -1.504  0.13266
## household.income[5K-12K]    0.022507   0.883395   0.025  0.97968
## household.income[75K-100K] -1.221179   0.797590  -1.531  0.12588
## high.educBachelor          0.660875   0.729065   0.906  0.36478
## high.educHS Diploma/GED    0.577993   0.731066   0.791  0.42925
## high.educPost Graduate Degree 1.021730   0.742951   1.375  0.16919
## high.educSome College       1.003400   0.680385   1.475  0.14041
## demo_race_hispanic1        -0.030365   0.350722  -0.087  0.93101
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0177
## lmer.REML = 14757 Scale est. = 17.826    n = 2393
```

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)      3.23422    2.13597   1.514 0.130107
## pds_p_ss_categoryEarly    0.33770    0.26926   1.254 0.209885
## pds_p_ss_categoryLate   -0.44364    1.61853  -0.274 0.784031
## pds_p_ss_categoryMid     1.31557    0.51843   2.538 0.011220 *
## race.ethnicity.5levelBlack -0.49782    0.86991  -0.572 0.567195
## race.ethnicity.5levelMixed  1.21348    0.85226   1.424 0.154613
## race.ethnicity.5levelOther  0.10434    0.97069   0.107 0.914407
## race.ethnicity.5levelWhite  0.97679    0.80167   1.218 0.223166
## interview_age           0.01060    0.01462   0.725 0.468610
## bmi                     0.04052    0.03013   1.345 0.178905
## household.income[>=200K]  -3.20444    0.81904  -3.912 9.38e-05 ***
## household.income[100K-200K] -2.54245    0.76336  -3.331 0.000879 ***
## household.income[12K-16K]  -0.45756    0.98107  -0.466 0.640976
## household.income[16K-25K]  -0.01813    0.82062  -0.022 0.982371
## household.income[25K-35K]  -0.09341    0.82400  -0.113 0.909752
## household.income[35K-50K]  -1.15846    0.77888  -1.487 0.137046
## household.income[50K-75K]  -1.63401    0.75577  -2.162 0.030708 *
## household.income[5K-12K]   -0.11402    0.85923  -0.133 0.894443
## household.income[75K-100K] -2.72057    0.77773  -3.498 0.000477 ***
## high.educBachelor         1.50797    0.76994   1.959 0.050275 .
## high.educHS Diploma/GED   -0.90169    0.76348  -1.181 0.237700
## high.educPost Graduate Degree 0.75665    0.77310   0.979 0.327813
## high.educSome College      0.96114    0.73205   1.313 0.189319
## demo_race_hispanic1        0.10935    0.34898   0.313 0.754046
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0357
## lmer.REML = 16052 Scale est. = 16.164    n = 2582
```

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)      0.712308    1.249598   0.570 0.5687
## pds_p_ss_categoryEarly    0.205193    0.171892   1.194 0.2327
## pds_p_ss_categoryLate     0.262515    0.434926   0.604 0.5462
## pds_p_ss_categoryMid      0.375537    0.166525   2.255 0.0242 *
## race.ethnicity.5levelBlack -0.154278    0.450501  -0.342 0.7320
## race.ethnicity.5levelMixed  0.789507    0.439111   1.798 0.0723 .
## race.ethnicity.5levelOther  0.159298    0.514129   0.310 0.7567
## race.ethnicity.5levelWhite  0.704038    0.409586   1.719 0.0858 .
```

```
## interview_age          0.010598    0.008914    1.189    0.2346
## bmi                    -0.012694    0.018014   -0.705    0.4811
## household.income[>=200K] -0.918478    0.473990   -1.938    0.0528 .
## household.income[100K-200K] -0.374602    0.441262   -0.849    0.3960
## household.income[12K-16K]  -0.101662    0.564628   -0.180    0.8571
## household.income[16K-25K]  -0.521964    0.488287   -1.069    0.2852
## household.income[25K-35K]   0.161469    0.461399    0.350    0.7264
## household.income[35K-50K]  -0.344987    0.448011   -0.770    0.4414
## household.income[50K-75K]  -0.230054    0.439195   -0.524    0.6005
## household.income[5K-12K]   0.129438    0.495970    0.261    0.7941
## household.income[75K-100K] -0.209103    0.447042   -0.468    0.6400
## high.educBachelor         0.128066    0.407970    0.314    0.7536
## high.educHS Diploma/GED   -0.040225    0.409457   -0.098    0.9218
## high.educPost Graduate Degree 0.537975    0.415769    1.294    0.1958
## high.educSome College      0.392179    0.380811    1.030    0.3032
## demo_race_hispanic1       0.103386    0.195826    0.528    0.5976
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0136
## lmer.REML = 12042  Scale est. = 6.7337    n = 2393
```

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)    2.357399   1.200971   1.963  0.04976 *
## pds_p_ss_categoryEarly  0.144144   0.151578   0.951  0.34171
## pds_p_ss_categoryLate -0.074924   0.907919  -0.083  0.93424
## pds_p_ss_categoryMid   0.731739   0.291891   2.507  0.01224 *
## race.ethnicity.5levelBlack -0.096647   0.484563  -0.199  0.84193
## race.ethnicity.5levelMixed  0.663912   0.474508   1.399  0.16189
## race.ethnicity.5levelOther  0.307215   0.542483   0.566  0.57123
## race.ethnicity.5levelWhite  0.664502   0.446195   1.489  0.13654
## interview_age    -0.005646   0.008250  -0.684  0.49381
## bmi              0.007222   0.016967   0.426  0.67041
## household.income[>=200K] -1.296652   0.457700  -2.833  0.00465 **
## household.income[100K-200K] -0.948226   0.426746  -2.222  0.02637 *
## household.income[12K-16K]  -0.131881   0.548745  -0.240  0.81009
## household.income[16K-25K]  -0.021660   0.459182  -0.047  0.96238
## household.income[25K-35K]   0.065697   0.461284   0.142  0.88676
## household.income[35K-50K]  -0.284118   0.435571  -0.652  0.51427
## household.income[50K-75K]  -0.696215   0.422665  -1.647  0.09964 .
## household.income[5K-12K]   0.039472   0.480723   0.082  0.93457
## household.income[75K-100K] -0.972538   0.434663  -2.237  0.02534 *
```

```
## high.educBachelor          1.194912    0.431053    2.772  0.00561 **
## high.educHS Diploma/GED   -0.213100    0.427690   -0.498  0.61835
## high.educPost Graduate Degree 0.855498    0.432751    1.977  0.04816 *
## high.educSome College      0.719937    0.410099    1.756  0.07929 .
## demo_race_hispanic1        0.160561    0.195228    0.822  0.41091
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0196
## lmer.REML = 13121 Scale est. = 6.672    n = 2582
```

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)    0.685287   0.652785   1.050  0.29392
## pds_p_ss_categoryEarly -0.014723   0.089968  -0.164  0.87002
## pds_p_ss_categoryLate  0.348598   0.227289   1.534  0.12523
## pds_p_ss_categoryMid   0.171908   0.086948   1.977  0.04814 *
## race.ethnicity.5levelBlack -0.379039   0.234582  -1.616  0.10627
## race.ethnicity.5levelMixed -0.027092   0.228506  -0.119  0.90563
## race.ethnicity.5levelOther -0.288256   0.267454  -1.078  0.28124
## race.ethnicity.5levelWhite -0.069125   0.213328  -0.324  0.74594
## interview_age      0.004899   0.004668   1.049  0.29413
## bmi                0.009912   0.009392   1.055  0.29134
## household.income[>=200K] -0.796185   0.246163  -3.234  0.00124 **
## household.income[100K-200K] -0.570113   0.229054  -2.489  0.01288 *
## household.income[12K-16K] -0.281132   0.292691  -0.961  0.33690
## household.income[16K-25K] -0.368348   0.253986  -1.450  0.14712
## household.income[25K-35K] -0.033463   0.239558  -0.140  0.88892
## household.income[35K-50K] -0.545609   0.232715  -2.345  0.01913 *
## household.income[50K-75K] -0.483238   0.227967  -2.120  0.03413 *
## household.income[5K-12K] -0.054763   0.258043  -0.212  0.83195
## household.income[75K-100K] -0.494470   0.232114  -2.130  0.03325 *
## high.educBachelor    -0.035306   0.211327  -0.167  0.86733
## high.educHS Diploma/GED  0.205500   0.212471   0.967  0.33355
## high.educPost Graduate Degree -0.012979   0.215409  -0.060  0.95196
## high.educSome College  0.004969   0.197313   0.025  0.97991
## demo_race_hispanic1  -0.018204   0.101669  -0.179  0.85791
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0201
```

```
## lmer.REML = 8979.8  Scale est. = 2.2981    n = 2393
```

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)    0.407182   0.693136   0.587 0.556955
## pds_p_ss_categoryEarly    0.055312   0.087693   0.631 0.528263
## pds_p_ss_categoryLate   -0.737010   0.526296  -1.400 0.161523
## pds_p_ss_categoryMid     0.404176   0.169036   2.391 0.016871 *
## race.ethnicity.5levelBlack -0.124736   0.281366  -0.443 0.657569
## race.ethnicity.5levelMixed  0.288589   0.275972   1.046 0.295790
## race.ethnicity.5levelOther  0.015394   0.314979   0.049 0.961023
## race.ethnicity.5levelWhite  0.128912   0.259272   0.497 0.619085
## interview_age     0.011901   0.004756   2.502 0.012399 *
## bmi               0.002317   0.009820   0.236 0.813516
## household.income[>=200K]  -1.066349   0.265225  -4.021 5.97e-05 ***
## household.income[100K-200K] -0.885045   0.247582  -3.575 0.000357 ***
## household.income[12K-16K]  -0.001812   0.318720  -0.006 0.995464
## household.income[16K-25K]   0.039187   0.266569   0.147 0.883140
## household.income[25K-35K]  -0.092237   0.267760  -0.344 0.730517
## household.income[35K-50K]  -0.478167   0.253002  -1.890 0.058874 .
## household.income[50K-75K]  -0.615194   0.245417  -2.507 0.012247 *
## household.income[5K-12K]   -0.051611   0.279285  -0.185 0.853403
## household.income[75K-100K] -0.960501   0.252389  -3.806 0.000145 ***
## high.educBachelor    -0.015881   0.249829  -0.064 0.949318
## high.educHS Diploma/GED -0.606079   0.247775  -2.446 0.014508 *
## high.educPost Graduate Degree -0.269326   0.250891  -1.073 0.283159
## high.educSome College   -0.134534   0.237488  -0.566 0.571111
## demo_race_hispanic1    -0.075538   0.110057  -0.686 0.492552
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0394
## lmer.REML = 10316  Scale est. = 1.9432    n = 2582
```

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)      1.254271   0.761815   1.646  0.0998 .
## pds_p_ss_categoryEarly -0.031469   0.104843  -0.300  0.7641
## pds_p_ss_categoryLate  0.127442   0.265291   0.480  0.6310
## pds_p_ss_categoryMid   0.127942   0.101585   1.259  0.2080
## race.ethnicity.5levelBlack -0.175222   0.274631  -0.638  0.5235
## race.ethnicity.5levelMixed  0.198858   0.267809   0.743  0.4578
## race.ethnicity.5levelOther -0.235300   0.313628  -0.750  0.4532
## race.ethnicity.5levelWhite  0.213269   0.249686   0.854  0.3931
## interview_age        0.001470   0.005435   0.271  0.7868
## bmi                  0.003036   0.010991   0.276  0.7824
## household.income[>=200K] -0.713207   0.289257  -2.466  0.0137 *
## household.income[100K-200K] -0.551048   0.269311  -2.046  0.0409 *
## household.income[12K-16K] -0.005753   0.344647  -0.017  0.9867
## household.income[16K-25K] -0.453692   0.298004  -1.522  0.1280
## household.income[25K-35K] -0.047835   0.281624  -0.170  0.8651
## household.income[35K-50K] -0.341577   0.273423  -1.249  0.2117
## household.income[50K-75K] -0.440780   0.268058  -1.644  0.1002
## household.income[5K-12K]  0.164917   0.302684   0.545  0.5859
## household.income[75K-100K] -0.457504   0.272841  -1.677  0.0937 .
## high.educBachelor      -0.224131   0.249030  -0.900  0.3682
## high.educHS Diploma/GED -0.104752   0.249911  -0.419  0.6751
## high.educPost Graduate Degree -0.042354   0.253781  -0.167  0.8675
## high.educSome College   -0.090303   0.232462  -0.388  0.6977
## demo_race_hispanic1     -0.016516   0.119227  -0.139  0.8898
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00935
## lmer.REML = 9698.5  Scale est. = 2.4591    n = 2393
```

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)      0.871849   0.814931   1.070  0.284791
## pds_p_ss_categoryEarly  0.132906   0.102833   1.292  0.196319
## pds_p_ss_categoryLate -0.053353   0.618118  -0.086  0.931223
## pds_p_ss_categoryMid   0.224861   0.198051   1.135  0.256326
## race.ethnicity.5levelBlack -0.122261   0.331888  -0.368  0.712621
## race.ethnicity.5levelMixed  0.289637   0.325272   0.890  0.373311
## race.ethnicity.5levelOther  0.009502   0.370571   0.026  0.979545
```

```
## race.ethnicity.5levelWhite      0.200115   0.305865   0.654 0.513004
## interview_age                   0.007626   0.005580   1.367 0.171857
## bmi                             0.001369   0.011510   0.119 0.905337
## household.income[>=200K]       -1.154950   0.312539  -3.695 0.000224 ***
## household.income[100K-200K]    -1.062598   0.291411  -3.646 0.000271 ***
## household.income[12K-16K]       0.056001   0.374670   0.149 0.881197
## household.income[16K-25K]      -0.400816   0.313370  -1.279 0.200995
## household.income[25K-35K]      -0.320948   0.314680  -1.020 0.307863
## household.income[35K-50K]      -0.671560   0.297447  -2.258 0.024045 *
## household.income[50K-75K]      -0.747285   0.288599  -2.589 0.009670 **
## household.income[5K-12K]       -0.169623   0.328180  -0.517 0.605300
## household.income[75K-100K]     -0.979784   0.296948  -3.300 0.000982 ***
## high.educBachelor              0.413478   0.293922   1.407 0.159619
## high.educHS Diploma/GED       -0.343192   0.291450  -1.178 0.239093
## high.educPost Graduate Degree  0.087732   0.295142   0.297 0.766298
## high.educSome College          0.370855   0.279424   1.327 0.184557
## demo_race_hispanic1           -0.067165   0.132218  -0.508 0.611505
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0252
## lmer.REML = 11127  Scale est. = 2.3763    n = 2582
```

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)    -2.202149   2.280520  -0.966 0.334335
## hormone_scr_ert_mean      0.001591   0.007417   0.215 0.830155
## hormone_sal_end_min_since_midnight  0.000333   0.000704   0.473 0.636225
## race.ethnicity.5levelBlack    -0.564439   0.816203  -0.692 0.489299
## race.ethnicity.5levelMixed     1.216996   0.796092   1.529 0.126481
## race.ethnicity.5levelOther    -0.257284   0.939620  -0.274 0.784251
## race.ethnicity.5levelWhite     1.214960   0.740255   1.641 0.100886
## interview_age      0.044621   0.015797   2.825 0.004778 **
## bmi                0.061797   0.032227   1.918 0.055302 .
## household.income[>=200K]     -2.985044   0.872121  -3.423 0.000631 ***
## household.income[100K-200K]  -2.097440   0.809473  -2.591 0.009630 **
## household.income[12K-16K]    -0.727069   1.048155  -0.694 0.487966
## household.income[16K-25K]    -1.411506   0.901101  -1.566 0.117395
## household.income[25K-35K]    -0.571138   0.846422  -0.675 0.499895
## household.income[35K-50K]    -1.576855   0.823333  -1.915 0.055597 .
## household.income[50K-75K]    -1.595383   0.809216  -1.972 0.048792 *
```

```
## household.income[5K-12K] -0.556654 0.927818 -0.600 0.548595
## household.income[75K-100K] -1.766294 0.820500 -2.153 0.031452 *
## high.educBachelor 1.083622 0.760606 1.425 0.154393
## high.educHS Diploma/GED 1.135117 0.762582 1.489 0.136759
## high.educPost Graduate Degree 1.521768 0.774672 1.964 0.049611 *
## high.educSome College 1.495050 0.709347 2.108 0.035176 *
## demo_race_hispanic1 -0.097395 0.364022 -0.268 0.789069
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0182
## lmer.REML = 13547 Scale est. = 17.516 n = 2194
```

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)    3.3805002   2.2422418   1.508 0.131779
## hormone_scr_ert_mean 0.0048902   0.0078223   0.625 0.531920
## hormone_sal_end_min_since_midnight 0.0010682   0.0006797   1.571 0.116201
## race.ethnicity.5levelBlack -0.3905890   0.8915577  -0.438 0.661356
## race.ethnicity.5levelMixed  1.0664243   0.8715831   1.224 0.221244
## race.ethnicity.5levelOther  0.1315377   0.9908942   0.133 0.894405
## race.ethnicity.5levelWhite  0.9982003   0.8192768   1.218 0.223196
## interview_age    0.0077550   0.0149298   0.519 0.603509
## bmi              0.0294019   0.0310430   0.947 0.343667
## household.income[>=200K] -3.2993791   0.8497547  -3.883 0.000106 ***
## household.income[100K-200K] -2.7505412   0.7949687  -3.460 0.000550 ***
## household.income[12K-16K] -0.2712899   1.0305554  -0.263 0.792384
## household.income[16K-25K] -0.2957324   0.8540034  -0.346 0.729156
## household.income[25K-35K] -0.9298497   0.8532212  -1.090 0.275907
## household.income[35K-50K] -1.4396566   0.8107853  -1.776 0.075922 .
## household.income[50K-75K] -1.9121216   0.7874051  -2.428 0.015240 *
## household.income[5K-12K] -0.2386447   0.8838600  -0.270 0.787182
## household.income[75K-100K] -2.8686350   0.8101562  -3.541 0.000407 ***
## high.educBachelor  1.2412073   0.7964565   1.558 0.119269
## high.educHS Diploma/GED -0.7449949   0.7903784  -0.943 0.345992
## high.educPost Graduate Degree 0.4536646   0.8010613   0.566 0.571223
## high.educSome College 0.8549347   0.7581064   1.128 0.259551
## demo_race_hispanic1 -0.0429705   0.3570446  -0.120 0.904216
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) = 0.0314
## lmer.REML = 14838 Scale est. = 14.802 n = 2392
```

1.10 Model: CBCL Anxious-Depressed ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##     race.ethnicity.5level + interview_age + bmi + household.income +
##     high.educ + demo_race_hispanic
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -0.6772703    1.2914696  -0.524   0.6000
## hormone_scr_ert_mean                0.0004716    0.0042039   0.112   0.9107
## hormone_sal_end_min_since_midnight  0.0003276    0.0003970   0.825   0.4093
## race.ethnicity.5levelBlack          -0.1368519    0.4594753  -0.298   0.7659
## race.ethnicity.5levelMixed           0.8384900    0.4484098   1.870   0.0616 .
## race.ethnicity.5levelOther           0.1023564    0.5295352   0.193   0.8467
## race.ethnicity.5levelWhite           0.7245162    0.4167716   1.738   0.0823 .
## interview_age                      0.0192288    0.0089747   2.143   0.0323 *
## bmi                                0.0059966    0.0182163   0.329   0.7420
## household.income[>=200K]            -1.0963527    0.4912061  -2.232   0.0257 *
## household.income[100K-200K]          -0.5902143    0.4558312  -1.295   0.1955
## household.income[12K-16K]            -0.1953279    0.5895983  -0.331   0.7405
## household.income[16K-25K]            -0.6022378    0.5082887  -1.185   0.2362
## household.income[25K-35K]            -0.0412148    0.4767757  -0.086   0.9311
## household.income[35K-50K]            -0.4586758    0.4638686  -0.989   0.3229
## household.income[50K-75K]            -0.3492380    0.4556672  -0.766   0.4435
## household.income[5K-12K]             -0.1950754    0.5241195  -0.372   0.7098
## household.income[75K-100K]           -0.4164295    0.4621374  -0.901   0.3676
## high.educBachelor                   0.1977527    0.4281320   0.462   0.6442
## high.educHS Diploma/GED             0.1323975    0.4297721   0.308   0.7581
## high.educPost Graduate Degree         0.6574649    0.4361054   1.508   0.1318
## high.educSome College                 0.4952835    0.3994622   1.240   0.2152
## demo_race_hispanic1                  0.0680369    0.2042909   0.333   0.7391
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0129
## lmer.REML = 11083 Scale est. = 6.8399 n = 2194
```

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)      2.7051814   1.2631914    2.142  0.03233 *
## hormone_scr_ert_mean      0.0035098   0.0044094    0.796  0.42612
## hormone_sal_end_min_since_midnight  0.0002172   0.0003830    0.567  0.57072
## race.ethnicity.5levelBlack      -0.1091037   0.4986411   -0.219  0.82682
## race.ethnicity.5levelMixed      0.5093862   0.4873293    1.045  0.29601
## race.ethnicity.5levelOther      0.2905096   0.5558033    0.523  0.60124
## race.ethnicity.5levelWhite      0.6490454   0.4579377    1.417  0.15652
## interview_age      -0.0075488   0.0084397   -0.894  0.37118
## bmi      0.0014931   0.0175061    0.085  0.93204
## household.income[>=200K]      -1.3496427   0.4764029   -2.833  0.00465 **
## household.income[100K-200K]      -1.0648583   0.4458635   -2.388  0.01700 *
## household.income[12K-16K]      0.0294426   0.5776482    0.051  0.95935
## household.income[16K-25K]      -0.2426899   0.4792974   -0.506  0.61266
## household.income[25K-35K]      -0.3537938   0.4787290   -0.739  0.45996
## household.income[35K-50K]      -0.4504315   0.4546905   -0.991  0.32197
## household.income[50K-75K]      -0.8535088   0.4416677   -1.932  0.05342 .
## household.income[5K-12K]      0.0016688   0.4956448    0.003  0.99731
## household.income[75K-100K]      -1.0511528   0.4542723   -2.314  0.02076 *
## high.educBachelor      1.0842458   0.4467321    2.427  0.01530 *
## high.educHS Diploma/GED      -0.0843212   0.4434692   -0.190  0.84922
## high.educPost Graduate Degree      0.7382547   0.4492819    1.643  0.10048
## high.educSome College      0.6915840   0.4253707    1.626  0.10412
## demo_race_hispanic1      0.0969560   0.2003195    0.484  0.62843
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0149
## lmer.REML = 12127  Scale est. = 5.9662    n = 2392

```

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)      2.037e-01   6.726e-01    0.303  0.76200
## hormone_scr_ert_mean      4.124e-03   2.189e-03    1.884  0.05974 .
## hormone_sal_end_min_since_midnight -7.106e-05   2.069e-04   -0.343  0.73136
## race.ethnicity.5levelBlack      -4.212e-01   2.384e-01   -1.766  0.07745 .

```

```

## race.ethnicity.5levelMixed      -8.803e-04  2.326e-01  -0.004  0.99698
## race.ethnicity.5levelOther      -3.356e-01  2.745e-01  -1.222  0.22169
## race.ethnicity.5levelWhite      -2.897e-02  2.163e-01  -0.134  0.89345
## interview_age                   6.707e-03  4.685e-03   1.432  0.15241
## bmi                             1.811e-02  9.463e-03   1.914  0.05579 .
## household.income[>=200K]        -9.507e-01  2.543e-01  -3.738  0.00019 ***
## household.income[100K-200K]     -7.053e-01  2.359e-01  -2.990  0.00282 **
## household.income[12K-16K]       -4.337e-01  3.047e-01  -1.423  0.15477
## household.income[16K-25K]       -3.490e-01  2.637e-01  -1.324  0.18571
## household.income[25K-35K]       -1.819e-01  2.468e-01  -0.737  0.46114
## household.income[35K-50K]       -6.173e-01  2.402e-01  -2.570  0.01024 *
## household.income[50K-75K]       -5.894e-01  2.358e-01  -2.500  0.01251 *
## household.income[5K-12K]        -1.436e-01  2.721e-01  -0.528  0.59789
## household.income[75K-100K]      -6.301e-01  2.392e-01  -2.634  0.00850 **
## high.educBachelor               1.357e-01  2.215e-01   0.613  0.54025
## high.educHS Diploma/GED         4.185e-01  2.228e-01   1.878  0.06050 .
## high.educPost Graduate Degree    1.955e-01  2.257e-01   0.866  0.38656
## high.educSome College            2.308e-01  2.068e-01   1.116  0.26454
## demo_race_hispanic1             -1.692e-02  1.058e-01  -0.160  0.87297
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0203
## lmer.REML = 8259.1  Scale est. = 2.2518    n = 2194

```

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)    0.1299469   0.7318285   0.178 0.859080
## hormone_scr_ert_mean    0.0034224   0.0025461   1.344 0.179022
## hormone_sal_end_min_since_midnight  0.0004998   0.0002140   2.336 0.019585 *
## race.ethnicity.5levelBlack   -0.1106784   0.2897457  -0.382 0.702507
## race.ethnicity.5levelMixed    0.2910055   0.2836290   1.026 0.304993
## race.ethnicity.5levelOther    0.0538053   0.3235524   0.166 0.867939
## race.ethnicity.5levelWhite    0.1483680   0.2660515   0.558 0.577125
## interview_age      0.0117943   0.0048977   2.408 0.016110 *
## bmi               -0.0015056   0.0101905  -0.148 0.882556
## household.income[>=200K]    -1.1103698   0.2766330  -4.014 6.16e-05 ***
## household.income[100K-200K] -0.9580569   0.2593356  -3.694 0.000226 ***
## household.income[12K-16K]   -0.0037480   0.3368989  -0.011 0.991125
## household.income[16K-25K]   -0.0025972   0.2792502  -0.009 0.992580
## household.income[25K-35K]   -0.3072663   0.2789262  -1.102 0.270746
## household.income[35K-50K]   -0.5514530   0.2650600  -2.080 0.037588 *

```

```
## household.income[50K-75K]          -0.7152422  0.2572210  -2.781  0.005468 **
## household.income[5K-12K]           -0.0757049  0.2891869  -0.262  0.793510
## household.income[75K-100K]         -1.0095935  0.2644996  -3.817  0.000139 ***
## high.educBachelor                  -0.0563274  0.2596880  -0.217  0.828302
## high.educHS Diploma/GED            -0.5501548  0.2577726  -2.134  0.032924 *
## high.educPost Graduate Degree       -0.3278045  0.2613063  -1.254  0.209790
## high.educSome College               -0.1289879  0.2470983  -0.522  0.601712
## demo_race_hispanic1                -0.1483359  0.1121480  -1.323  0.186070
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0396
## lmer.REML =   9561  Scale est. = 1.9242    n = 2392
```

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)    0.5448231  0.7855508   0.694  0.48804
## hormone_scr_ert_mean    0.0002492  0.0025575   0.097  0.92238
## hormone_sal_end_min_since_midnight  0.0001340  0.0002405   0.557  0.57748
## race.ethnicity.5levelBlack -0.1485679  0.2793271  -0.532  0.59487
## race.ethnicity.5levelMixed  0.2228049  0.2728009   0.817  0.41417
## race.ethnicity.5levelOther -0.2463580  0.3222510  -0.764  0.44466
## race.ethnicity.5levelWhite  0.2689667  0.2533752   1.062  0.28856
## interview_age    0.0050960  0.0054599   0.933  0.35074
## bmi              0.0136328  0.0110909   1.229  0.21914
## household.income[>=200K]    -0.8399652  0.2990620  -2.809  0.00502 **
## household.income[100K-200K] -0.6906508  0.2775604  -2.488  0.01291 *
## household.income[12K-16K]   -0.1248396  0.3590775  -0.348  0.72812
## household.income[16K-25K]   -0.4488379  0.3095188  -1.450  0.14717
## household.income[25K-35K]   -0.1706572  0.2903564  -0.588  0.55676
## household.income[35K-50K]   -0.4208837  0.2824487  -1.490  0.13634
## household.income[50K-75K]   -0.5418391  0.2774752  -1.953  0.05098 .
## household.income[5K-12K]    -0.0400520  0.3191595  -0.125  0.90015
## household.income[75K-100K]  -0.5672067  0.2814055  -2.016  0.04396 *
## high.educBachelor          -0.1290761  0.2607057  -0.495  0.62058
## high.educHS Diploma/GED    -0.0003630  0.2616818  -0.001  0.99889
## high.educPost Graduate Degree  0.0669397  0.2655463   0.252  0.80100
## high.educSome College       0.0006746  0.2432671   0.003  0.99779
## demo_race_hispanic1        -0.0492478  0.1239892  -0.397  0.69126
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.0086
## lmer.REML = 8927 Scale est. = 2.504 n = 2194

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) 1.1089210 0.8528185 1.300 0.193624
## hormone_scr_ert_mean 0.0025473 0.0029744 0.856 0.391856
## hormone_sal_end_min_since_midnight 0.0004028 0.0002568 1.568 0.116947
## race.ethnicity.5levelBlack -0.1048659 0.3389517 -0.309 0.757057
## race.ethnicity.5levelMixed 0.2323189 0.3314597 0.701 0.483437
## race.ethnicity.5levelOther 0.0553055 0.3770389 0.147 0.883394
## race.ethnicity.5levelWhite 0.1963183 0.3114462 0.630 0.528530
## interview_age 0.0054812 0.0056847 0.964 0.335038
## bmi -0.0041071 0.0118219 -0.347 0.728313
## household.income[>=200K] -1.2041317 0.3231176 -3.727 0.000199 ***
## household.income[100K-200K] -1.1848778 0.3024065 -3.918 9.18e-05 ***
## household.income[12K-16K] 0.0684012 0.3921856 0.174 0.861558
## household.income[16K-25K] -0.4522390 0.3249924 -1.392 0.164193
## household.income[25K-35K] -0.6489931 0.3246895 -1.999 0.045743 *
## household.income[35K-50K] -0.8104691 0.3085476 -2.627 0.008677 **
## household.income[50K-75K] -0.8808591 0.2996055 -2.940 0.003313 **
## household.income[5K-12K] -0.2348057 0.3364084 -0.698 0.485259
## household.income[75K-100K] -1.0337418 0.3082316 -3.354 0.000810 ***
## high.educBachelor 0.2793866 0.3029385 0.922 0.356489
## high.educHS Diploma/GED -0.3735840 0.3006348 -1.243 0.214120
## high.educPost Graduate Degree -0.0428537 0.3047169 -0.141 0.888171
## high.educSome College 0.2771872 0.2883268 0.961 0.336467
## demo_race_hispanic1 -0.1314448 0.1348643 -0.975 0.329836
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0257
## lmer.REML = 10263 Scale est. = 2.2078 n = 2392
```

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)	-1.0235183	2.2937529	-0.446	0.655483
## hormone_scr_ert_mean	-0.0039075	0.0075274	-0.519	0.603738
## hormone_sal_end_min_since_midnight	0.0003904	0.0007025	0.556	0.578475
## PDS_score	0.6968211	0.1813164	3.843	0.000125 ***
## race.ethnicity.5levelBlack	-0.8738375	0.8173791	-1.069	0.285156
## race.ethnicity.5levelMixed	1.0856218	0.7939893	1.367	0.171673
## race.ethnicity.5levelOther	-0.3238110	0.9364448	-0.346	0.729536
## race.ethnicity.5levelWhite	1.1398878	0.7379822	1.545	0.122589
## interview_age	0.0293430	0.0162433	1.806	0.070984 .
## bmi	0.0418235	0.0325327	1.286	0.198726
## household.income[>=200K]	-2.7947142	0.8702052	-3.212	0.001339 **
## household.income[100K-200K]	-1.9360962	0.8074842	-2.398	0.016583 *
## household.income[12K-16K]	-0.5222649	1.0454545	-0.500	0.617437
## household.income[16K-25K]	-1.3051584	0.8981967	-1.453	0.146344
## household.income[25K-35K]	-0.4354260	0.8439344	-0.516	0.605943
## household.income[35K-50K]	-1.4569271	0.8208460	-1.775	0.076053 .
## household.income[50K-75K]	-1.4951269	0.8065764	-1.854	0.063922 .
## household.income[5K-12K]	-0.4912888	0.9246786	-0.531	0.595260
## household.income[75K-100K]	-1.5973797	0.8185850	-1.951	0.051139 .
## high.educBachelor	1.0797204	0.7577160	1.425	0.154310
## high.educHS Diploma/GED	1.0730662	0.7599078	1.412	0.158064
## high.educPost Graduate Degree	1.5024283	0.7717551	1.947	0.051691 .
## high.educSome College	1.3854747	0.7072093	1.959	0.050232 .
## demo_race_hispanic1	-0.0519846	0.3630728	-0.143	0.886162

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0237
## lmer.REML = 13534  Scale est. = 17.697    n = 2194
```

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)	3.3555049	2.2393249	1.498	0.134151
## hormone_scr_ert_mean	0.0030847	0.0078412	0.393	0.694061

```

## hormone_sal_end_min_since_midnight 0.0010918 0.0006787 1.609 0.107844
## PDS_score 0.5964451 0.2235365 2.668 0.007677 **
## race.ethnicity.5levelBlack -0.5787815 0.8933340 -0.648 0.517119
## race.ethnicity.5levelMixed 1.0652490 0.8705881 1.224 0.221226
## race.ethnicity.5levelOther 0.1536256 0.9897469 0.155 0.876663
## race.ethnicity.5levelWhite 1.0080296 0.8183389 1.232 0.218146
## interview_age 0.0028944 0.0150225 0.193 0.847232
## bmi 0.0178667 0.0313010 0.571 0.568188
## household.income[>=200K] -3.1021961 0.8520024 -3.641 0.000277 ***
## household.income[100K-200K] -2.5588013 0.7973164 -3.209 0.001349 **
## household.income[12K-16K] -0.1776146 1.0299995 -0.172 0.863105
## household.income[16K-25K] -0.1222170 0.8555048 -0.143 0.886413
## household.income[25K-35K] -0.7270881 0.8556224 -0.850 0.395535
## household.income[35K-50K] -1.2542279 0.8128651 -1.543 0.122971
## household.income[50K-75K] -1.7630756 0.7884980 -2.236 0.025445 *
## household.income[5K-12K] -0.2034881 0.8829576 -0.230 0.817753
## household.income[75K-100K] -2.6779137 0.8123872 -3.296 0.000994 ***
## high.educBachelor 1.1500976 0.7962569 1.444 0.148764
## high.educHS Diploma/GED -0.8435550 0.7903163 -1.067 0.285916
## high.educPost Graduate Degree 0.3672177 0.8007837 0.459 0.646583
## high.educSome College 0.7355487 0.7585390 0.970 0.332299
## demo_race_hispanic1 -0.0565550 0.3565637 -0.159 0.873989
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0331
## lmer.REML = 14832 Scale est. = 14.69 n = 2392

```

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)   -0.4791156  2.3737499  -0.202  0.84006
## hormone_scr_ert_mean -0.0018296  0.0075063  -0.244  0.80745
## hormone_sal_end_min_since_midnight 0.0003195  0.0007049   0.453  0.65037
## pds_p_ss_categoryEarly 0.3199518  0.3157908   1.013  0.31109
## pds_p_ss_categoryLate 0.7413169  0.8198696   0.904  0.36600
## pds_p_ss_categoryMid 0.8521830  0.3109844   2.740  0.00619 **
## race.ethnicity.5levelBlack -0.7575458  0.8179247  -0.926  0.35446
## race.ethnicity.5levelMixed 1.1289051  0.7953866   1.419  0.15595
## race.ethnicity.5levelOther -0.2785297  0.9380016  -0.297  0.76654
## race.ethnicity.5levelWhite 1.1648902  0.7392110   1.576  0.11520
## interview_age 0.0314119  0.0166281   1.889  0.05901 .

```

```
## bmi 0.0361033 0.0337279 1.070 0.28455
## household.income[>=200K] -2.8229835 0.8727427 -3.235 0.00124 **
## household.income[100K-200K] -1.9541412 0.8100575 -2.412 0.01593 *
## household.income[12K-16K] -0.6780736 1.0467838 -0.648 0.51720
## household.income[16K-25K] -1.3046423 0.9003999 -1.449 0.14749
## household.income[25K-35K] -0.5202213 0.8459213 -0.615 0.53864
## household.income[35K-50K] -1.5206784 0.8221872 -1.850 0.06451 .
## household.income[50K-75K] -1.5254036 0.8084430 -1.887 0.05932 .
## household.income[5K-12K] -0.5169751 0.9266703 -0.558 0.57698
## household.income[75K-100K] -1.6452994 0.8204060 -2.005 0.04504 *
## high.educBachelor 1.0535667 0.7602749 1.386 0.16596
## high.educHS Diploma/GED 1.0940361 0.7613975 1.437 0.15090
## high.educPost Graduate Degree 1.4814336 0.7745445 1.913 0.05592 .
## high.educSome College 1.4376086 0.7093335 2.027 0.04281 *
## demo_race_hispanic1 -0.1029159 0.3635832 -0.283 0.77716
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0204
## lmer.REML = 13540 Scale est. = 17.955 n = 2194
```

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) 3.5811749 2.2456007 1.595 0.110901
## hormone_scr_ert_mean 0.0039347 0.0078309 0.502 0.615396
## hormone_sal_end_min_since_midnight 0.0010882 0.0006794 1.602 0.109323
## pds_p_ss_categoryEarly 0.4034434 0.2793663 1.444 0.148833
## pds_p_ss_categoryLate 1.4982688 1.9532895 0.767 0.443129
## pds_p_ss_categoryMid 1.1662689 0.5312009 2.196 0.028222 *
## race.ethnicity.5levelBlack -0.5281809 0.8931675 -0.591 0.554338
## race.ethnicity.5levelMixed 1.1256653 0.8716952 1.291 0.196708
## race.ethnicity.5levelOther 0.1801788 0.9908638 0.182 0.855724
## race.ethnicity.5levelWhite 1.0874633 0.8197727 1.327 0.184788
## interview_age 0.0046756 0.0149915 0.312 0.755157
## bmi 0.0214360 0.0312173 0.687 0.492357
## household.income[>=200K] -3.1076288 0.8538593 -3.640 0.000279 ***
## household.income[100K-200K] -2.5610841 0.7992413 -3.204 0.001371 **
## household.income[12K-16K] -0.1799988 1.0327250 -0.174 0.861649
## household.income[16K-25K] -0.1284680 0.8575024 -0.150 0.880922
## household.income[25K-35K] -0.7083791 0.8601272 -0.824 0.410264
## household.income[35K-50K] -1.2590822 0.8151572 -1.545 0.122580
## household.income[50K-75K] -1.7624825 0.7899045 -2.231 0.025757 *
```

```
## household.income[5K-12K] -0.1929420 0.8848564 -0.218 0.827410
## household.income[75K-100K] -2.6915897 0.8139773 -3.307 0.000958 ***
## high.educBachelor 1.2022349 0.7968383 1.509 0.131495
## high.educHS Diploma/GED -0.8214976 0.7916041 -1.038 0.299486
## high.educPost Graduate Degree 0.4184123 0.8013957 0.522 0.601646
## high.educSome College 0.7681790 0.7594912 1.011 0.311910
## demo_race_hispanic1 -0.0732975 0.3571391 -0.205 0.837406
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0323
## lmer.REML = 14829 Scale est. = 14.704 n = 2392
```

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) -0.1474743 1.3006223 -0.113 0.90973
## hormone_scr_ert_mean -0.0020267 0.0042730 -0.474 0.63532
## hormone_sal_end_min_since_midnight 0.0003520 0.0003967 0.887 0.37504
## PDS_score 0.3139131 0.1027613 3.055 0.00228 **
## race.ethnicity.5levelBlack -0.2742696 0.4607915 -0.595 0.55176
## race.ethnicity.5levelMixed 0.7800913 0.4478394 1.742 0.08167 .
## race.ethnicity.5levelOther 0.0738792 0.5284416 0.140 0.88883
## race.ethnicity.5levelWhite 0.6910203 0.4160889 1.661 0.09691 .
## interview_age 0.0123825 0.0092363 1.341 0.18018
## bmi -0.0031050 0.0184162 -0.169 0.86613
## household.income[>=200K] -1.0108430 0.4907583 -2.060 0.03954 *
## household.income[100K-200K] -0.5181084 0.4552856 -1.138 0.25525
## household.income[12K-16K] -0.1029896 0.5888390 -0.175 0.86117
## household.income[16K-25K] -0.5560220 0.5073000 -1.096 0.27318
## household.income[25K-35K] 0.0186861 0.4759666 0.039 0.96869
## household.income[35K-50K] -0.4055175 0.4630561 -0.876 0.38127
## household.income[50K-75K] -0.3051537 0.4547577 -0.671 0.50228
## household.income[5K-12K] -0.1680152 0.5229856 -0.321 0.74804
## household.income[75K-100K] -0.3409762 0.4616468 -0.739 0.46022
## high.educBachelor 0.1972908 0.4270731 0.462 0.64416
## high.educHS Diploma/GED 0.1063651 0.4288322 0.248 0.80413
## high.educPost Graduate Degree 0.6494771 0.4350427 1.493 0.13561
## high.educSome College 0.4468687 0.3987839 1.121 0.26259
## demo_race_hispanic1 0.0883378 0.2040670 0.433 0.66514
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.0158
## lmer.REML = 11077 Scale est. = 6.9027 n = 2194

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)	2.6893771	1.2618611	2.131	0.03317 *
## hormone_scr_ert_mean	0.0025645	0.0044209	0.580	0.56191
## hormone_sal_end_min_since_midnight	0.0002306	0.0003826	0.603	0.54685
## PDS_score	0.3145322	0.1261218	2.494	0.01270 *
## race.ethnicity.5levelBlack	-0.2060364	0.4997066	-0.412	0.68015
## race.ethnicity.5levelMixed	0.5111685	0.4869047	1.050	0.29390
## race.ethnicity.5levelOther	0.3041434	0.5553086	0.548	0.58395
## race.ethnicity.5levelWhite	0.6562924	0.4575521	1.434	0.15160
## interview_age	-0.0101159	0.0084939	-1.191	0.23379
## bmi	-0.0046039	0.0176575	-0.261	0.79432
## household.income[>=200K]	-1.2448737	0.4777880	-2.605	0.00923 **
## household.income[100K-200K]	-0.9628445	0.4473009	-2.153	0.03145 *
## household.income[12K-16K]	0.0800668	0.5774493	0.139	0.88973
## household.income[16K-25K]	-0.1514097	0.4802239	-0.315	0.75257
## household.income[25K-35K]	-0.2464034	0.4801862	-0.513	0.60790
## household.income[35K-50K]	-0.3532115	0.4559252	-0.775	0.43859
## household.income[50K-75K]	-0.7744322	0.4423742	-1.751	0.08014 .
## household.income[5K-12K]	0.0207600	0.4952209	0.042	0.96657
## household.income[75K-100K]	-0.9504640	0.4556162	-2.086	0.03708 *
## high.educBachelor	1.0359970	0.4467055	2.319	0.02047 *
## high.educHS Diploma/GED	-0.1363819	0.4435177	-0.308	0.75849
## high.educPost Graduate Degree	0.6923039	0.4492151	1.541	0.12342
## high.educSome College	0.6283093	0.4257019	1.476	0.14009
## demo_race_hispanic1	0.0902449	0.2001212	0.451	0.65207

```
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0164
## lmer.REML = 12123 Scale est. = 5.9262 n = 2392
```

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)      0.1130945   1.3447302    0.084  0.9330
## hormone_scr_ert_mean -0.0010164   0.0042580   -0.239  0.8114
## hormone_sal_end_min_since_midnight 0.0003058   0.0003977    0.769  0.4420
## pds_p_ss_categoryEarly 0.2452367   0.1794051    1.367  0.1718
## pds_p_ss_categoryLate 0.2714538   0.4653101    0.583  0.5597
## pds_p_ss_categoryMid 0.4063780   0.1763814    2.304  0.0213 *
## race.ethnicity.5levelBlack -0.2162464   0.4608365   -0.469  0.6389
## race.ethnicity.5levelMixed 0.7990085   0.4483636    1.782  0.0749 .
## race.ethnicity.5levelOther 0.0908101   0.5290057    0.172  0.8637
## race.ethnicity.5levelWhite 0.7024600   0.4165245    1.686  0.0918 .
## interview_age      0.0130394   0.0094450    1.381  0.1676
## bmi                -0.0060622   0.0190825   -0.318  0.7508
## household.income[>=200K] -1.0276877   0.4918901   -2.089  0.0368 *
## household.income[100K-200K] -0.5302331   0.4564655   -1.162  0.2455
## household.income[12K-16K] -0.1829693   0.5892303   -0.311  0.7562
## household.income[16K-25K] -0.5483277   0.5082410   -1.079  0.2808
## household.income[25K-35K] -0.0221415   0.4768142   -0.046  0.9630
## household.income[35K-50K] -0.4321851   0.4635323   -0.932  0.3512
## household.income[50K-75K] -0.3207558   0.4555353   -0.704  0.4814
## household.income[5K-12K] -0.1752306   0.5237732   -0.335  0.7380
## household.income[75K-100K] -0.3633979   0.4623972   -0.786  0.4320
## high.educBachelor    0.1876197   0.4283013    0.438  0.6614
## high.educHS Diploma/GED 0.1186534   0.4294391    0.276  0.7823
## high.educPost Graduate Degree 0.6420506   0.4364024    1.471  0.1414
## high.educSome College 0.4743118   0.3997786    1.186  0.2356
## demo_race_hispanic1 0.0647933   0.2042215    0.317  0.7511
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0137
## lmer.REML = 11081 Scale est. = 6.96      n = 2194

```

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)      2.7981649   1.2651209   2.212  0.02708 *
## hormone_scr_ert_mean      0.0030285   0.0044150   0.686  0.49280
## hormone_sal_end_min_since_midnight 0.0002296   0.0003830   0.599  0.54893
## pds_p_ss_categoryEarly      0.1891186   0.1575558   1.200  0.23013
## pds_p_ss_categoryLate      0.8109628   1.0971038   0.739  0.45987
## pds_p_ss_categoryMid      0.6734195   0.2996575   2.247  0.02471 *
## race.ethnicity.5levelBlack -0.1830931   0.4995911  -0.366  0.71404
## race.ethnicity.5levelMixed   0.5452541   0.4874615   1.119  0.26344
## race.ethnicity.5levelOther   0.3183094   0.5558703   0.573  0.56695
## race.ethnicity.5levelWhite   0.6990210   0.4583198   1.525  0.12735
## interview_age      -0.0091346   0.0084749  -1.078  0.28122
## bmi      -0.0026732   0.0176075  -0.152  0.87934
## household.income[>=200K]    -1.2422942   0.4787484  -2.595  0.00952 **
## household.income[100K-200K] -0.9591811   0.4483000  -2.140  0.03249 *
## household.income[12K-16K]   0.0801324   0.5788828   0.138  0.88992
## household.income[16K-25K]   -0.1464274   0.4812765  -0.304  0.76097
## household.income[25K-35K]   -0.2255259   0.4826112  -0.467  0.64033
## household.income[35K-50K]   -0.3493459   0.4571370  -0.764  0.44482
## household.income[50K-75K]   -0.7693275   0.4430938  -1.736  0.08265 .
## household.income[5K-12K]    0.0286754   0.4962132   0.058  0.95392
## household.income[75K-100K] -0.9516853   0.4564449  -2.085  0.03718 *
## high.educBachelor      1.0638358   0.4469682   2.380  0.01739 *
## high.educHS Diploma/GED    -0.1280968   0.4441790  -0.288  0.77307
## high.educPost Graduate Degree 0.7201440   0.4494900   1.602  0.10926
## high.educSome College      0.6442689   0.4261717   1.512  0.13073
## demo_race_hispanic1      0.0798369   0.2004185   0.398  0.69041
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0158
## lmer.REML = 12122 Scale est. = 5.9308    n = 2392

```

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)      0.4749241   0.6774111   0.701  0.483324
## hormone_scr_ert_mean      0.0028502   0.0022259   1.280  0.200527
## hormone_sal_end_min_since_midnight -0.0000571   0.0002066  -0.276  0.782284
## PDS_score      0.1591141   0.0534745   2.976  0.002957 **
## race.ethnicity.5levelBlack    -0.4903843   0.2390417  -2.051  0.040342 *
## race.ethnicity.5levelMixed    -0.0292756   0.2322633  -0.126  0.899708

```

```

## race.ethnicity.5levelOther      -0.3485297  0.2739778  -1.272  0.203471
## race.ethnicity.5levelWhite      -0.0453880  0.2158951  -0.210  0.833507
## interview_age                    0.0032131  0.0048217   0.666  0.505239
## bmi                             0.0134666  0.0095711   1.407  0.159568
## household.income[>=200K]        -0.9084967  0.2541282  -3.575  0.000358 ***
## household.income[100K-200K]     -0.6695469  0.2356401  -2.841  0.004534 **
## household.income[12K-16K]       -0.3862945  0.3043186  -1.269  0.204443
## household.income[16K-25K]       -0.3259204  0.2631970  -1.238  0.215734
## household.income[25K-35K]       -0.1524759  0.2463780  -0.619  0.536067
## household.income[35K-50K]       -0.5910347  0.2398287  -2.464  0.013801 *
## household.income[50K-75K]       -0.5671819  0.2353323  -2.410  0.016029 *
## household.income[5K-12K]        -0.1308079  0.2715993  -0.482  0.630124
## household.income[75K-100K]      -0.5921637  0.2389930  -2.478  0.013297 *
## high.educBachelor               0.1356108  0.2210308   0.614  0.539585
## high.educHS Diploma/GED         0.4057324  0.2223492   1.825  0.068176 .
## high.educPost Graduate Degree    0.1914676  0.2252086   0.850  0.395319
## high.educSome College            0.2064858  0.2064999   1.000  0.317455
## demo_race_hispanic1             -0.0060614  0.1056212  -0.057  0.954241
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0237
## lmer.REML = 8254.3  Scale est. = 2.269      n = 2194

```

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)    0.1210785   0.7316064   0.165  0.868567
## hormone_scr_ert_mean 0.0030457   0.0025548   1.192  0.233326
## hormone_sal_end_min_since_midnight 0.0005051   0.0002140   2.361  0.018319 *
## PDS_score       0.1250441   0.0734936   1.701  0.088994 .
## race.ethnicity.5levelBlack -0.1500621   0.2906197  -0.516  0.605657
## race.ethnicity.5levelMixed  0.2911696   0.2836000   1.027  0.304671
## race.ethnicity.5levelOther  0.0596001   0.3235077   0.184  0.853848
## race.ethnicity.5levelWhite  0.1510061   0.2660351   0.568  0.570349
## interview_age    0.0108037   0.0049315   2.191  0.028566 *
## bmi             -0.0039389   0.0102866  -0.383  0.701818
## household.income[>=200K] -1.0686353   0.2776444  -3.849  0.000122 ***
## household.income[100K-200K] -0.9173209   0.2603617  -3.523  0.000434 ***
## household.income[12K-16K]  0.0162723   0.3370316   0.048  0.961496
## household.income[16K-25K]  0.0340416   0.2800115   0.122  0.903248
## household.income[25K-35K] -0.2643667   0.2799827  -0.944  0.345151
## household.income[35K-50K] -0.5123120   0.2659859  -1.926  0.054213 .

```



```
## household.income[50K-75K]          -0.6834367  0.2578363  -2.651  0.008087  **
## household.income[5K-12K]           -0.0680754  0.2891557  -0.235  0.813897
## household.income[75K-100K]         -0.9691185  0.2654896  -3.650  0.000268  ***
## high.educBachelor                  -0.0757598  0.2598697  -0.292  0.770672
## high.educHS Diploma/GED            -0.5706863  0.2579884  -2.212  0.027057  *
## high.educPost Graduate Degree       -0.3465747  0.2614709  -1.325  0.185140
## high.educSome College               -0.1541558  0.2474723  -0.623  0.533396
## demo_race_hispanic1                -0.1526033  0.1121602  -1.361  0.173775
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0399
## lmer.REML = 9561.5  Scale est. = 1.9101    n = 2392
```

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)    5.779e-01  7.004e-01   0.825  0.409458
## hormone_scr_ert_mean  3.360e-03  2.219e-03   1.515  0.130034
## hormone_sal_end_min_since_midnight -6.178e-05  2.072e-04  -0.298  0.765552
## pds_p_ss_categoryEarly  1.200e-02  9.357e-02   0.128  0.897927
## pds_p_ss_categoryLate  2.747e-01  2.422e-01   1.134  0.256893
## pds_p_ss_categoryMid   1.660e-01  9.186e-02   1.807  0.070923 .
## race.ethnicity.5levelBlack -4.645e-01  2.392e-01  -1.942  0.052254 .
## race.ethnicity.5levelMixed -1.629e-02  2.326e-01  -0.070  0.944172
## race.ethnicity.5levelOther -3.355e-01  2.744e-01  -1.223  0.221597
## race.ethnicity.5levelWhite -3.734e-02  2.162e-01  -0.173  0.862882
## interview_age        3.902e-03  4.930e-03   0.791  0.428772
## bmi                  1.259e-02  9.921e-03   1.269  0.204590
## household.income[>=200K] -9.187e-01  2.548e-01  -3.605  0.000319 ***
## household.income[100K-200K] -6.756e-01  2.364e-01  -2.859  0.004295 **
## household.income[12K-16K]  -4.199e-01  3.047e-01  -1.378  0.168289
## household.income[16K-25K]  -3.334e-01  2.638e-01  -1.264  0.206383
## household.income[25K-35K]  -1.749e-01  2.469e-01  -0.709  0.478708
## household.income[35K-50K]  -6.094e-01  2.402e-01  -2.538  0.011233 *
## household.income[50K-75K]  -5.772e-01  2.358e-01  -2.447  0.014465 *
## household.income[5K-12K]   -1.407e-01  2.721e-01  -0.517  0.605066
## household.income[75K-100K] -6.070e-01  2.395e-01  -2.535  0.011325 *
## high.educBachelor          1.326e-01  2.218e-01   0.598  0.550115
## high.educHS Diploma/GED    4.100e-01  2.228e-01   1.841  0.065802 .
## high.educPost Graduate Degree 1.908e-01  2.260e-01   0.844  0.398659
## high.educSome College      2.205e-01  2.071e-01   1.064  0.287263
```

```
## demo_race_hispanic1          -1.817e-02  1.058e-01  -0.172 0.863593
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0211
## lmer.REML = 8261.8  Scale est. = 2.2679    n = 2194
```

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)      0.1649316   0.7331693   0.225 0.822032
## hormone_scr_ert_mean      0.0032779   0.0025503   1.285 0.198804
## hormone_sal_end_min_since_midnight      0.0005027   0.0002140   2.349 0.018908 *
## pds_p_ss_categoryEarly      0.0583880   0.0916737   0.637 0.524245
## pds_p_ss_categoryLate     -0.4175227   0.6397450  -0.653 0.514052
## pds_p_ss_categoryMid       0.3358230   0.1747243   1.922 0.054724 .
## race.ethnicity.5levelBlack  -0.1305392   0.2903494  -0.450 0.653045
## race.ethnicity.5levelMixed   0.3107114   0.2837552   1.095 0.273629
## race.ethnicity.5levelOther   0.0751994   0.3236650   0.232 0.816296
## race.ethnicity.5levelWhite   0.1737322   0.2663249   0.652 0.514251
## interview_age           0.0113619   0.0049189   2.310 0.020983 *
## bmi                   -0.0030252   0.0102536  -0.295 0.767993
## household.income[>=200K]     -1.0834066   0.2780778  -3.896 0.000100 ***
## household.income[100K-200K]  -0.9315989   0.2608504  -3.571 0.000362 ***
## household.income[12K-16K]    -0.0093701   0.3377168  -0.028 0.977868
## household.income[16K-25K]     0.0263261   0.2804957   0.094 0.925232
## household.income[25K-35K]    -0.2680368   0.2812960  -0.953 0.340756
## household.income[35K-50K]    -0.5269732   0.2665738  -1.977 0.048176 *
## household.income[50K-75K]    -0.6916502   0.2581453  -2.679 0.007429 **
## household.income[5K-12K]     -0.0816377   0.2895921  -0.282 0.778040
## household.income[75K-100K]   -0.9845581   0.2658690  -3.703 0.000218 ***
## high.educBachelor          -0.0756942   0.2599197  -0.291 0.770908
## high.educHS Diploma/GED     -0.5843168   0.2582688  -2.262 0.023761 *
## high.educPost Graduate Degree -0.3459077   0.2615192  -1.323 0.186068
## high.educSome College       -0.1624445   0.2476542  -0.656 0.511931
## demo_race_hispanic1         -0.1602872   0.1122593  -1.428 0.153473
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0402
## lmer.REML = 9560.3  Scale est. = 1.9183    n = 2392
```

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)    0.7329447  0.7922449   0.925  0.35499
## hormone_scr_ert_mean -0.0006339  0.0026033  -0.243  0.80764
## hormone_sal_end_min_since_midnight 0.0001436  0.0002405   0.597  0.55059
## PDS_score       0.1121565  0.0626583   1.790  0.07360 .
## race.ethnicity.5levelBlack -0.1981417  0.2805824  -0.706  0.48015
## race.ethnicity.5levelMixed  0.2021829  0.2729169   0.741  0.45888
## race.ethnicity.5levelOther -0.2566456  0.3221469  -0.797  0.42573
## race.ethnicity.5levelWhite  0.2570199  0.2533572   1.014  0.31048
## interview_age     0.0026545  0.0056264   0.472  0.63713
## bmi              0.0103957  0.0112319   0.926  0.35478
## household.income[>=200K] -0.8101511  0.2993534  -2.706  0.00686 **
## household.income[100K-200K] -0.6652596  0.2777634  -2.395  0.01670 *
## household.income[12K-16K] -0.0928040  0.3593345  -0.258  0.79623
## household.income[16K-25K] -0.4328090  0.3094806  -1.399  0.16211
## household.income[25K-35K] -0.1500203  0.2904260  -0.517  0.60552
## household.income[35K-50K] -0.4022745  0.2824866  -1.424  0.15458
## household.income[50K-75K] -0.5263118  0.2774590  -1.897  0.05797 .
## household.income[5K-12K] -0.0307932  0.3190285  -0.097  0.92312
## household.income[75K-100K] -0.5404168  0.2816470  -1.919  0.05514 .
## high.educBachelor -0.1294081  0.2605665  -0.497  0.61949
## high.educHS Diploma/GED -0.0097230  0.2615916  -0.037  0.97035
## high.educPost Graduate Degree  0.0640450  0.2654093   0.241  0.80934
## high.educSome College -0.0166985  0.2433245  -0.069  0.94529
## demo_race_hispanic1 -0.0419100  0.1240251  -0.338  0.73546
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00929
## lmer.REML = 8927.5  Scale est. = 2.5026    n = 2194
```

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)      1.1021646   0.8525860    1.293 0.196230
## hormone_scr_ert_mean      0.0021680   0.0029846    0.726 0.467657
## hormone_sal_end_min_since_midnight 0.0004086   0.0002567    1.592 0.111523
## PDS_score          0.1265043   0.0852259    1.484 0.137852
## race.ethnicity.5levelBlack    -0.1445429   0.3399892   -0.425 0.670773
## race.ethnicity.5levelMixed     0.2321299   0.3314363    0.700 0.483762
## race.ethnicity.5levelOther     0.0599617   0.3770031    0.159 0.873644
## race.ethnicity.5levelWhite     0.1984459   0.3114214    0.637 0.524039
## interview_age          0.0044596   0.0057255    0.779 0.436121
## bmi                -0.0065586   0.0119329   -0.550 0.582632
## household.income[>=200K]    -1.1623989   0.3243165   -3.584 0.000345 ***
## household.income[100K-200K] -1.1443263   0.3036237   -3.769 0.000168 ***
## household.income[12K-16K]     0.0879132   0.3923957    0.224 0.822744
## household.income[16K-25K]    -0.4155784   0.3259138   -1.275 0.202393
## household.income[25K-35K]    -0.6059773   0.3259532   -1.859 0.063138 .
## household.income[35K-50K]    -0.7714113   0.3096712   -2.491 0.012804 *
## household.income[50K-75K]    -0.8493779   0.3003449   -2.828 0.004723 **
## household.income[5K-12K]     -0.2274147   0.3364261   -0.676 0.499124
## household.income[75K-100K]   -0.9933782   0.3094126   -3.211 0.001343 **
## high.educBachelor          0.2599197   0.3031834    0.857 0.391365
## high.educHS Diploma/GED    -0.3944860   0.3009271   -1.311 0.190018
## high.educPost Graduate Degree -0.0613831   0.3049360   -0.201 0.840483
## high.educSome College       0.2518553   0.2887948    0.872 0.383247
## demo_race_hispanic1        -0.1346305   0.1348056   -0.999 0.318041
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0258
## lmer.REML = 10264 Scale est. = 2.1931    n = 2392

```

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)      0.8478270   0.8185592    1.036 0.30043
## hormone_scr_ert_mean    -0.0004206   0.0025923   -0.162 0.87114
## hormone_sal_end_min_since_midnight 0.0001385   0.0002411    0.574 0.56578
## pds_p_ss_categoryEarly   0.0159055   0.1092878    0.146 0.88430
## pds_p_ss_categoryLate    0.1266151   0.2834960    0.447 0.65519

```

```

## pds_p_ss_categoryMid          0.1538762  0.1074603   1.432  0.15231
## race.ethnicity.5levelBlack    -0.1879642  0.2804143  -0.670  0.50273
## race.ethnicity.5levelMixed     0.2060143  0.2730257   0.755  0.45059
## race.ethnicity.5levelOther    -0.2489929  0.3222349  -0.773  0.43978
## race.ethnicity.5levelWhite     0.2596160  0.2534493   1.024  0.30579
## interview_age                 0.0028242  0.0057495   0.491  0.62333
## bmi                           0.0091407  0.0116286   0.786  0.43192
## household.income[>=200K]      -0.8059592  0.2997868  -2.688  0.00723 **
## household.income[100K-200K]   -0.6596126  0.2782410  -2.371  0.01784 *
## household.income[12K-16K]     -0.1107718  0.3592581  -0.308  0.75786
## household.income[16K-25K]     -0.4309941  0.3097888  -1.391  0.16429
## household.income[25K-35K]     -0.1582130  0.2906851  -0.544  0.58631
## household.income[35K-50K]     -0.4099075  0.2825349  -1.451  0.14697
## household.income[50K-75K]     -0.5262291  0.2776918  -1.895  0.05822 .
## household.income[5K-12K]      -0.0334329  0.3192385  -0.105  0.91660
## household.income[75K-100K]    -0.5419942  0.2818604  -1.923  0.05462 .
## high.educBachelor             -0.1385506  0.2610855  -0.531  0.59570
## high.educHS Diploma/GED       -0.0103984  0.2617359  -0.040  0.96831
## high.educPost Graduate Degree   0.0553668  0.2660060   0.208  0.83514
## high.educSome College          -0.0144021  0.2437156  -0.059  0.95288
## demo_race_hispanic1           -0.0491056  0.1240621  -0.396  0.69228
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00826
## lmer.REML = 8930.8  Scale est. = 2.5265    n = 2194

```

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)    1.1964262   0.8544812   1.400  0.161591
## hormone_scr_ert_mean 0.0022036   0.0029790   0.740  0.459537
## hormone_sal_end_min_since_midnight 0.0004081   0.0002567   1.589  0.112091
## pds_p_ss_categoryEarly 0.1834946   0.1064296   1.724  0.084822 .
## pds_p_ss_categoryLate 0.7085454   0.7439173   0.952  0.340965
## pds_p_ss_categoryMid 0.1661096   0.2024511   0.820  0.412018
## race.ethnicity.5levelBlack -0.1444953   0.3397461  -0.425  0.670654
## race.ethnicity.5levelMixed 0.2377308   0.3316892   0.717  0.473613
## race.ethnicity.5levelOther 0.0612591   0.3772324   0.162  0.871012
## race.ethnicity.5levelWhite 0.2137548   0.3118083   0.686  0.493075
## interview_age     0.0044071   0.0057105   0.772  0.440340
## bmi               -0.0065873   0.0118946  -0.554  0.579763
## household.income[>=200K] -1.1556517   0.3248568  -3.557  0.000382 ***

```

```
## household.income[100K-200K]      -1.1358979  0.3042078  -3.734  0.000193 ***
## household.income[12K-16K]         0.1013785  0.3932424   0.258  0.796582
## household.income[16K-25K]        -0.4198107  0.3265107  -1.286  0.198657
## household.income[25K-35K]        -0.6091202  0.3275091  -1.860  0.063030 .
## household.income[35K-50K]        -0.7672763  0.3103915  -2.472  0.013507 *
## household.income[50K-75K]        -0.8454586  0.3007320  -2.811  0.004974 **
## household.income[5K-12K]         -0.2202183  0.3369827  -0.654  0.513497
## household.income[75K-100K]       -0.9903424  0.3098685  -3.196  0.001412 **
## high.educBachelor                 0.2714424  0.3032550   0.895  0.370827
## high.educHS Diploma/GED         -0.3803427  0.3012675  -1.262  0.206902
## high.educPost Graduate Degree    -0.0504596  0.3050170  -0.165  0.868618
## high.educSome College             0.2615563  0.2890140   0.905  0.365560
## demo_race_hispanic1              -0.1350656  0.1349265  -1.001  0.316914
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0254
## lmer.REML = 10262  Scale est. = 2.1894    n = 2392
```

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)  0.132699  0.325345   0.408  0.683400
## PDS_score    0.044904  0.028979   1.550  0.121371
## interview_age -0.005088  0.002720  -1.870  0.061540 .
## bmi          0.018611  0.005164   3.604  0.000319 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00937
## lmer.REML =  7513  Scale est. = 0.75725    n = 2653
```

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)  0.1632169  0.2941550   0.555   0.5790
## PDS_score    0.0634471  0.0335696   1.890   0.0589 .
## interview_age -0.0016103  0.0024428  -0.659   0.5098
## bmi          0.0002214  0.0048359   0.046   0.9635
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000733
## lmer.REML = 7984.4  Scale est. = 0.78017   n = 2880
```

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) -0.681578  0.330503  -2.062   0.0393 *
## PDS_score    0.019874  0.029797   0.667   0.5049
## interview_age 0.005653  0.002776   2.037   0.0418 *
## bmi          0.000375  0.005263   0.071   0.9432
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00123
## lmer.REML = 6017.7  Scale est. = 0.76084   n = 2220
##
## 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) -0.5905110  0.3426771  -1.723   0.085 .
## PDS_score    -0.0002649  0.0309522  -0.009   0.993
## interview_age 0.0042819  0.0028793   1.487   0.137
## bmi          0.0048231  0.0054430   0.886   0.376
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```

## R-sq.(adj) = 0.000209
## lmer.REML = 6157 Scale est. = 0.82171 n = 2220

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) -0.620015  0.312022  -1.987  0.0470 *
## PDS_score    -0.056931  0.036796  -1.547  0.1220
## interview_age 0.005351  0.002580   2.074  0.0382 *
## bmi          0.002057  0.005278   0.390  0.6968
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00177
## lmer.REML = 6173.8 Scale est. = 0.7607 n = 2298

##
## 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)  0.012519  0.307207   0.041  0.967
## PDS_score    -0.027737  0.036102  -0.768  0.442
## interview_age -0.000516  0.002539  -0.203  0.839
## bmi          0.003842  0.005186   0.741  0.459
##
##
## R-sq.(adj) = -0.000866
## lmer.REML = 6113.4 Scale est. = 0.82796 n = 2298

```

2.3 Model: Caudate Anticipation ~ PDS

Females

```

##
## 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) -0.315320   0.325732  -0.968   0.333
## PDS_score   -0.015660   0.029322  -0.534   0.593
## interview_age 0.003899   0.002741   1.423   0.155
## bmi         -0.007257   0.005322  -1.364   0.173
##
##
## R-sq.(adj) =  0.000795
## lmer.REML = 5366.4  Scale est. = 0.73411  n = 2051
```

Males

```
##
## 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) -0.341124   0.331548  -1.029   0.3037
## PDS_score     0.043599   0.039947   1.091   0.2752
## interview_age 0.004009   0.002734   1.466   0.1427
## bmi          -0.010567   0.005652  -1.870   0.0617 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00119
## lmer.REML = 5485.8  Scale est. = 0.81022  n = 2041
```

2.4 Model B: Putamen Anticipation ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvs_n_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.423647   0.322762  -1.313   0.1895
## PDS_score     0.005043   0.029045   0.174   0.8622
## interview_age 0.004721   0.002715   1.739   0.0822 .
## bmi          -0.008698   0.005310  -1.638   0.1016
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00141
## lmer.REML = 5332.1  Scale est. = 0.69631  n = 2051
```

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) -0.212548  0.322636  -0.659   0.510
## PDS_score    0.002317  0.038885   0.060   0.952
## interview_age 0.003288  0.002657   1.238   0.216
## bmi          -0.008993  0.005494  -1.637   0.102
##
##
## R-sq.(adj) =  0.000318
## lmer.REML = 5379.9  Scale est. = 0.65059   n = 2045
```

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)  0.2093731  0.2557352   0.819   0.413
## PDS_score    -0.0195109  0.0229520  -0.850   0.395
## interview_age -0.0005292  0.0021487  -0.246   0.805
## bmi          -0.0057282  0.0042144  -1.359   0.174
##
##
## R-sq.(adj) =  0.000377
## lmer.REML = 4379.1  Scale est. = 0.47334   n = 2046
```

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)  0.190985  0.261587   0.730   0.465
## PDS_score    0.023208  0.031349   0.740   0.459
```

```
## interview_age -0.001346  0.002155  -0.624    0.532
## bmi           -0.003056  0.004455  -0.686    0.493
##
##
## R-sq.(adj) =  -0.000713
## lmer.REML = 4525.9  Scale est. = 0.43755    n = 2042
```

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)  -4.561e-02  3.198e-01  -0.143    0.887
## PDS_score      3.641e-02  2.879e-02   1.264    0.206
## interview_age -2.853e-04  2.689e-03  -0.106    0.916
## bmi           5.477e-05  5.231e-03   0.010    0.992
##
##
## R-sq.(adj) =  -0.000764
## lmer.REML = 5269.5  Scale est. = 0.63123    n = 2048
```

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)  -0.0400629  0.3253762  -0.123    0.902
## PDS_score     -0.0053302  0.0389898  -0.137    0.891
## interview_age  0.0000188  0.0026783   0.007    0.994
## bmi           0.0028986  0.0055135   0.526    0.599
##
##
## R-sq.(adj) =  -0.00136
## lmer.REML = 5412.7  Scale est. = 0.82118    n = 2039
```

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)  0.0988455  0.3149600   0.314   0.754
## PDS_score    0.0336585  0.0283956   1.185   0.236
## interview_age -0.0013557  0.0026478  -0.512   0.609
## bmi         -0.0001433  0.0051534  -0.028   0.978
##
##
## R-sq.(adj) = -0.00083
## lmer.REML = 5203.2  Scale est. = 0.70883    n = 2048
```

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)  0.217990  0.323139   0.675   0.500
## PDS_score    0.020601  0.038643   0.533   0.594
## interview_age -0.002791  0.002661  -1.049   0.294
## bmi         0.006425  0.005479   1.173   0.241
##
##
## R-sq.(adj) = -0.00064
## lmer.REML = 5378.6  Scale est. = 0.7549     n = 2044
```

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) -0.3660146  0.2503784  -1.462   0.144
## PDS_score    0.0134280  0.0225898   0.594   0.552
## interview_age 0.0025873  0.0021072   1.228   0.220
## bmi         0.0008257  0.0040922   0.202   0.840
##
##
```

```
## R-sq.(adj) = 6.88e-05
## lmer.REML = 4268.4 Scale est. = 0.43456 n = 2047
```

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)  -0.0917033  0.2640959  -0.347   0.728
## PDS_score     -0.0417262  0.0316431  -1.319   0.187
## interview_age  0.0003966  0.0021729   0.183   0.855
## bmi           0.0061317  0.0045100   1.360   0.174
##
##
## R-sq.(adj) = -0.000198
## lmer.REML = 4543.1 Scale est. = 0.38953 n = 2044
```

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)    2.997e-02  2.044e-01   0.147   0.883
## PDS_score      -1.225e-02  1.851e-02  -0.662   0.508
## interview_age  -1.434e-05  1.719e-03  -0.008   0.993
## bmi            -2.967e-04  3.336e-03  -0.089   0.929
##
##
## R-sq.(adj) = -0.00118
## lmer.REML = 3424.1 Scale est. = 0.30859 n = 2038
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsnt_ant_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.1633755  0.2378443   0.687   0.4922
```

```
## PDS_score      -0.0505856  0.0214306  -2.360   0.0183 *
## interview_age  -0.0006933  0.0020002  -0.347   0.7289
## bmi            -0.0003504  0.0038820  -0.090   0.9281
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00184
## lmer.REML = 4040.7  Scale est. = 0.41739   n = 2039
```

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)  -0.369802  0.225911  -1.637   0.102
## PDS_score      0.033088  0.027448   1.206   0.228
## interview_age  0.003053  0.001861   1.641   0.101
## bmi          -0.003946  0.003843  -1.027   0.305
##
##
## R-sq.(adj) =  0.00126
## lmer.REML = 3888.8  Scale est. = 0.3442    n = 2032
##
## 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)  -0.1670235  0.2563422  -0.652   0.5148
## PDS_score      0.0598089  0.0310408   1.927   0.0541 .
## interview_age  0.0008652  0.0021105   0.410   0.6819
## bmi          -0.0022339  0.0043395  -0.515   0.6068
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00137
## lmer.REML = 4431.1  Scale est. = 0.44672    n = 2038
```

2.10 Model: OFC Feedback ~ PDS

Females

```
##
```

```

## Family: gaussian
## Link function: identity
##
## Formula:
## l0FC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  5.939e-02  1.854e-01   0.320   0.749
## PDS_score     4.868e-03  1.674e-02   0.291   0.771
## interview_age -8.429e-04  1.561e-03  -0.540   0.589
## bmi           7.308e-05  3.024e-03   0.024   0.981
##
##
## R-sq.(adj) = -0.00137
## lmer.REML = 3045.9  Scale est. = 0.2541    n = 2048
##
## Family: gaussian
## Link function: identity
##
## Formula:
## m0FC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.0262328  0.2188123   0.120   0.905
## PDS_score     0.0025914  0.0197740   0.131   0.896
## interview_age -0.0001621  0.0018415  -0.088   0.930
## bmi          -0.0020736  0.0035868  -0.578   0.563
##
##
## R-sq.(adj) = -0.00129
## lmer.REML = 3754.4  Scale est. = 0.33097    n = 2051

```

Males

```

##
## Family: gaussian
## Link function: identity
##
## Formula:
## l0FC_posvsneg_feedback_z ~ PDS_score + interview_age + bmi
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.150528  0.195739  -0.769   0.442
## PDS_score    -0.021332  0.023670  -0.901   0.368
## interview_age  0.001083  0.001610   0.673   0.501
## bmi          0.003031  0.003338   0.908   0.364
##
##
## R-sq.(adj) = -0.000697
## lmer.REML = 3309.6  Scale est. = 0.22092    n = 2030

```

```
##
## 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) -0.0577964  0.2322376  -0.249   0.803
## PDS_score    -0.0249590  0.0281509  -0.887   0.375
## interview_age  0.0006329  0.0019110   0.331   0.741
## bmi          0.0024086  0.0039600   0.608   0.543
##
##
## R-sq.(adj) = -0.000968
## lmer.REML = 4029.7  Scale est. = 0.32186  n = 2039
```

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_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)    -2.508e-01  3.565e-01  -0.704   0.482
## hormone_scr_ert_mean    -1.281e-03  1.292e-03  -0.992   0.321
## hormone_sal_end_min_since_midnight -1.352e-04  1.239e-04  -1.091   0.275
## interview_age      4.229e-03  2.828e-03   1.495   0.135
## MRI_minus_hormone_date_time    1.061e-06  2.635e-06   0.403   0.687
## bmi             -5.840e-03  5.562e-03  -1.050   0.294
##
##
## R-sq.(adj) = 0.000508
## lmer.REML = 4903.7  Scale est. = 0.74968  n = 1859
```

Males

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

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



```
## caudate_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -2.193e-01  3.563e-01  -0.615   0.538
## hormone_scr_ert_mean    -4.539e-04  1.491e-03  -0.304   0.761
## hormone_sal_end_min_since_midnight  1.855e-04  1.257e-04   1.476   0.140
## interview_age      2.482e-03  2.814e-03   0.882   0.378
## MRI_minus_hormone_date_time    4.314e-07  2.897e-06   0.149   0.882
## bmi              -1.085e-02  5.745e-03  -1.889   0.059 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00115
## lmer.REML = 5055.2  Scale est. = 0.80253    n = 1875
```

2.12 Model B: Putamen Anticipation ~ Testosterone

Females

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -2.657e-01  3.506e-01  -0.758   0.449
## hormone_scr_ert_mean    1.005e-04  1.273e-03   0.079   0.937
## hormone_sal_end_min_since_midnight -1.937e-04  1.215e-04  -1.593   0.111
## interview_age      4.141e-03  2.781e-03   1.489   0.137
## MRI_minus_hormone_date_time    1.282e-06  2.591e-06   0.495   0.621
## bmi              -5.593e-03  5.504e-03  -1.016   0.310
##
##
## R-sq.(adj) =  0.000705
## lmer.REML = 4843.8  Scale est. = 0.64702    n = 1859
```

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)    -2.773e-01  3.508e-01  -0.791  0.4293
## hormone_scr_ert_mean    -1.652e-03  1.473e-03  -1.121  0.2623
## hormone_sal_end_min_since_midnight  2.193e-04  1.238e-04   1.772  0.0765 .
## interview_age      3.102e-03  2.774e-03   1.118  0.2636
## MRI_minus_hormone_date_time    6.697e-07  2.863e-06   0.234  0.8151
## bmi             -1.049e-02  5.677e-03  -1.847  0.0649 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00255
## lmer.REML = 4998.9  Scale est. = 0.61328   n = 1875
```

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)    2.685e-01  2.796e-01   0.960  0.3369
## hormone_scr_ert_mean    1.317e-05  1.011e-03   0.013  0.9896
## hormone_sal_end_min_since_midnight -1.086e-04  9.423e-05  -1.152  0.2493
## interview_age    -1.979e-04  2.214e-03  -0.089  0.9288
## MRI_minus_hormone_date_time    -2.295e-07  2.051e-06  -0.112  0.9109
## bmi             -8.257e-03  4.398e-03  -1.878  0.0606 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000136
## lmer.REML = 3998.4  Scale est. = 0.41352   n = 1853
```

Males

```
## 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)      1.688e-01  2.833e-01   0.596   0.551
## hormone_scr_ert_mean      -2.561e-04  1.192e-03  -0.215   0.830
## hormone_sal_end_min_since_midnight  1.144e-04  9.945e-05   1.150   0.250
## interview_age      -1.458e-03  2.237e-03  -0.652   0.515
## MRI_minus_hormone_date_time      -3.395e-06  2.355e-06  -1.441   0.150
## bmi      -2.990e-03  4.566e-03  -0.655   0.513
##
##
## R-sq.(adj) =  -0.00088
## lmer.REML = 4186.7  Scale est. = 0.43565    n = 1870
```

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)      6.533e-02  3.458e-01   0.189   0.8502
## hormone_scr_ert_mean      -3.724e-06  1.251e-03  -0.003   0.9976
## hormone_sal_end_min_since_midnight  -2.922e-04  1.211e-04  -2.413   0.0159 *
## interview_age      8.981e-04  2.742e-03   0.328   0.7433
## MRI_minus_hormone_date_time      -5.379e-07  2.551e-06  -0.211   0.8330
## bmi      2.408e-03  5.390e-03   0.447   0.6551
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00178
## lmer.REML =  4764  Scale est. = 0.65794    n = 1854
```

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)      2.077e-01  3.523e-01   0.590  0.5555
## hormone_scr_ert_mean      -2.567e-03  1.458e-03  -1.760  0.0786 .
## hormone_sal_end_min_since_midnight -3.060e-04  1.209e-04  -2.532  0.0114 *
## interview_age      -9.212e-05  2.781e-03  -0.033  0.9736
## MRI_minus_hormone_date_time      3.085e-06  2.842e-06   1.085  0.2779
## bmi                6.174e-03  5.653e-03   1.092  0.2749
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00279
## lmer.REML = 5005.2  Scale est. = 0.82111  n = 1869
```

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)      3.559e-01  3.399e-01   1.047  0.2952
## hormone_scr_ert_mean      1.859e-04  1.233e-03   0.151  0.8802
## hormone_sal_end_min_since_midnight -3.255e-04  1.212e-04  -2.686  0.0073 **
## interview_age      -1.146e-03  2.694e-03  -0.425  0.6705
## MRI_minus_hormone_date_time      3.695e-07  2.522e-06   0.146  0.8835
## bmi                1.078e-03  5.311e-03   0.203  0.8391
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00203
## lmer.REML = 4709.2  Scale est. = 0.70478  n = 1857
```

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)    3.934e-01  3.478e-01   1.131  0.2582
## hormone_scr_ert_mean -3.072e-03  1.459e-03  -2.105  0.0354 *
## hormone_sal_end_min_since_midnight -1.906e-04  1.275e-04  -1.494  0.1352
## interview_age    -2.616e-03  2.748e-03  -0.952  0.3411
## MRI_minus_hormone_date_time    1.875e-06  2.837e-06   0.661  0.5086
## bmi              9.808e-03  5.593e-03   1.754  0.0797 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00239
## lmer.REML = 4951.3  Scale est. = 0.75984    n = 1873
```

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)   -3.594e-01  2.744e-01  -1.310   0.190
## hormone_scr_ert_mean -3.017e-04  9.935e-04  -0.304   0.761
## hormone_sal_end_min_since_midnight -8.185e-05  9.620e-05  -0.851   0.395
## interview_age     2.820e-03  2.174e-03   1.297   0.195
## MRI_minus_hormone_date_time    6.440e-07  2.024e-06   0.318   0.750
## bmi              4.567e-03  4.284e-03   1.066   0.286
##
##
## R-sq.(adj) = -0.000194
## lmer.REML = 3907.3  Scale est. = 0.43899    n = 1853
```

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)    3.366e-02  2.844e-01   0.118  0.9058
## hormone_scr_ert_mean -1.886e-03  1.199e-03  -1.572  0.1161
## hormone_sal_end_min_since_midnight -1.339e-04  1.037e-04  -1.291  0.1969
## interview_age    -1.331e-04  2.247e-03  -0.059  0.9528
## MRI_minus_hormone_date_time -2.074e-06  2.382e-06  -0.871  0.3838
## bmi             8.522e-03  4.611e-03   1.848  0.0647 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00226
## lmer.REML = 4197.4  Scale est. = 0.42826    n = 1875
```

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_rvsns_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)    1.633e-01  2.223e-01   0.734  0.4628
## hormone_scr_ert_mean 1.662e-03  8.039e-04   2.067  0.0389 *
## hormone_sal_end_min_since_midnight -7.882e-05  7.681e-05  -1.026  0.3049
## interview_age    -1.223e-03  1.762e-03  -0.695  0.4875
## MRI_minus_hormone_date_time -1.728e-06  1.636e-06  -1.056  0.2909
## bmi             -2.456e-04  3.464e-03  -0.071  0.9435
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00119
## lmer.REML = 3120.1  Scale est. = 0.3033    n = 1846
##
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
```

```
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_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)    3.424e-01  2.608e-01   1.313   0.189
## hormone_scr_ert_mean    1.362e-03  9.417e-04   1.447   0.148
## hormone_sal_end_min_since_midnight -3.727e-05  9.118e-05  -0.409   0.683
## interview_age    -2.918e-03  2.067e-03  -1.411   0.158
## MRI_minus_hormone_date_time    5.643e-07  1.920e-06   0.294   0.769
## bmi             -1.155e-03  4.058e-03  -0.285   0.776
##
##
## R-sq.(adj) =  -0.000928
## lmer.REML =   3700  Scale est. = 0.41462   n = 1847
```

Males

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_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)   -4.562e-01  2.443e-01  -1.867   0.0621 .
## hormone_scr_ert_mean   -1.374e-03  1.025e-03  -1.340   0.1803
## hormone_sal_end_min_since_midnight  1.567e-04  8.723e-05   1.797   0.0725 .
## interview_age    3.226e-03  1.932e-03   1.670   0.0951 .
## MRI_minus_hormone_date_time   -1.584e-06  2.048e-06  -0.774   0.4393
## bmi             -2.004e-03  3.942e-03  -0.508   0.6113
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00113
## lmer.REML = 3612.5  Scale est. = 0.34145   n = 1863
##
## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
```

```
## mOFC_rvsn_ant_z ~ hormone_scr_ert_mean + hormone_sal_end_min_since_midnight +
##      interview_age + MRI_minus_hormone_date_time + bmi
##
## Parametric coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -1.866e-01  2.772e-01  -0.673   0.501
## hormone_scr_ert_mean    -2.384e-04  1.156e-03  -0.206   0.837
## hormone_sal_end_min_since_midnight  1.499e-04  9.549e-05   1.570   0.117
## interview_age      6.693e-04  2.190e-03   0.306   0.760
## MRI_minus_hormone_date_time    -2.189e-06  2.298e-06  -0.952   0.341
## bmi              -1.079e-03  4.445e-03  -0.243   0.808
##
##
## R-sq.(adj) =  -0.000997
## lmer.REML = 4094.9  Scale est. = 0.4446    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)      6.969e-02  1.983e-01   0.352   0.7252
## hormone_scr_ert_mean    1.333e-03  7.196e-04   1.853   0.0641 .
## hormone_sal_end_min_since_midnight -6.895e-05  6.801e-05  -1.014   0.3108
## interview_age     -8.187e-04  1.574e-03  -0.520   0.6031
## MRI_minus_hormone_date_time    -2.228e-06  1.459e-06  -1.527   0.1269
## bmi              9.254e-04  3.094e-03   0.299   0.7649
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00207
## lmer.REML = 2726.7  Scale est. = 0.24409    n = 1853
##
## 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)    -8.624e-02  2.381e-01  -0.362   0.717
## hormone_scr_ert_mean      1.328e-03  8.637e-04   1.538   0.124
## hormone_sal_end_min_since_midnight  1.808e-05  8.028e-05   0.225   0.822
## interview_age      1.853e-04  1.889e-03   0.098   0.922
## MRI_minus_hormone_date_time    -1.567e-07  1.744e-06  -0.090   0.928
## bmi              -1.108e-03  3.718e-03  -0.298   0.766
##
##
## R-sq.(adj) =  -0.00132
## lmer.REML = 3423.2  Scale est. = 0.34969   n = 1857
```

Males

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

##
## Family: gaussian
## Link function: identity
##
## Formula:
## l0FC_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)      7.719e-03  2.127e-01   0.036   0.9711
## hormone_scr_ert_mean    -3.370e-04  8.878e-04  -0.380   0.7043
## hormone_sal_end_min_since_midnight -1.393e-04  7.369e-05  -1.890   0.0589 .
## interview_age      3.670e-04  1.680e-03   0.218   0.8271
## MRI_minus_hormone_date_time    2.690e-06  1.726e-06   1.558   0.1193
## bmi                3.374e-03  3.432e-03   0.983   0.3257
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000877
## lmer.REML = 3094.6  Scale est. = 0.23035   n = 1860

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

##
## Family: gaussian
## Link function: identity
##
## Formula:
## m0FC_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)      1.129e-01  2.502e-01   0.451   0.6517
```

```
## hormone_scr_ert_mean          -9.530e-04  1.045e-03  -0.912  0.3620
## hormone_sal_end_min_since_midnight -1.757e-04  8.688e-05  -2.022  0.0433 *
## interview_age                 2.348e-04  1.976e-03   0.119  0.9054
## MRI_minus_hormone_date_time     3.480e-07  2.086e-06   0.167  0.8675
## bmi                          2.552e-03  4.037e-03   0.632  0.5273
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -5.3e-05
## lmer.REML = 3715.3  Scale est. = 0.3339    n = 1866
```

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)    -0.6132051  0.3603866  -1.702  0.0890 .
## hormone_scr_ert_mean    -0.0013159  0.0013225  -0.995  0.3199
## hormone_sal_end_min_since_midnight -0.0001012  0.0001186  -0.853  0.3937
## interview_age     0.0062619  0.0028566   2.192  0.0285 *
## bmi              0.0012710  0.0055094   0.231  0.8176
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00101
## lmer.REML = 5583.6  Scale est. = 0.7483    n = 2045
##
## 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)    -6.100e-01  3.731e-01  -1.635  0.102
## hormone_scr_ert_mean    -1.445e-03  1.371e-03  -1.055  0.292
## hormone_sal_end_min_since_midnight  2.733e-05  1.254e-04   0.218  0.827
## interview_age     4.389e-03  2.958e-03   1.484  0.138
## bmi              6.879e-03  5.696e-03   1.208  0.227
##
##
```

```
## R-sq.(adj) = 4.02e-05
## lmer.REML = 5712.8 Scale est. = 0.83368 n = 2045
```

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)   -0.6568018  0.3348718  -1.961  0.0500 *
## hormone_scr_ert_mean -0.0012582  0.0014000  -0.899  0.3689
## hormone_sal_end_min_since_midnight 0.0001219  0.0001155   1.055  0.2915
## interview_age    0.0047592  0.0026664   1.785  0.0744 .
## bmi            0.0008703  0.0053883   0.162  0.8717
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.000265
## lmer.REML = 5779.5 Scale est. = 0.74258 n = 2142
##
## 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)   -6.410e-02  3.304e-01  -0.194  0.846
## hormone_scr_ert_mean -1.537e-03  1.367e-03  -1.124  0.261
## hormone_sal_end_min_since_midnight 1.002e-05  1.104e-04   0.091  0.928
## interview_age    2.723e-04  2.631e-03   0.103  0.918
## bmi            2.876e-03  5.304e-03   0.542  0.588
##
##
## R-sq.(adj) = -0.00119
## lmer.REML = 5739.7 Scale est. = 0.83491 n = 2142
```

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)    -0.2622146   0.3514679  -0.746  0.455706
## hormone_scr_ert_mean -0.0002109   0.0012948  -0.163  0.870628
## hormone_sal_end_min_since_midnight  0.0004103   0.0001221   3.359  0.000793 ***
## interview_age    -0.0036387   0.0027803  -1.309  0.190754
## bmi              0.0180143   0.0053543   3.364  0.000779 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0126
## lmer.REML = 6903.5  Scale est. = 0.79495    n = 2435
```

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)    -0.0754309   0.3160250  -0.239   0.8114
## hormone_scr_ert_mean -0.0025577   0.0013148  -1.945   0.0518 .
## hormone_sal_end_min_since_midnight  0.0001421   0.0001132   1.256   0.2091
## interview_age     0.0005400   0.0025207   0.214   0.8304
## bmi              0.0028675   0.0049928   0.574   0.5658
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000107
## lmer.REML = 7430.8  Scale est. = 0.78582    n = 2673
```

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_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.93807    1.89253   0.496  0.6202
## accumbens_rvsnt_ant_z -0.25017    0.16587  -1.508  0.1317
## interview_age      0.03348    0.01579   2.120  0.0341 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  0.000946
## lmer.REML = 12780 Scale est. = 15.797    n = 2065
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.66112    1.91239   1.392   0.164
## accumbens_rvsnt_ant_z 0.02731    0.16422   0.166   0.868
## interview_age      0.01940    0.01592   1.219   0.223
##
## R-sq.(adj) = -0.00141
## lmer.REML = 12866 Scale est. = 13.349    n = 2060
```

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)      1.23747    1.89544   0.653   0.5139
## caudate_rvsnt_ant_z 0.03828    0.13153   0.291   0.7710
## interview_age      0.03104    0.01581   1.963   0.0498 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) = -0.000229
## lmer.REML = 12819 Scale est. = 16.059    n = 2069
```

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)    2.65338    1.91171   1.388   0.165
## caudate_rvsnt_ant_z 0.15740    0.12910   1.219   0.223
## interview_age    0.01980    0.01593   1.243   0.214
##
##
## R-sq.(adj) = -0.000981
## lmer.REML = 12905 Scale est. = 12.492    n = 2065
```

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)    1.055560    1.894179   0.557   0.5774
## putamen_rvsnt_ant_z 0.002893    0.132368   0.022   0.9826
## interview_age    0.032556    0.015806   2.060   0.0395 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000189
## lmer.REML = 12818 Scale est. = 15.798    n = 2069
```

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)    2.826785    1.915110   1.476   0.140
## putamen_rvsnt_ant_z -0.008676    0.133533  -0.065   0.948
```

```
## interview_age      0.018274  0.015955  1.145    0.252
##
##
## R-sq.(adj) =  -0.00137
## lmer.REML = 12899  Scale est. = 12.555    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)    0.99988    1.89645   0.527   0.5981
## accumbens_posvsneg_feedback_z 0.19684    0.17181   1.146   0.2521
## interview_age   0.03298    0.01582   2.085   0.0372 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00028
## lmer.REML = 12781  Scale est. = 15.798    n = 2064
```

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)    3.22030    1.92031   1.677   0.0937 .
## accumbens_posvsneg_feedback_z -0.21511    0.16484  -1.305   0.1920
## interview_age   0.01519    0.01600   0.950   0.3424
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.00061
## lmer.REML = 12898  Scale est. = 13.209    n = 2063
```

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)      0.99119    1.89617   0.523   0.6012
## caudate_posvsneg_feedback_z -0.03668    0.13461  -0.272   0.7853
## interview_age      0.03312    0.01582   2.094   0.0364 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000154
## lmer.REML = 12789  Scale est. = 15.852    n = 2065
```

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)      3.24793    1.92088   1.691   0.091 .
## caudate_posvsneg_feedback_z -0.15368    0.13267  -1.158   0.247
## interview_age      0.01478    0.01601   0.923   0.356
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000312
## lmer.REML = 12877  Scale est. = 13.985    n = 2058
```

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)      1.13313    1.89586   0.598   0.5501
## putamen_posvsneg_feedback_z -0.11704    0.13669  -0.856   0.3919
## interview_age      0.03186    0.01582   2.014   0.0442 *
```



```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000199
## lmer.REML = 12792  Scale est. = 16.215    n = 2065

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)      3.16383    1.91978   1.648  0.0995 .
## putamen_posvsneg_feedback_z -0.03829    0.13449  -0.285  0.7759
## interview_age      0.01554    0.01600   0.972  0.3313
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.00122
## lmer.REML = 12912  Scale est. = 14.196    n = 2063
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvsn_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      1.00430    1.90118   0.528  0.5974
## lOFC_rvsn_ant_z  0.05371    0.20796   0.258  0.7962
## interview_age     0.03302    0.01586   2.082  0.0374 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -8.98e-05
## lmer.REML = 12736  Scale est. = 15.567    n = 2056

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

```
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.82010    1.90148   0.431   0.6663
## mOFC_rvsnt_ant_z 0.17691    0.17881   0.989   0.3226
## interview_age   0.03454    0.01587   2.177   0.0296 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000336
## lmer.REML = 12741 Scale est. = 15.138    n = 2057
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.45026    1.90224   1.288   0.198
## lOFC_rvsnt_ant_z -0.12564    0.18771  -0.669   0.503
## interview_age   0.02112    0.01583   1.334   0.182
##
##
## R-sq.(adj) = -0.00104
## lmer.REML = 12770 Scale est. = 12.306    n = 2050
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvsnt_ant_z + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.34538    1.91032   1.228   0.220
## mOFC_rvsnt_ant_z -0.14308    0.16520  -0.866   0.387
## interview_age   0.02204    0.01591   1.386   0.166
##
##
## R-sq.(adj) = -0.000983
## lmer.REML = 12829 Scale est. = 12.283    n = 2056
```

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)    0.98560    1.89246   0.521   0.6026
## lOFC_posvsneg_feedback_z -0.04673    0.23076  -0.203   0.8395
## interview_age   0.03302    0.01579   2.091   0.0366 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000146
## lmer.REML = 12779 Scale est. = 16.099    n = 2065
##
## 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)    0.92801    1.89200   0.490   0.6238
## mOFC_posvsneg_feedback_z 0.20371    0.19485   1.046   0.2959
## interview_age   0.03360    0.01578   2.129   0.0334 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.000549
## lmer.REML = 12810 Scale est. = 15.903    n = 2069
```

Males

```
##
## 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)    2.96298    1.91995   1.543   0.123
## lOFC_posvsneg_feedback_z 0.15402    0.22167   0.695   0.487
## interview_age   0.01726    0.01599   1.080   0.280
```

```
##
##
## R-sq.(adj) =  -0.00137
## lmer.REML = 12794  Scale est. = 13.396    n = 2049

##
## 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)    2.91983    1.91198   1.527   0.127
## mOFC_posvsneg_feedback_z  0.05625    0.18611   0.302   0.763
## interview_age    0.01763    0.01593   1.107   0.269
##
##
## R-sq.(adj) =  -0.00132
## lmer.REML = 12845  Scale est. = 13.43    n = 2058
```

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)    1.21645    1.72886   0.704   0.4817
## bisbas_ss_basm_rr -0.02712    0.04321  -0.628   0.5303
## interview_age    0.03358    0.01401   2.398   0.0166 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000264
## lmer.REML = 16599  Scale est. = 17.025    n = 2681
```

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)      3.03467    1.68960   1.796  0.0726 .
## bisbas_ss_basm_rr -0.06792    0.04399  -1.544  0.1227
## interview_age     0.02210    0.01370   1.613  0.1068
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.000626
## lmer.REML = 18169 Scale est. = 15.591 n = 2906
```

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)      0.63889    1.83997   0.347  0.7285
## rt_diff_large_neutral_z 0.10524    0.12066   0.872  0.3832
## interview_age     0.03612    0.01535   2.354  0.0187 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.000301
## lmer.REML = 13881 Scale est. = 16.789 n = 2240

##
## 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)      0.64472    1.83859   0.351  0.7259
## rt_diff_large_small_z 0.15141    0.11655   1.299  0.1941
## interview_age     0.03610    0.01533   2.355  0.0186 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0007
## lmer.REML = 13880 Scale est. = 16.808 n = 2240
```

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)      2.13544    1.80453   1.183   0.237
## rt_diff_large_neutral_z -0.09316    0.12123  -0.768   0.442
## interview_age      0.02404    0.01503   1.599   0.110
##
##
## R-sq.(adj) =  -0.00104
## lmer.REML = 14471  Scale est. = 12.033    n = 2318
##
## 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)      2.17720    1.80291   1.208   0.227
## rt_diff_large_small_z -0.12580    0.12219  -1.029   0.303
## interview_age      0.02369    0.01502   1.577   0.115
##
##
## R-sq.(adj) =  -0.000768
## lmer.REML = 14470  Scale est. = 11.987    n = 2318
```

4—Int~Puberty x Reward—

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_rvsn_ant_z +
##   race.ethnicity.5level + demo_race_hispanic + interview_age +
##   bmi + household.income + high.educ
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.19987    2.43939   0.082   0.9347
```

```

## PDS_score          0.79254      0.19269      4.113 4.08e-05 ***
## accumbens_rvsnt_z -0.11644      0.43011     -0.271  0.7866
## race.ethnicity.5levelBlack -0.54696      0.88663     -0.617  0.5374
## race.ethnicity.5levelMixed  1.03544      0.85146      1.216  0.2241
## race.ethnicity.5levelOther -0.16088      1.02269     -0.157  0.8750
## race.ethnicity.5levelWhite  1.45279      0.79104      1.837  0.0664 .
## demo_race_hispanic1 -0.20403      0.38852     -0.525  0.5995
## interview_age        0.02278      0.01742      1.307  0.1912
## bmi                  0.02269      0.03487      0.651  0.5153
## household.income[>=200K] -1.88984      0.97221     -1.944  0.0521 .
## household.income[100K-200K] -0.89020      0.90918     -0.979  0.3277
## household.income[12K-16K]   0.25208      1.12725      0.224  0.8231
## household.income[16K-25K] -1.10913      1.03345     -1.073  0.2833
## household.income[25K-35K]   0.78057      0.95360      0.819  0.4131
## household.income[35K-50K] -0.41598      0.92982     -0.447  0.6547
## household.income[50K-75K] -0.73265      0.91346     -0.802  0.4226
## household.income[5K-12K]    0.55629      1.06287      0.523  0.6008
## household.income[75K-100K] -0.62387      0.92037     -0.678  0.4980
## high.educBachelor -0.31054      0.84267     -0.369  0.7125
## high.educHS Diploma/GED -0.49667      0.85388     -0.582  0.5609
## high.educPost Graduate Degree 0.06275      0.85607      0.073  0.9416
## high.educSome College  0.36018      0.79327      0.454  0.6498
## PDS_score:accumbens_rvsnt_z -0.10649      0.23252     -0.458  0.6470
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0285
## lmer.REML = 11325  Scale est. = 15.622    n = 1846

```

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)   2.668835   2.556890   1.044 0.296725
## PDS_score      0.746048   0.263507   2.831 0.004688 **
## accumbens_rvsnt_z 0.364988   0.435625   0.838 0.402226
## race.ethnicity.5levelBlack -0.108348   1.079384  -0.100 0.920054
## race.ethnicity.5levelMixed  1.304836   1.051483   1.241 0.214784
## race.ethnicity.5levelOther  0.341785   1.189402   0.287 0.773870
## race.ethnicity.5levelWhite  1.206927   0.989496   1.220 0.222722
## demo_race_hispanic1  0.311388   0.408385   0.762 0.445868
## interview_age   0.012166   0.016968   0.717 0.473475
## bmi            0.012529   0.036822   0.340 0.733708
## household.income[>=200K] -3.281213   0.990068  -3.314 0.000937 ***

```

```
## household.income[100K-200K]    -2.763515    0.933363    -2.961 0.003108 **
## household.income[12K-16K]      -1.157768    1.199683    -0.965 0.334642
## household.income[16K-25K]      -0.008963    1.030309    -0.009 0.993060
## household.income[25K-35K]      -0.663347    1.015310    -0.653 0.513617
## household.income[35K-50K]      -0.669759    0.974374    -0.687 0.491934
## household.income[50K-75K]      -2.274735    0.934490    -2.434 0.015020 *
## household.income[5K-12K]       0.169541    1.099597    0.154 0.877481
## household.income[75K-100K]     -2.905544    0.949416    -3.060 0.002243 **
## high.educBachelor              1.452597    0.960481    1.512 0.130615
## high.educHS Diploma/GED       -0.979665    0.985423    -0.994 0.320278
## high.educPost Graduate Degree  0.582158    0.960077    0.606 0.544347
## high.educSome College          0.869921    0.917613    0.948 0.343241
## PDS_score:accumbens_rvs_n_ant_z -0.260139    0.292297    -0.890 0.373593
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0392
## lmer.REML = 11466 Scale est. = 13.619 n = 1849
```

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_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)    0.52927    2.43361   0.217  0.8279
## PDS_score       0.76803    0.19272   3.985 7.01e-05 ***
## caudate_rvs_n_ant_z 0.77370    0.34515   2.242  0.0251 *
## race.ethnicity.5levelBlack -0.51173    0.88814  -0.576  0.5646
## race.ethnicity.5levelMixed  1.07930    0.85226   1.266  0.2055
## race.ethnicity.5levelOther -0.07330    1.02515  -0.072  0.9430
## race.ethnicity.5levelWhite  1.52492    0.79237   1.925  0.0544 .
## demo_race_hispanic1 -0.22051    0.38852  -0.568  0.5704
## interview_age    0.02131    0.01742   1.223  0.2213
## bmi             0.03008    0.03466   0.868  0.3856
## household.income[>=200K] -2.21288    0.96642  -2.290  0.0221 *
## household.income[100K-200K] -1.20284    0.90240  -1.333  0.1827
## household.income[12K-16K]   0.06126    1.12824   0.054  0.9567
## household.income[16K-25K]  -1.36902    1.02749  -1.332  0.1829
## household.income[25K-35K]   0.43839    0.94424   0.464  0.6425
## household.income[35K-50K]  -0.68580    0.92095  -0.745  0.4566
## household.income[50K-75K]  -1.01690    0.90543  -1.123  0.2615
## household.income[5K-12K]    0.23352    1.05848   0.221  0.8254
```



```
## household.income[75K-100K]      -0.92123      0.91378    -1.008      0.3135
## high.educBachelor                -0.33766      0.83936    -0.402      0.6875
## high.educHS Diploma/GED         -0.49618      0.85416    -0.581      0.5614
## high.educPost Graduate Degree    0.09642      0.85272     0.113      0.9100
## high.educSome College            0.30288      0.79132     0.383      0.7019
## PDS_score:caudate_rvs_n_ant_z   -0.44649      0.19155    -2.331      0.0199 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0296
## lmer.REML = 11351  Scale est. = 16.23      n = 1848
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_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)      2.27460    2.54857   0.892  0.37224
## PDS_score         0.72826    0.26505   2.748  0.00606 **
## caudate_rvs_n_ant_z -0.03750    0.37583  -0.100  0.92053
## race.ethnicity.5levelBlack -0.01279    1.07966  -0.012  0.99055
## race.ethnicity.5levelMixed  1.39123    1.05392   1.320  0.18698
## race.ethnicity.5levelOther  0.29446    1.19153   0.247  0.80484
## race.ethnicity.5levelWhite  1.24808    0.99269   1.257  0.20882
## demo_race_hispanic1    0.40834    0.41147   0.992  0.32113
## interview_age        0.01274    0.01697   0.751  0.45300
## bmi                0.02021    0.03694   0.547  0.58443
## household.income[>=200K] -3.19440    0.98176  -3.254  0.00116 **
## household.income[100K-200K] -2.61789    0.92382  -2.834  0.00465 **
## household.income[12K-16K]  -0.77745    1.19679  -0.650  0.51602
## household.income[16K-25K]   0.15487    1.01804   0.152  0.87910
## household.income[25K-35K]  -0.47781    1.00891  -0.474  0.63585
## household.income[35K-50K]  -0.50031    0.96604  -0.518  0.60459
## household.income[50K-75K]  -2.01226    0.92431  -2.177  0.02960 *
## household.income[5K-12K]    0.43778    1.09645   0.399  0.68974
## household.income[75K-100K] -2.72820    0.93954  -2.904  0.00373 **
## high.educBachelor        1.47711    0.94599   1.561  0.11859
## high.educHS Diploma/GED  -1.10801    0.96856  -1.144  0.25278
## high.educPost Graduate Degree 0.63666    0.94617   0.673  0.50111
## high.educSome College     0.87567    0.90374   0.969  0.33270
## PDS_score:caudate_rvs_n_ant_z 0.12919    0.26079   0.495  0.62041
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) = 0.0398
## lmer.REML = 11493 Scale est. = 12.653 n = 1853
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_rvsn_ant_z + race.ethnicity.5level +
##      demo_race_hispanic + interview_age + bmi + household.income +
##      high.educ
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.18199    2.43846   0.075   0.9405
## PDS_score       0.77946    0.19301   4.038 5.6e-05 ***
## putamen_rvsn_ant_z 0.51684    0.35098   1.473   0.1410
## race.ethnicity.5levelBlack -0.51921    0.88894  -0.584   0.5592
## race.ethnicity.5levelMixed  1.06269    0.85367   1.245   0.2133
## race.ethnicity.5levelOther -0.12951    1.02499  -0.126   0.8995
## race.ethnicity.5levelWhite  1.51865    0.79338   1.914   0.0558 .
## demo_race_hispanic1 -0.20874    0.38909  -0.536   0.5917
## interview_age     0.02186    0.01743   1.254   0.2100
## bmi              0.02891    0.03490   0.828   0.4075
## household.income[>=200K] -1.97204    0.97578  -2.021   0.0434 *
## household.income[100K-200K] -0.96416    0.91232  -1.057   0.2907
## household.income[12K-16K]   0.22577    1.13244   0.199   0.8420
## household.income[16K-25K] -1.09675    1.03876  -1.056   0.2912
## household.income[25K-35K]   0.67425    0.95488   0.706   0.4802
## household.income[35K-50K] -0.43173    0.93241  -0.463   0.6434
## household.income[50K-75K] -0.79323    0.91494  -0.867   0.3861
## household.income[5K-12K]    0.49588    1.06790   0.464   0.6425
## household.income[75K-100K] -0.69572    0.92325  -0.754   0.4512
## high.educBachelor -0.26109    0.83684  -0.312   0.7551
## high.educHS Diploma/GED -0.46064    0.85090  -0.541   0.5883
## high.educPost Graduate Degree 0.15474    0.85033   0.182   0.8556
## high.educSome College  0.38669    0.78792   0.491   0.6236
## PDS_score:putamen_rvsn_ant_z -0.27967    0.19194  -1.457   0.1453
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0276
## lmer.REML = 11353 Scale est. = 15.813 n = 1848
```

Males

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

```
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_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)	2.4927082	2.5555208	0.975	0.32948
## PDS_score	0.7756950	0.2663093	2.913	0.00363 **
## putamen_rvsnt_ant_z	0.2834519	0.3949329	0.718	0.47302
## race.ethnicity.5levelBlack	0.0001431	1.0817292	0.000	0.99989
## race.ethnicity.5levelMixed	1.3575455	1.0555089	1.286	0.19855
## race.ethnicity.5levelOther	0.3273285	1.1935135	0.274	0.78392
## race.ethnicity.5levelWhite	1.2081930	0.9944948	1.215	0.22457
## demo_race_hispanic1	0.3881799	0.4104266	0.946	0.34438
## interview_age	0.0099168	0.0170198	0.583	0.56019
## bmi	0.0177485	0.0370427	0.479	0.63190
## household.income[>=200K]	-3.1208895	0.9831975	-3.174	0.00153 **
## household.income[100K-200K]	-2.5910582	0.9250107	-2.801	0.00515 **
## household.income[12K-16K]	-0.8692761	1.1932014	-0.729	0.46639
## household.income[16K-25K]	0.1353133	1.0176884	0.133	0.89424
## household.income[25K-35K]	-0.5001195	1.0088742	-0.496	0.62015
## household.income[35K-50K]	-0.4669172	0.9685290	-0.482	0.62980
## household.income[50K-75K]	-1.9923143	0.9253626	-2.153	0.03145 *
## household.income[5K-12K]	0.2134903	1.0892411	0.196	0.84463
## household.income[75K-100K]	-2.6453000	0.9412716	-2.810	0.00500 **
## high.educBachelor	1.5888184	0.9403096	1.690	0.09126 .
## high.educHS Diploma/GED	-1.0540087	0.9636757	-1.094	0.27421
## high.educPost Graduate Degree	0.7441161	0.9410583	0.791	0.42921
## high.educSome College	0.9790706	0.8968195	1.092	0.27510
## PDS_score:putamen_rvsnt_ant_z	-0.2187160	0.2737571	-0.799	0.42443

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.038
## lmer.REML = 11499  Scale est. = 12.667    n = 1853
```

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_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)      0.509631   2.453955   0.208 0.835504
## PDS_score        0.743493   0.195361   3.806 0.000146 ***
## l0FC_rvs_n_ant_z  0.371556   0.520662   0.714 0.475553
## race.ethnicity.5levelBlack -0.509222   0.893439  -0.570 0.568777
## race.ethnicity.5levelMixed  1.085426   0.856802   1.267 0.205377
## race.ethnicity.5levelOther -0.008328   1.028092  -0.008 0.993538
## race.ethnicity.5levelWhite  1.520267   0.795904   1.910 0.056276 .
## demo_race_hispanic1 -0.229686   0.391675  -0.586 0.557666
## interview_age     0.022207   0.017531   1.267 0.205428
## bmi              0.033037   0.034909   0.946 0.344094
## household.income[>=200K] -2.349377   0.982168  -2.392 0.016857 *
## household.income[100K-200K] -1.351875   0.918676  -1.472 0.141317
## household.income[12K-16K]  -0.067052   1.139912  -0.059 0.953100
## household.income[16K-25K]  -1.511751   1.041776  -1.451 0.146917
## household.income[25K-35K]   0.280808   0.961148   0.292 0.770199
## household.income[35K-50K]  -0.795571   0.938319  -0.848 0.396623
## household.income[50K-75K]  -1.151035   0.920871  -1.250 0.211482
## household.income[5K-12K]    0.107912   1.079860   0.100 0.920410
## household.income[75K-100K] -1.073761   0.929025  -1.156 0.247918
## high.educBachelor  -0.285637   0.862130  -0.331 0.740444
## high.educHS Diploma/GED  -0.471556   0.874502  -0.539 0.589796
## high.educPost Graduate Degree 0.157297   0.875476   0.180 0.857431
## high.educSome College  0.349323   0.812297   0.430 0.667215
## PDS_score:l0FC_rvs_n_ant_z -0.164213   0.289256  -0.568 0.570304
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0252
## lmer.REML = 11292 Scale est. = 15.515    n = 1837

```

Males

```

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * l0FC_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)      1.8899551   2.5602585   0.738 0.46049
## PDS_score        0.6690788   0.2661542   2.514 0.01203 *
## l0FC_rvs_n_ant_z -0.1563665   0.5432191  -0.288 0.77349
## race.ethnicity.5levelBlack -0.1031758   1.0924920  -0.094 0.92477
## race.ethnicity.5levelMixed  1.3818086   1.0629140   1.300 0.19376
## race.ethnicity.5levelOther  0.3270420   1.1967393   0.273 0.78467
## race.ethnicity.5levelWhite  1.2388365   1.0015380   1.237 0.21627
## demo_race_hispanic1  0.3626372   0.4101091   0.884 0.37668
## interview_age     0.0142816   0.0169079   0.845 0.39841

```

```
## bmi 0.0152630 0.0366726 0.416 0.67732
## household.income[>=200K] -2.7069049 1.0039019 -2.696 0.00707 **
## household.income[100K-200K] -2.2091889 0.9485947 -2.329 0.01997 *
## household.income[12K-16K] -0.5989285 1.2158175 -0.493 0.62235
## household.income[16K-25K] 0.6471284 1.0438504 0.620 0.53537
## household.income[25K-35K] -0.1385306 1.0284002 -0.135 0.89286
## household.income[35K-50K] -0.0729630 0.9874297 -0.074 0.94110
## household.income[50K-75K] -1.7069097 0.9505327 -1.796 0.07270 .
## household.income[5K-12K] 0.4555305 1.1168450 0.408 0.68342
## household.income[75K-100K] -2.3291007 0.9632424 -2.418 0.01570 *
## high.educBachelor 1.4563833 0.9368369 1.555 0.12022
## high.educHS Diploma/GED -0.9280029 0.9719115 -0.955 0.33979
## high.educPost Graduate Degree 0.5937916 0.9364935 0.634 0.52612
## high.educSome College 0.8353600 0.8954363 0.933 0.35099
## PDS_score:lOFC_rvsnt_ant_z -0.0006906 0.3724398 -0.002 0.99852
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0373
## lmer.REML = 11383 Scale est. = 12.556 n = 1840
```

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_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) 0.23125 2.44798 0.094 0.924750
## PDS_score 0.74166 0.19569 3.790 0.000156 ***
## mOFC_rvsnt_ant_z 0.68269 0.45307 1.507 0.132039
## race.ethnicity.5levelBlack -0.49374 0.89222 -0.553 0.580068
## race.ethnicity.5levelMixed 1.06878 0.85750 1.246 0.212780
## race.ethnicity.5levelOther 0.01560 1.02588 0.015 0.987869
## race.ethnicity.5levelWhite 1.57030 0.79556 1.974 0.048552 *
## demo_race_hispanic1 -0.25419 0.39118 -0.650 0.515899
## interview_age 0.02340 0.01750 1.337 0.181485
## bmi 0.03649 0.03489 1.046 0.295773
## household.income[>=200K] -2.46751 0.98037 -2.517 0.011924 *
## household.income[100K-200K] -1.41492 0.91672 -1.543 0.122894
## household.income[12K-16K] -0.22244 1.13312 -0.196 0.844391
## household.income[16K-25K] -1.54100 1.04031 -1.481 0.138706
## household.income[25K-35K] 0.26413 0.95711 0.276 0.782602
## household.income[35K-50K] -0.87687 0.93651 -0.936 0.349235
```

```
## household.income[50K-75K]      -1.21896    0.91802   -1.328  0.184408
## household.income[5K-12K]       0.04002    1.07524    0.037  0.970316
## household.income[75K-100K]    -1.14780    0.92676   -1.239  0.215686
## high.educBachelor             -0.15461    0.85496   -0.181  0.856513
## high.educHS Diploma/GED      -0.37719    0.86561   -0.436  0.663068
## high.educPost Graduate Degree  0.27185    0.86905    0.313  0.754462
## high.educSome College         0.45474    0.80486    0.565  0.572148
## PDS_score:mOFC_rvs_n_ant_z    -0.23269    0.24885   -0.935  0.349888
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.028
## lmer.REML = 11289  Scale est. = 15.582    n = 1837
```

Males

```
##
## 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)    2.33465    2.56104   0.912  0.36210
## PDS_score       0.74586    0.26566   2.808  0.00504 **
## mOFC_rvs_n_ant_z 0.59577    0.44424   1.341  0.18006
## race.ethnicity.5levelBlack -0.05633    1.09594  -0.051  0.95902
## race.ethnicity.5levelMixed  1.26999    1.06560   1.192  0.23349
## race.ethnicity.5levelOther  0.33258    1.20125   0.277  0.78192
## race.ethnicity.5levelWhite  1.18947    1.00496   1.184  0.23673
## demo_race_hispanic1  0.35212    0.40931   0.860  0.38975
## interview_age    0.01453    0.01694   0.857  0.39136
## bmi             0.01654    0.03667   0.451  0.65197
## household.income[>=200K]   -3.25982    0.99489  -3.277  0.00107 **
## household.income[100K-200K] -2.79664    0.93840  -2.980  0.00292 **
## household.income[12K-16K]  -1.24341    1.19243  -1.043  0.29720
## household.income[16K-25K]  -0.06731    1.03063  -0.065  0.94794
## household.income[25K-35K]  -0.84096    1.01997  -0.824  0.40977
## household.income[35K-50K]  -0.62621    0.97777  -0.640  0.52197
## household.income[50K-75K]  -2.27169    0.93946  -2.418  0.01570 *
## household.income[5K-12K]   -0.13244    1.10869  -0.119  0.90492
## household.income[75K-100K] -2.86625    0.95358  -3.006  0.00269 **
## high.educBachelor         1.45219    0.93867   1.547  0.12202
## high.educHS Diploma/GED  -1.10692    0.96878  -1.143  0.25336
## high.educPost Graduate Degree 0.63563    0.93823   0.677  0.49819
## high.educSome College     0.89430    0.89508   0.999  0.31786
## PDS_score:mOFC_rvs_n_ant_z -0.61615    0.30883  -1.995  0.04618 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.0408
## lmer.REML = 11447 Scale est. = 12.563 n = 1848
```

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)	0.35307	2.43986	0.145	0.8850
## PDS_score	0.76492	0.19403	3.942	8.37e-05
## accumbens_posvsneg_feedback_z	0.10595	0.44779	0.237	0.8130
## race.ethnicity.5levelBlack	-0.48032	0.89176	-0.539	0.5902
## race.ethnicity.5levelMixed	1.10492	0.85548	1.292	0.1967
## race.ethnicity.5levelOther	-0.05763	1.02403	-0.056	0.9551
## race.ethnicity.5levelWhite	1.51240	0.79409	1.905	0.0570
## demo_race_hispanic1	-0.23063	0.39229	-0.588	0.5567
## interview_age	0.02054	0.01746	1.176	0.2398
## bmi	0.03083	0.03480	0.886	0.3758
## household.income[>=200K]	-1.97151	0.97565	-2.021	0.0435
## household.income[100K-200K]	-0.93035	0.91144	-1.021	0.3075
## household.income[12K-16K]	0.23620	1.13195	0.209	0.8347
## household.income[16K-25K]	-1.17570	1.03619	-1.135	0.2567
## household.income[25K-35K]	0.67948	0.95356	0.713	0.4762
## household.income[35K-50K]	-0.44467	0.93169	-0.477	0.6332
## household.income[50K-75K]	-0.77898	0.91599	-0.850	0.3952
## household.income[5K-12K]	0.38165	1.07169	0.356	0.7218
## household.income[75K-100K]	-0.67134	0.92331	-0.727	0.4673
## high.educBachelor	-0.30408	0.84731	-0.359	0.7197
## high.educHS Diploma/GED	-0.47572	0.85865	-0.554	0.5796
## high.educPost Graduate Degree	0.10898	0.86114	0.127	0.8993
## high.educSome College	0.34659	0.79736	0.435	0.6639
## PDS_score:accumbens_posvsneg_feedback_z	0.05945	0.24407	0.244	0.8076

```
##
## (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) =  0.0257
## lmer.REML = 11341 Scale est. = 15.659 n = 1846
```

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)	2.833606	2.573055	1.101	0.270928
## PDS_score	0.732031	0.264249	2.770	0.005658
## accumbens_posvsneg_feedback_z	0.498652	0.501856	0.994	0.320541
## race.ethnicity.5levelBlack	-0.157031	1.091012	-0.144	0.885570
## race.ethnicity.5levelMixed	1.371431	1.065187	1.288	0.198082
## race.ethnicity.5levelOther	0.311895	1.200040	0.260	0.794967
## race.ethnicity.5levelWhite	1.295424	1.005717	1.288	0.197888
## demo_race_hispanic1	0.369736	0.407321	0.908	0.364143
## interview_age	0.008032	0.017001	0.472	0.636670
## bmi	0.038021	0.036993	1.028	0.304191
## household.income[>=200K]	-3.510564	0.999903	-3.511	0.000457
## household.income[100K-200K]	-3.078528	0.942808	-3.265	0.001114
## household.income[12K-16K]	-1.275245	1.195551	-1.067	0.286267
## household.income[16K-25K]	-0.345507	1.032720	-0.335	0.737996
## household.income[25K-35K]	-0.819645	1.028399	-0.797	0.425548
## household.income[35K-50K]	-0.990200	0.983894	-1.006	0.314352
## household.income[50K-75K]	-2.446963	0.944296	-2.591	0.009637
## household.income[5K-12K]	-0.092983	1.118555	-0.083	0.933759
## household.income[75K-100K]	-3.135884	0.959249	-3.269	0.001099
## high.educBachelor	1.566462	0.944650	1.658	0.097440


```

## high.educHS Diploma/GED          -1.105470    0.969749   -1.140  0.254455
## high.educPost Graduate Degree      0.726847    0.944857    0.769  0.441834
## high.educSome College              0.979738    0.901637    1.087  0.277347
## PDS_score:accumbens_posvsneg_feedback_z -0.590649    0.363764   -1.624  0.104610
##
## (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) =  0.0421
## lmer.REML = 11479  Scale est. = 13.482    n = 1851

```

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)                  0.51190    2.42883   0.211   0.8331
## PDS_score                     0.76428    0.19286   3.963 7.69e-05 ***
## caudate_posvsneg_feedback_z  -0.71105    0.35018  -2.031   0.0424 *
## race.ethnicity.5levelBlack   -0.60318    0.89066  -0.677   0.4983

```

```

## race.ethnicity.5levelMixed      1.00450    0.85426    1.176    0.2398
## race.ethnicity.5levelOther     -0.17787    1.02347   -0.174    0.8620
## race.ethnicity.5levelWhite      1.49748    0.79346    1.887    0.0593 .
## demo_race_hispanic1            -0.17104    0.38968   -0.439    0.6608
## interview_age                   0.02055    0.01739    1.181    0.2377
## bmi                            0.03194    0.03473    0.920    0.3579
## household.income[>=200K]       -2.17768    0.96850   -2.249    0.0247 *
## household.income[100K-200K]    -1.20550    0.90382   -1.334    0.1824
## household.income[12K-16K]      -0.06817    1.12429   -0.061    0.9517
## household.income[16K-25K]      -1.38480    1.03248   -1.341    0.1800
## household.income[25K-35K]       0.40339    0.94577    0.427    0.6698
## household.income[35K-50K]      -0.71028    0.92465   -0.768    0.4425
## household.income[50K-75K]      -1.04628    0.90657   -1.154    0.2486
## household.income[5K-12K]        0.22101    1.05915    0.209    0.8347
## household.income[75K-100K]     -0.93949    0.91389   -1.028    0.3041
## high.educBachelor              -0.16956    0.84517   -0.201    0.8410
## high.educHS Diploma/GED        -0.31013    0.85714   -0.362    0.7175
## high.educPost Graduate Degree    0.17402    0.85809    0.203    0.8393
## high.educSome College           0.47665    0.79539    0.599    0.5491
## PDS_score:caudate_posvsneg_feedback_z 0.41089    0.19275    2.132    0.0332 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0281
## lmer.REML = 11350  Scale est. = 15.053    n = 1848

```

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)    3.004228   2.564003   1.172 0.241473
## PDS_score       0.738043   0.264851   2.787 0.005381 **
## caudate_posvsneg_feedback_z 0.263956   0.409314   0.645 0.519091
## race.ethnicity.5levelBlack -0.122024   1.081122  -0.113 0.910148
## race.ethnicity.5levelMixed  1.308752   1.053496   1.242 0.214288
## race.ethnicity.5levelOther  0.281773   1.191348   0.237 0.813059
## race.ethnicity.5levelWhite  1.176789   0.992934   1.185 0.236107
## demo_race_hispanic1  0.375257   0.407847   0.920 0.357647
## interview_age    0.007968   0.017059   0.467 0.640509
## bmi             0.021121   0.036967   0.571 0.567844
## household.income[>=200K] -3.284541   0.987085  -3.328 0.000894 ***
## household.income[100K-200K] -2.815522   0.930646  -3.025 0.002518 **
## household.income[12K-16K]  -1.132038   1.186248  -0.954 0.340058
## household.income[16K-25K]  -0.144790   1.027851  -0.141 0.887991

```

```
## household.income[25K-35K] -0.559241 1.015415 -0.551 0.581872
## household.income[35K-50K] -0.703973 0.971681 -0.724 0.468858
## household.income[50K-75K] -2.196545 0.932866 -2.355 0.018647 *
## household.income[5K-12K] -0.173524 1.103500 -0.157 0.875066
## household.income[75K-100K] -2.886482 0.946159 -3.051 0.002316 **
## high.educBachelor 1.568339 0.947305 1.656 0.097979 .
## high.educHS Diploma/GED -1.063308 0.975403 -1.090 0.275804
## high.educPost Graduate Degree 0.695531 0.947466 0.734 0.462985
## high.educSome College 0.931210 0.903483 1.031 0.302823
## PDS_score:caudate_posvsneg_feedback_z -0.319191 0.294216 -1.085 0.278116
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0366
## lmer.REML = 11453 Scale est. = 14.079 n = 1844
```

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) 0.57505 2.43611 0.236 0.8134
## PDS_score 0.80088 0.19338 4.141 3.61e-05 ***
## putamen_posvsneg_feedback_z -0.61980 0.36241 -1.710 0.0874 .
## race.ethnicity.5levelBlack -0.59957 0.88903 -0.674 0.5001
## race.ethnicity.5levelMixed 1.06549 0.85352 1.248 0.2121
## race.ethnicity.5levelOther -0.20223 1.02412 -0.197 0.8435
## race.ethnicity.5levelWhite 1.53343 0.79261 1.935 0.0532 .
## demo_race_hispanic1 -0.21173 0.39216 -0.540 0.5893
## interview_age 0.01948 0.01738 1.121 0.2625
## bmi 0.02802 0.03484 0.804 0.4214
## household.income[>=200K] -2.01635 0.97301 -2.072 0.0384 *
## household.income[100K-200K] -1.02319 0.90912 -1.125 0.2605
## household.income[12K-16K] 0.14503 1.13069 0.128 0.8980
## household.income[16K-25K] -1.20627 1.03453 -1.166 0.2438
## household.income[25K-35K] 0.62129 0.95232 0.652 0.5142
## household.income[35K-50K] -0.48021 0.93076 -0.516 0.6060
## household.income[50K-75K] -0.83024 0.91322 -0.909 0.3634
## household.income[5K-12K] 0.54493 1.07020 0.509 0.6107
## household.income[75K-100K] -0.81486 0.92045 -0.885 0.3761
## high.educBachelor -0.33667 0.84974 -0.396 0.6920
## high.educHS Diploma/GED -0.53510 0.86179 -0.621 0.5347
## high.educPost Graduate Degree 0.05744 0.86134 0.067 0.9468
## high.educSome College 0.33091 0.80000 0.414 0.6792
```

```
## PDS_score:putamen_posvsneg_feedback_z 0.31332 0.19814 1.581 0.1140
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0286
## lmer.REML = 11330 Scale est. = 15.573 n = 1845
```

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) 3.077138 2.578607 1.193 0.232894
## PDS_score 0.713497 0.265855 2.684 0.007345 **
## putamen_posvsneg_feedback_z 0.116789 0.400597 0.292 0.770673
## race.ethnicity.5levelBlack -0.091564 1.081925 -0.085 0.932564
## race.ethnicity.5levelMixed 1.316816 1.054779 1.248 0.212034
## race.ethnicity.5levelOther 0.265007 1.192768 0.222 0.824200
## race.ethnicity.5levelWhite 1.193574 0.993491 1.201 0.229754
## demo_race_hispanic1 0.332109 0.407206 0.816 0.414847
## interview_age 0.007625 0.017065 0.447 0.655041
## bmi 0.026963 0.036900 0.731 0.465050
## household.income[>=200K] -3.315514 0.992895 -3.339 0.000857 ***
## household.income[100K-200K] -2.862492 0.935670 -3.059 0.002251 **
## household.income[12K-16K] -1.162753 1.191175 -0.976 0.329125
## household.income[16K-25K] -0.174900 1.036935 -0.169 0.866075
## household.income[25K-35K] -0.612503 1.021872 -0.599 0.548985
## household.income[35K-50K] -0.748731 0.977299 -0.766 0.443702
## household.income[50K-75K] -2.183867 0.938157 -2.328 0.020030 *
## household.income[5K-12K] -0.252420 1.110944 -0.227 0.820284
## household.income[75K-100K] -2.910663 0.951717 -3.058 0.002258 **
## high.educBachelor 1.458417 0.952884 1.531 0.126059
## high.educHS Diploma/GED -1.136266 0.980450 -1.159 0.246639
## high.educPost Graduate Degree 0.626871 0.952971 0.658 0.510745
## high.educSome College 0.867904 0.909644 0.954 0.340152
## PDS_score:putamen_posvsneg_feedback_z -0.117205 0.283941 -0.413 0.679816
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0358
## lmer.REML = 11489 Scale est. = 14.541 n = 1849
```

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)                   0.30976    2.43644   0.127 0.898847
## PDS_score                      0.73791    0.19490   3.786 0.000158 ***
## lOFC_posvsneg_feedback_z      -0.47278    0.58504  -0.808 0.419125
## race.ethnicity.5levelBlack    -0.46824    0.89181  -0.525 0.599617
## race.ethnicity.5levelMixed     1.09005    0.85458   1.276 0.202283
## race.ethnicity.5levelOther    -0.18063    1.02502  -0.176 0.860140
## race.ethnicity.5levelWhite     1.50079    0.79359   1.891 0.058766 .
## demo_race_hispanic1          -0.22674    0.39222  -0.578 0.563272
## interview_age                  0.02290    0.01748   1.310 0.190270
## bmi                           0.02970    0.03483   0.853 0.393892
## household.income[>=200K]      -2.21091    0.96851  -2.283 0.022557 *
## household.income[100K-200K]   -1.20356    0.90400  -1.331 0.183231
## household.income[12K-16K]     -0.03615    1.12546  -0.032 0.974382
## household.income[16K-25K]     -1.37547    1.02896  -1.337 0.181471
## household.income[25K-35K]      0.51538    0.94793   0.544 0.586720
## household.income[35K-50K]     -0.60480    0.92575  -0.653 0.513641
## household.income[50K-75K]     -0.98708    0.90800  -1.087 0.277140
## household.income[5K-12K]       0.21756    1.06901   0.204 0.838755
## household.income[75K-100K]    -0.93897    0.91516  -1.026 0.305022
## high.educBachelor             -0.22976    0.83796  -0.274 0.783968
## high.educHS Diploma/GED      -0.33738    0.85104  -0.396 0.691831
## high.educPost Graduate Degree  0.19193    0.85135   0.225 0.821665
## high.educSome College          0.38717    0.78861   0.491 0.623516
## PDS_score:lOFC_posvsneg_feedback_z 0.32573    0.31273   1.042 0.297747
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0253
## lmer.REML = 11333 Scale est. = 15.886    n = 1845
```

Males

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

```
##      race.ethnicity.5level + demo_race_hispanic + interview_age +
##      bmi + household.income + high.educ
##
## Parametric coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.567528   2.562908   1.002  0.31657
## PDS_score         0.676935   0.268108   2.525  0.01166 *
## lOFC_posvsneg_feedback_z -0.061789   0.595076  -0.104  0.91731
## race.ethnicity.5levelBlack -0.071107   1.089696  -0.065  0.94798
## race.ethnicity.5levelMixed  1.329647   1.064212   1.249  0.21167
## race.ethnicity.5levelOther  0.235045   1.198365   0.196  0.84452
## race.ethnicity.5levelWhite  1.233856   1.002795   1.230  0.21870
## demo_race_hispanic1      0.393637   0.410627   0.959  0.33788
## interview_age          0.009194   0.017018   0.540  0.58912
## bmi                   0.026275   0.036987   0.710  0.47757
## household.income[>=200K] -3.109191   1.027046  -3.027  0.00250 **
## household.income[100K-200K] -2.638807   0.972604  -2.713  0.00673 **
## household.income[12K-16K]  -1.096754   1.227158  -0.894  0.37158
## household.income[16K-25K]   0.282532   1.075271   0.263  0.79277
## household.income[25K-35K]  -0.741261   1.057463  -0.701  0.48340
## household.income[35K-50K]  -0.570784   1.011264  -0.564  0.57253
## household.income[50K-75K]  -2.018260   0.975068  -2.070  0.03861 *
## household.income[5K-12K]    0.289728   1.131858   0.256  0.79800
## household.income[75K-100K] -2.740308   0.987973  -2.774  0.00560 **
## high.educBachelor        1.590826   0.949403   1.676  0.09399 .
## high.educHS Diploma/GED  -0.727824   0.978583  -0.744  0.45712
## high.educPost Graduate Degree  0.751565   0.949321   0.792  0.42865
## high.educSome College     1.015511   0.907015   1.120  0.26302
## PDS_score:lOFC_posvsneg_feedback_z 0.054163   0.402000   0.135  0.89284
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0368
## lmer.REML = 11390 Scale est. = 13.732    n = 1838
```

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)      0.38712    2.43162   0.159  0.8735
## PDS_score         0.76028    0.19404   3.918 9.25e-05 ***
```

```

## mOFC_posvsneg_feedback_z      -0.50792    0.50771   -1.000    0.3172
## race.ethnicity.5levelBlack     -0.44012    0.89170   -0.494    0.6217
## race.ethnicity.5levelMixed      1.10747    0.85501    1.295    0.1954
## race.ethnicity.5levelOther     -0.16579    1.02495   -0.162    0.8715
## race.ethnicity.5levelWhite      1.52923    0.79407    1.926    0.0543 .
## demo_race_hispanic1            -0.23353    0.39138   -0.597    0.5508
## interview_age                   0.02070    0.01742    1.188    0.2349
## bmi                             0.03224    0.03473    0.928    0.3535
## household.income[>=200K]       -2.12483    0.96950   -2.192    0.0285 *
## household.income[100K-200K]    -1.09009    0.90505   -1.204    0.2286
## household.income[12K-16K]       0.02058    1.12426    0.018    0.9854
## household.income[16K-25K]      -1.25048    1.03215   -1.212    0.2258
## household.income[25K-35K]       0.53796    0.94739    0.568    0.5702
## household.income[35K-50K]      -0.57381    0.92545   -0.620    0.5353
## household.income[50K-75K]      -0.92159    0.90757   -1.015    0.3100
## household.income[5K-12K]        0.22099    1.07020    0.206    0.8364
## household.income[75K-100K]     -0.87021    0.91625   -0.950    0.3424
## high.educBachelor              -0.22513    0.83778   -0.269    0.7882
## high.educHS Diploma/GED        -0.35398    0.85094   -0.416    0.6775
## high.educPost Graduate Degree    0.19295    0.85138    0.227    0.8207
## high.educSome College           0.40759    0.78890    0.517    0.6055
## PDS_score:mOFC_posvsneg_feedback_z 0.48424    0.27660    1.751    0.0802 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0277
## lmer.REML = 11355  Scale est. = 15.46    n = 1849

```

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)    2.508370   2.551745   0.983  0.32574
## PDS_score       0.680530   0.265937   2.559  0.01058 *
## mOFC_posvsneg_feedback_z -0.110384   0.510815  -0.216  0.82894
## race.ethnicity.5levelBlack -0.104075   1.087092  -0.096  0.92374
## race.ethnicity.5levelMixed  1.361193   1.061232   1.283  0.19978
## race.ethnicity.5levelOther  0.263816   1.194095   0.221  0.82517
## race.ethnicity.5levelWhite  1.245547   1.000695   1.245  0.21341
## demo_race_hispanic1    0.374382   0.407782   0.918  0.35869
## interview_age    0.009942   0.016954   0.586  0.55767
## bmi              0.026877   0.036780   0.731  0.46503
## household.income[>=200K] -3.126142   1.017381  -3.073  0.00215 **
## household.income[100K-200K] -2.652350   0.962729  -2.755  0.00593 **

```

```

## household.income[12K-16K]          -1.023856    1.209430   -0.847    0.39735
## household.income[16K-25K]          0.239296    1.056189    0.227    0.82079
## household.income[25K-35K]         -0.751904    1.048135   -0.717    0.47324
## household.income[35K-50K]         -0.570143    1.001645   -0.569    0.56929
## household.income[50K-75K]         -2.056041    0.964937   -2.131    0.03324 *
## household.income[5K-12K]           0.261112    1.122652    0.233    0.81611
## household.income[75K-100K]        -2.750170    0.977886   -2.812    0.00497 **
## high.educBachelor                  1.539549    0.939061    1.639    0.10129
## high.educHS Diploma/GED          -0.759596    0.967541   -0.785    0.43251
## high.educPost Graduate Degree      0.721519    0.938978    0.768    0.44234
## high.educSome College              0.979824    0.895528    1.094    0.27404
## PDS_score:m0FC_posvsneg_feedback_z -0.028308    0.353115   -0.080    0.93611
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0368
## lmer.REML = 11440 Scale est. = 13.673    n = 1847

```

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)   -1.964742   2.316890   -0.848   0.39652
## PDS_score       2.291122   0.572318    4.003 6.44e-05 ***
## bisbas_ss_basm_rr  0.270771   0.112787    2.401   0.01644 *
## race.ethnicity.5levelBlack -0.480223   0.801906   -0.599   0.54933
## race.ethnicity.5levelMixed  1.182151   0.779342    1.517   0.12944
## race.ethnicity.5levelOther -0.142460   0.912020   -0.156   0.87589
## race.ethnicity.5levelWhite  1.176660   0.726192    1.620   0.10530
## demo_race_hispanic1  0.041940   0.348870    0.120   0.90432
## interview_age    0.021133   0.015491    1.364   0.17265
## bmi             0.022214   0.030695    0.724   0.46931
## household.income[>=200K] -2.536212   0.839799   -3.020   0.00255 **
## household.income[100K-200K] -1.589044   0.781394   -2.034   0.04210 *
## household.income[12K-16K]   -0.175324   1.001862   -0.175   0.86110
## household.income[16K-25K]   -1.301729   0.865942   -1.503   0.13291
## household.income[25K-35K]    0.034045   0.817465    0.042   0.96678
## household.income[35K-50K]   -1.233934   0.793966   -1.554   0.12028
## household.income[50K-75K]   -1.240914   0.778372   -1.594   0.11102
## household.income[5K-12K]    -0.009487   0.878712   -0.011   0.99139
## household.income[75K-100K]  -1.305847   0.792143   -1.648   0.09938 .
## high.educBachelor    0.838193   0.726124    1.154   0.24848
## high.educHS Diploma/GED    0.673239   0.729377    0.923   0.35608

```



```
## high.educPost Graduate Degree 1.254149 0.740103 1.695 0.09029 .
## high.educSome College 1.121949 0.677781 1.655 0.09799 .
## PDS_score:bisbas_ss_basm_rr -0.185901 0.061830 -3.007 0.00267 **
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0242
## lmer.REML = 14690 Scale est. = 17.387 n = 2386
```

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)    2.323785   2.413658   0.963 0.335757
## PDS_score      1.558044   0.836221   1.863 0.062550 .
## bisbas_ss_basm_rr 0.055826   0.126180   0.442 0.658214
## race.ethnicity.5levelBlack -0.642261   0.870655  -0.738 0.460780
## race.ethnicity.5levelMixed 1.126438   0.850371   1.325 0.185408
## race.ethnicity.5levelOther 0.001861   0.968613   0.002 0.998467
## race.ethnicity.5levelWhite 0.901458   0.799736   1.127 0.259766
## demo_race_hispanic1 0.149641   0.349418   0.428 0.668499
## interview_age   0.008886   0.014672   0.606 0.544832
## bmi            0.038379   0.030218   1.270 0.204167
## household.income[>=200K] -3.198453   0.817642  -3.912 9.4e-05 ***
## household.income[100K-200K] -2.514976   0.761712  -3.302 0.000974 ***
## household.income[12K-16K] -0.401508   0.982888  -0.408 0.682942
## household.income[16K-25K] 0.068238   0.818906   0.083 0.933597
## household.income[25K-35K] -0.021866   0.820398  -0.027 0.978739
## household.income[35K-50K] -1.121953   0.777868  -1.442 0.149328
## household.income[50K-75K] -1.614867   0.754396  -2.141 0.032400 *
## household.income[5K-12K] 0.012037   0.857908   0.014 0.988807
## household.income[75K-100K] -2.702569   0.776130  -3.482 0.000506 ***
## high.educBachelor 1.566816   0.769204   2.037 0.041760 *
## high.educHS Diploma/GED -0.780604   0.761865  -1.025 0.305651
## high.educPost Graduate Degree 0.821133   0.772003   1.064 0.287593
## high.educSome College 1.033586   0.731079   1.414 0.157549
## PDS_score:bisbas_ss_basm_rr -0.110206   0.088112  -1.251 0.211137
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0376
## lmer.REML = 15990 Scale est. = 16.17 n = 2572
```

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)    0.477984   2.327932   0.205   0.8373
## PDS_score       0.851339   0.187443   4.542 5.91e-06 ***
## rt_diff_large_neutral_z
##     0.170917   0.322352   0.530   0.5960
## race.ethnicity.5levelBlack
##     -0.804532   0.856333  -0.940   0.3476
## race.ethnicity.5levelMixed
##     0.725827   0.825624   0.879   0.3794
## race.ethnicity.5levelOther
##    -0.376790   0.964664  -0.391   0.6961
## race.ethnicity.5levelWhite
##     1.171617   0.768723   1.524   0.1276
## demo_race_hispanic1
##    -0.102853   0.376584  -0.273   0.7848
## interview_age
##     0.021389   0.016842   1.270   0.2042
## bmi
##     0.021994   0.032978   0.667   0.5049
## household.income[>=200K]
##    -1.987153   0.923062  -2.153   0.0315 *
## household.income[100K-200K]
##    -1.118499   0.860810  -1.299   0.1940
## household.income[12K-16K]
##     0.005363   1.085642   0.005   0.9961
## household.income[16K-25K]
##    -1.082031   0.960667  -1.126   0.2602
## household.income[25K-35K]
##     0.662600   0.900230   0.736   0.4618
## household.income[35K-50K]
##    -0.591733   0.875941  -0.676   0.4994
## household.income[50K-75K]
##    -0.928488   0.859971  -1.080   0.2804
## household.income[5K-12K]
##     0.750107   1.011190   0.742   0.4583
## household.income[75K-100K]
##    -0.898419   0.873788  -1.028   0.3040
## high.educBachelor
##    -0.052123   0.791281  -0.066   0.9475
## high.educHS Diploma/GED
##    -0.140798   0.804287  -0.175   0.8611
## high.educPost Graduate Degree
##     0.359388   0.806143   0.446   0.6558
## high.educSome College
##     0.559501   0.742926   0.753   0.4515
## PDS_score:rt_diff_large_neutral_z
##    -0.040147   0.177109  -0.227   0.8207
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0272
## lmer.REML = 12303 Scale est. = 17.018    n = 2002
```

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)      1.55204    2.42735   0.639  0.52264
## PDS_score         0.71670    0.24366   2.941  0.00330 **
## rt_diff_large_neutral_z      0.94554    0.35008   2.701  0.00697 **
## race.ethnicity.5levelBlack    -0.66155    1.04415  -0.634  0.52643
## race.ethnicity.5levelMixed     0.81389    1.02285   0.796  0.42629
## race.ethnicity.5levelOther    -0.12240    1.13855  -0.108  0.91440
## race.ethnicity.5levelWhite     0.84771    0.96495   0.879  0.37978
## demo_race_hispanic1          0.18995    0.38897   0.488  0.62535
## interview_age              0.01050    0.01608   0.653  0.51399
## bmi                      0.04047    0.03457   1.171  0.24192
## household.income[>=200K]     -2.52365    0.94036  -2.684  0.00734 **
## household.income[100K-200K]  -2.07217    0.88639  -2.338  0.01950 *
## household.income[12K-16K]      0.34620    1.11332   0.311  0.75586
## household.income[16K-25K]      0.80566    0.97095   0.830  0.40677
## household.income[25K-35K]      0.18345    0.95874   0.191  0.84827
## household.income[35K-50K]     -0.08184    0.90686  -0.090  0.92810
## household.income[50K-75K]     -1.19765    0.88244  -1.357  0.17487
## household.income[5K-12K]       0.58073    1.02432   0.567  0.57082
## household.income[75K-100K]    -2.12297    0.90179  -2.354  0.01866 *
## high.educBachelor           1.91706    0.89504   2.142  0.03232 *
## high.educHS Diploma/GED      -0.06892    0.90328  -0.076  0.93919
## high.educPost Graduate Degree  1.14465    0.89447   1.280  0.20080
## high.educSome College         1.18518    0.85039   1.394  0.16356
## PDS_score:rt_diff_large_neutral_z -0.79066    0.24890  -3.177  0.00151 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0373
## lmer.REML = 12775  Scale est. = 12.226    n = 2062
```

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)      0.448717    2.326099   0.193  0.8471
## PDS_score         0.849628    0.187453   4.532 6.18e-06 ***
```

```

## rt_diff_large_small_z      0.255889    0.302709    0.845    0.3980
## race.ethnicity.5levelBlack -0.788429    0.856263   -0.921    0.3573
## race.ethnicity.5levelMixed  0.742151    0.825685    0.899    0.3689
## race.ethnicity.5levelOther -0.349865    0.964353   -0.363    0.7168
## race.ethnicity.5levelWhite  1.190202    0.768384    1.549    0.1215
## demo_race_hispanic1        -0.111582    0.376431   -0.296    0.7669
## interview_age               0.021661    0.016829    1.287    0.1982
## bmi                         0.021267    0.032988    0.645    0.5192
## household.income[>=200K]    -1.989205    0.923604   -2.154    0.0314 *
## household.income[100K-200K] -1.131861    0.860815   -1.315    0.1887
## household.income[12K-16K]   -0.003082    1.086192   -0.003    0.9977
## household.income[16K-25K]   -1.102514    0.961085   -1.147    0.2515
## household.income[25K-35K]    0.668389    0.901156    0.742    0.4584
## household.income[35K-50K]   -0.616173    0.875354   -0.704    0.4816
## household.income[50K-75K]   -0.935777    0.860354   -1.088    0.2769
## household.income[5K-12K]     0.749634    1.011331    0.741    0.4586
## household.income[75K-100K]  -0.907514    0.873743   -1.039    0.2991
## high.educBachelor           -0.045600    0.790616   -0.058    0.9540
## high.educHS Diploma/GED     -0.135695    0.803640   -0.169    0.8659
## high.educPost Graduate Degree 0.372269    0.805775    0.462    0.6441
## high.educSome College        0.580600    0.742551    0.782    0.4344
## PDS_score:rt_diff_large_small_z -0.085937    0.167660   -0.513    0.6083
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0273
## lmer.REML = 12303  Scale est. = 16.96    n = 2002

```

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)    1.686153   2.430953    0.694  0.48800
## PDS_score       0.703776   0.245000    2.873  0.00411 **
## rt_diff_large_small_z 0.370624   0.348644    1.063  0.28789
## race.ethnicity.5levelBlack -0.712790   1.046222   -0.681  0.49576
## race.ethnicity.5levelMixed  0.680494   1.023985    0.665  0.50641
## race.ethnicity.5levelOther -0.149277   1.141404   -0.131  0.89596
## race.ethnicity.5levelWhite  0.724499   0.966433    0.750  0.45354
## demo_race_hispanic1  0.209392   0.389923    0.537  0.59132
## interview_age     0.009529   0.016096    0.592  0.55391
## bmi              0.041360   0.034644    1.194  0.23267
## household.income[>=200K] -2.457091   0.942077   -2.608  0.00917 **
## household.income[100K-200K] -2.012993   0.888211   -2.266  0.02353 *

```

```
## household.income[12K-16K]      0.260501  1.115633  0.234  0.81540
## household.income[16K-25K]      0.911029  0.972723  0.937  0.34909
## household.income[25K-35K]      0.249104  0.961110  0.259  0.79552
## household.income[35K-50K]      0.019223  0.908030  0.021  0.98311
## household.income[50K-75K]     -1.122310  0.884045 -1.270  0.20440
## household.income[5K-12K]       0.725082  1.025547  0.707  0.47964
## household.income[75K-100K]    -2.043640  0.903525 -2.262  0.02381 *
## high.educBachelor              1.940672  0.896913  2.164  0.03060 *
## high.educHS Diploma/GED      -0.082517  0.905297 -0.091  0.92738
## high.educPost Graduate Degree  1.176035  0.896301  1.312  0.18963
## high.educSome College         1.207962  0.852237  1.417  0.15652
## PDS_score:rt_diff_large_small_z -0.352952  0.247525 -1.426  0.15404
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0348
## lmer.REML = 12783  Scale est. = 12.228    n = 2062
```

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)    -9.452e-01  2.607e+00  -0.363
## PDS_score        8.551e-01  2.049e-01   4.173
## hormone_sal_end_min_since_midnight  8.284e-06  7.971e-04   0.010
## hormone_scr_ert_mean    -3.709e-03  8.177e-03  -0.454
## accumbens_rvsnt_ant_z    5.906e-01  4.223e-01   1.398
## race.ethnicity.5levelBlack    -7.315e-01  9.032e-01  -0.810
## race.ethnicity.5levelMixed     8.865e-01  8.682e-01   1.021
## race.ethnicity.5levelOther    -5.864e-01  1.052e+00  -0.558
## race.ethnicity.5levelWhite     1.441e+00  8.030e-01   1.794
## demo_race_hispanic1    -1.305e-01  4.041e-01  -0.323
## interview_age         2.881e-02  1.812e-02   1.590
## MRI_minus_hormone_date_time    4.022e-05  1.635e-05   2.460
## bmi                4.328e-02  3.677e-02   1.177
## household.income[>=200K]    -2.260e+00  9.943e-01  -2.273
## household.income[100K-200K]   -1.423e+00  9.238e-01  -1.540
## household.income[12K-16K]    -2.295e-01  1.154e+00  -0.199
```

```

## household.income[16K-25K] -1.379e+00 1.061e+00 -1.300
## household.income[25K-35K] 1.957e-01 9.656e-01 0.203
## household.income[35K-50K] -9.535e-01 9.437e-01 -1.010
## household.income[50K-75K] -1.266e+00 9.306e-01 -1.360
## household.income[5K-12K] -4.892e-01 1.124e+00 -0.435
## household.income[75K-100K] -1.196e+00 9.340e-01 -1.281
## high.educBachelor 1.943e-01 8.811e-01 0.221
## high.educHS Diploma/GED -9.843e-02 8.924e-01 -0.110
## high.educPost Graduate Degree 5.533e-01 8.958e-01 0.618
## high.educSome College 7.772e-01 8.294e-01 0.937
## hormone_scr_ert_mean:accumbens_rvsnt_ant_z -2.352e-02 1.019e-02 -2.307
## Pr(>|t|)
## (Intercept) 0.7169
## PDS_score 3.17e-05 ***
## hormone_sal_end_min_since_midnight 0.9917
## hormone_scr_ert_mean 0.6502
## accumbens_rvsnt_ant_z 0.1622
## race.ethnicity.5levelBlack 0.4181
## race.ethnicity.5levelMixed 0.3074
## race.ethnicity.5levelOther 0.5772
## race.ethnicity.5levelWhite 0.0730 .
## demo_race_hispanic1 0.7467
## interview_age 0.1120
## MRI_minus_hormone_date_time 0.0140 *
## bmi 0.2394
## household.income[>=200K] 0.0231 *
## household.income[100K-200K] 0.1236
## household.income[12K-16K] 0.8424
## household.income[16K-25K] 0.1937
## household.income[25K-35K] 0.8394
## household.income[35K-50K] 0.3124
## household.income[50K-75K] 0.1740
## household.income[5K-12K] 0.6636
## household.income[75K-100K] 0.2004
## high.educBachelor 0.8255
## high.educHS Diploma/GED 0.9122
## high.educPost Graduate Degree 0.5369
## high.educSome College 0.3489
## hormone_scr_ert_mean:accumbens_rvsnt_ant_z 0.0212 *
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.034
## lmer.REML = 10241 Scale est. = 15.403 n = 1669

```

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)      2.623e+00  2.687e+00   0.976
## PDS_score         7.895e-01  2.800e-01   2.820
## hormone_sal_end_min_since_midnight  7.604e-04  8.077e-04   0.941
## hormone_scr_ert_mean  8.202e-03  9.327e-03   0.879
## accumbens_rvsnt_ant_z  3.884e-02  4.266e-01   0.091
## race.ethnicity.5levelBlack  7.413e-02  1.127e+00   0.066
## race.ethnicity.5levelMixed  1.254e+00  1.096e+00   1.144
## race.ethnicity.5levelOther  5.522e-01  1.233e+00   0.448
## race.ethnicity.5levelWhite  1.442e+00  1.033e+00   1.396
## demo_race_hispanic1 -1.038e-02  4.238e-01  -0.024
## interview_age      6.555e-03  1.751e-02   0.374
## MRI_minus_hormone_date_time  2.137e-05  1.863e-05   1.147
## bmi               6.158e-04  3.782e-02   0.016
## household.income[>=200K] -3.040e+00  1.029e+00  -2.954
## household.income[100K-200K] -2.607e+00  9.732e-01  -2.678
## household.income[12K-16K]  -5.505e-01  1.258e+00  -0.438
## household.income[16K-25K]   3.242e-01  1.071e+00   0.303
## household.income[25K-35K]  -7.992e-01  1.052e+00  -0.760
## household.income[35K-50K]  -6.562e-01  1.023e+00  -0.641
## household.income[50K-75K]  -2.072e+00  9.702e-01  -2.135
## household.income[5K-12K]    2.984e-01  1.118e+00   0.267
## household.income[75K-100K] -2.701e+00  9.915e-01  -2.724
## high.educBachelor    1.099e+00  9.811e-01   1.120
## high.educHS Diploma/GED -1.128e+00  1.010e+00  -1.117
## high.educPost Graduate Degree  2.286e-01  9.835e-01   0.232
## high.educSome College   6.613e-01  9.375e-01   0.705
## hormone_scr_ert_mean:accumbens_rvsnt_ant_z -4.202e-03  1.254e-02  -0.335
##
##               Pr(>|t|)
## (Intercept)      0.32907
## PDS_score         0.00486 **
## hormone_sal_end_min_since_midnight  0.34660
## hormone_scr_ert_mean  0.37927
## accumbens_rvsnt_ant_z  0.92747
## race.ethnicity.5levelBlack  0.94754
## race.ethnicity.5levelMixed  0.25264
## race.ethnicity.5levelOther  0.65442
## race.ethnicity.5levelWhite  0.16302
## demo_race_hispanic1  0.98046
## interview_age      0.70818
## MRI_minus_hormone_date_time  0.25149
## bmi               0.98701
## household.income[>=200K]  0.00318 **
## household.income[100K-200K]  0.00747 **
## household.income[12K-16K]   0.66175
## household.income[16K-25K]   0.76223
## household.income[25K-35K]   0.44755

```

```
## household.income[35K-50K] 0.52148
## household.income[50K-75K] 0.03290 *
## household.income[5K-12K] 0.78951
## household.income[75K-100K] 0.00652 **
## high.educBachelor 0.26282
## high.educHS Diploma/GED 0.26421
## high.educPost Graduate Degree 0.81621
## high.educSome College 0.48064
## hormone_scr_ert_mean:accumbens_rvsnt_ant_z 0.73758
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.038
## lmer.REML = 10469 Scale est. = 11.823 n = 1688
```

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)    -4.883e-01  2.616e+00  -0.187  0.85196
## PDS_score        8.134e-01  2.054e-01   3.959  7.85e-05
## hormone_sal_end_min_since_midnight -3.392e-05  8.014e-04  -0.042  0.96624
## hormone_scr_ert_mean -3.980e-03  8.231e-03  -0.484  0.62879
## caudate_rvsnt_ant_z  4.947e-01  3.215e-01   1.538  0.12412
## race.ethnicity.5levelBlack -7.525e-01  9.076e-01  -0.829  0.40720
## race.ethnicity.5levelMixed  8.977e-01  8.715e-01   1.030  0.30316
## race.ethnicity.5levelOther -5.283e-01  1.057e+00  -0.500  0.61721
## race.ethnicity.5levelWhite  1.477e+00  8.064e-01   1.832  0.06717
## demo_race_hispanic1 -1.875e-01  4.050e-01  -0.463  0.64350
## interview_age    2.639e-02  1.824e-02   1.447  0.14804
## MRI_minus_hormone_date_time  4.122e-05  1.646e-05   2.505  0.01234
## bmi             5.585e-02  3.659e-02   1.526  0.12715
## household.income[>=200K] -2.629e+00  9.922e-01  -2.650  0.00813
## household.income[100K-200K] -1.747e+00  9.209e-01  -1.897  0.05799
## household.income[12K-16K] -4.319e-01  1.160e+00  -0.372  0.70965
## household.income[16K-25K] -1.656e+00  1.059e+00  -1.563  0.11829
## household.income[25K-35K] -1.877e-01  9.615e-01  -0.195  0.84522
## household.income[35K-50K] -1.270e+00  9.391e-01  -1.352  0.17659
```



```

## household.income[50K-75K] -1.558e+00 9.264e-01 -1.682 0.09275
## household.income[5K-12K] -7.828e-01 1.124e+00 -0.697 0.48609
## household.income[75K-100K] -1.543e+00 9.321e-01 -1.655 0.09809
## high.educBachelor 1.966e-01 8.796e-01 0.223 0.82320
## high.educHS Diploma/GED -7.450e-02 8.950e-01 -0.083 0.93367
## high.educPost Graduate Degree 6.087e-01 8.941e-01 0.681 0.49608
## high.educSome College 7.508e-01 8.296e-01 0.905 0.36556
## hormone_scr_ert_mean:caudate_rvsnt_ant_z -1.218e-02 8.165e-03 -1.491 0.13611
##
## (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) = 0.0304
## lmer.REML = 10279 Scale est. = 16.006 n = 1672

```

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)      2.356e+00  2.682e+00   0.878  0.37984
## PDS_score         7.755e-01  2.822e-01   2.748  0.00606
## hormone_sal_end_min_since_midnight 7.009e-04  8.073e-04   0.868  0.38538
## hormone_scr_ert_mean 7.209e-03  9.322e-03   0.773  0.43947
## caudate_rvsnt_ant_z 3.088e-01  3.304e-01   0.935  0.35012
## race.ethnicity.5levelBlack 1.145e-01  1.125e+00   0.102  0.91895
## race.ethnicity.5levelMixed 1.344e+00  1.096e+00   1.227  0.22010
## race.ethnicity.5levelOther 4.969e-01  1.233e+00   0.403  0.68699
## race.ethnicity.5levelWhite 1.484e+00  1.034e+00   1.435  0.15141
## demo_race_hispanic1 7.026e-02  4.268e-01   0.165  0.86926
## interview_age     6.924e-03  1.756e-02   0.394  0.69339
## MRI_minus_hormone_date_time 1.922e-05  1.817e-05   1.057  0.29051
## bmi              5.344e-03  3.799e-02   0.141  0.88814
## household.income[>=200K] -2.897e+00  1.020e+00  -2.841  0.00456
## household.income[100K-200K] -2.393e+00  9.632e-01  -2.485  0.01307
## household.income[12K-16K]  3.504e-02  1.261e+00   0.028  0.97783
## household.income[16K-25K]  6.452e-01  1.061e+00   0.608  0.54305
## household.income[25K-35K] -5.380e-01  1.046e+00  -0.514  0.60712
## household.income[35K-50K] -5.053e-01  1.014e+00  -0.498  0.61839
## household.income[50K-75K] -1.777e+00  9.600e-01  -1.851  0.06428
## household.income[5K-12K]  6.633e-01  1.113e+00   0.596  0.55138
## household.income[75K-100K] -2.420e+00  9.797e-01  -2.470  0.01362
## high.educBachelor  1.091e+00  9.659e-01   1.130  0.25879
## high.educHS Diploma/GED -1.196e+00  9.948e-01  -1.202  0.22941
## high.educPost Graduate Degree 2.441e-01  9.696e-01   0.252  0.80125
## high.educSome College  6.243e-01  9.235e-01   0.676  0.49910
## hormone_scr_ert_mean:caudate_rvsnt_ant_z -7.065e-03  9.355e-03  -0.755  0.45022
##
## (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) =  0.0386
## lmer.REML = 10506  Scale est. = 11.816    n = 1693

```

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)    -7.804e-01  2.617e+00  -0.298  0.7656
## PDS_score       8.319e-01  2.058e-01   4.042 5.54e-05
## hormone_sal_end_min_since_midnight  8.783e-05  7.995e-04   0.110  0.9125
## hormone_scr_ert_mean  -3.805e-03  8.236e-03  -0.462  0.6441
## putamen_rvsnt_ant_z  4.369e-01  3.285e-01   1.330  0.1836
## race.ethnicity.5levelBlack  -7.620e-01  9.070e-01  -0.840  0.4010
## race.ethnicity.5levelMixed   9.132e-01  8.718e-01   1.048  0.2950
## race.ethnicity.5levelOther  -5.566e-01  1.055e+00  -0.527  0.5980
## race.ethnicity.5levelWhite   1.491e+00  8.063e-01   1.849  0.0647
## demo_race_hispanic1  -1.718e-01  4.049e-01  -0.424  0.6714
## interview_age     2.640e-02  1.824e-02   1.448  0.1479
## MRI_minus_hormone_date_time  4.011e-05  1.643e-05   2.442  0.0147
## bmi              5.184e-02  3.681e-02   1.408  0.1592
## household.income[>=200K]  -2.472e+00  9.995e-01  -2.473  0.0135
## household.income[100K-200K] -1.563e+00  9.298e-01  -1.681  0.0929
## household.income[12K-16K]  -2.943e-01  1.162e+00  -0.253  0.8001
## household.income[16K-25K]  -1.397e+00  1.070e+00  -1.306  0.1918
## household.income[25K-35K]   6.128e-03  9.716e-01   0.006  0.9950
## household.income[35K-50K]  -1.034e+00  9.496e-01  -1.088  0.2766
## household.income[50K-75K]  -1.363e+00  9.351e-01  -1.458  0.1452
## household.income[5K-12K]   -5.567e-01  1.132e+00  -0.492  0.6228
## household.income[75K-100K] -1.334e+00  9.404e-01  -1.419  0.1561

```

```

## high.educBachelor                2.608e-01  8.755e-01   0.298   0.7658
## high.educHS Diploma/GED         -7.912e-02  8.898e-01  -0.089   0.9292
## high.educPost Graduate Degree     6.494e-01  8.901e-01   0.730   0.4657
## high.educSome College            7.941e-01  8.245e-01   0.963   0.3356
## hormone_scr_ert_mean:putamen_rvs  -9.214e-03  8.488e-03  -1.085   0.2779
##
## (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_rvs  -9.214e-03  8.488e-03  -1.085   0.2779
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0305
## lmer.REML = 10280  Scale est. = 15.953    n = 1672

```

Males

```

## Warning: Some predictor variables are on very different scales: consider
## rescaling
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##   hormone_scr_ert_mean * putamen_rvsn_ant_z + race.ethnicity.5level +
##   demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##   bmi + household.income + high.educ
##

```

```

## Parametric coefficients:
##
##      Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.549e+00  2.687e+00   0.949  0.34297
## PDS_score         8.005e-01  2.837e-01   2.821  0.00484
## hormone_sal_end_min_since_midnight  7.121e-04  8.096e-04   0.879  0.37926
## hormone_scr_ert_mean  6.472e-03  9.320e-03   0.694  0.48755
## putamen_rvsnt_ant_z -5.895e-02  3.433e-01  -0.172  0.86369
## race.ethnicity.5levelBlack  1.730e-01  1.127e+00   0.153  0.87805
## race.ethnicity.5levelMixed  1.308e+00  1.099e+00   1.190  0.23405
## race.ethnicity.5levelOther  5.104e-01  1.235e+00   0.413  0.67953
## race.ethnicity.5levelWhite  1.450e+00  1.037e+00   1.399  0.16196
## demo_race_hispanic1  5.566e-02  4.257e-01   0.131  0.89599
## interview_age  4.736e-03  1.761e-02   0.269  0.78795
## MRI_minus_hormone_date_time  2.161e-05  1.825e-05   1.184  0.23653
## bmi  4.257e-03  3.812e-02   0.112  0.91110
## household.income[>=200K] -2.919e+00  1.020e+00  -2.862  0.00426
## household.income[100K-200K] -2.470e+00  9.627e-01  -2.566  0.01038
## household.income[12K-16K] -2.336e-01  1.252e+00  -0.187  0.85204
## household.income[16K-25K]  5.408e-01  1.058e+00   0.511  0.60940
## household.income[25K-35K] -6.314e-01  1.044e+00  -0.605  0.54552
## household.income[35K-50K] -5.728e-01  1.015e+00  -0.564  0.57259
## household.income[50K-75K] -1.832e+00  9.598e-01  -1.909  0.05642
## household.income[5K-12K]  3.540e-01  1.105e+00   0.320  0.74878
## household.income[75K-100K] -2.459e+00  9.805e-01  -2.508  0.01223
## high.educBachelor  1.251e+00  9.596e-01   1.304  0.19250
## high.educHS Diploma/GED -1.099e+00  9.887e-01  -1.111  0.26668
## high.educPost Graduate Degree  4.092e-01  9.635e-01   0.425  0.67110
## high.educSome College  7.486e-01  9.156e-01   0.818  0.41372
## hormone_scr_ert_mean:putamen_rvsnt_ant_z -7.128e-04  9.934e-03  -0.072  0.94281
##
## (Intercept)
## PDS_score **
## hormone_sal_end_min_since_midnight
## hormone_scr_ert_mean
## putamen_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:putamen_rvsnt_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0365
## lmer.REML = 10518  Scale est. = 11.969    n = 1694
```

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)                    -7.949e-01  2.625e+00
## PDS_score                       8.086e-01  2.071e-01
## hormone_sal_end_min_since_midnight  9.388e-05  8.022e-04
## hormone_scr_ert_mean            -3.682e-03  8.265e-03
## accumbens_posvsneg_feedback_z     2.404e-01  4.472e-01
## race.ethnicity.5levelBlack        -6.950e-01  9.106e-01
## race.ethnicity.5levelMixed         9.445e-01  8.732e-01
## race.ethnicity.5levelOther        -4.542e-01  1.054e+00
## race.ethnicity.5levelWhite         1.482e+00  8.069e-01
## demo_race_hispanic1              -2.111e-01  4.092e-01
## interview_age                    2.648e-02  1.830e-02
## MRI_minus_hormone_date_time       3.967e-05  1.643e-05
## bmi                             5.208e-02  3.679e-02
## household.income[>=200K]          -2.401e+00  1.001e+00
## household.income[100K-200K]        -1.445e+00  9.304e-01
## household.income[12K-16K]          -2.560e-01  1.162e+00
## household.income[16K-25K]          -1.414e+00  1.069e+00
## household.income[25K-35K]           7.553e-02  9.706e-01
## household.income[35K-50K]          -9.574e-01  9.511e-01
## household.income[50K-75K]          -1.244e+00  9.377e-01
## household.income[5K-12K]           -6.201e-01  1.139e+00
## household.income[75K-100K]         -1.218e+00  9.430e-01
## high.educBachelor                  1.842e-01  8.873e-01
## high.educHS Diploma/GED           -9.178e-02  8.989e-01
## high.educPost Graduate Degree       5.942e-01  9.024e-01
```

```

## high.educSome College          7.220e-01  8.347e-01
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z -4.005e-04  1.121e-02
##                               t value Pr(>|t|)
## (Intercept)                    -0.303   0.7621
## PDS_score                       3.905  9.8e-05 ***
## hormone_sal_end_min_since_midnight    0.117   0.9068
## hormone_scr_ert_mean             -0.446   0.6560
## accumbens_posvsneg_feedback_z        0.538   0.5909
## race.ethnicity.5levelBlack          -0.763   0.4454
## race.ethnicity.5levelMixed           1.082   0.2796
## race.ethnicity.5levelOther          -0.431   0.6665
## race.ethnicity.5levelWhite           1.837   0.0664 .
## demo_race_hispanic1                -0.516   0.6060
## interview_age                      1.447   0.1480
## MRI_minus_hormone_date_time         2.415   0.0159 *
## bmi                                1.415   0.1571
## household.income[>=200K]            -2.400   0.0165 *
## household.income[100K-200K]         -1.553   0.1207
## household.income[12K-16K]           -0.220   0.8257
## household.income[16K-25K]          -1.323   0.1860
## household.income[25K-35K]           0.078   0.9380
## household.income[35K-50K]          -1.007   0.3143
## household.income[50K-75K]          -1.326   0.1849
## household.income[5K-12K]           -0.544   0.5862
## household.income[75K-100K]         -1.292   0.1965
## high.educBachelor                   0.208   0.8356
## high.educHS Diploma/GED            -0.102   0.9187
## high.educPost Graduate Degree        0.659   0.5103
## high.educSome College                0.865   0.3872
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z -0.036   0.9715
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0284
## lmer.REML = 10256  Scale est. = 15.925    n = 1668

```

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)                3.025e+00  2.701e+00

```

## PDS_score	7.940e-01	2.807e-01
## hormone_sal_end_min_since_midnight	5.908e-04	8.080e-04
## hormone_scr_ert_mean	4.565e-03	9.331e-03
## accumbens_posvsneg_feedback_z	-1.984e-01	4.158e-01
## race.ethnicity.5levelBlack	5.119e-03	1.142e+00
## race.ethnicity.5levelMixed	1.303e+00	1.113e+00
## race.ethnicity.5levelOther	4.186e-01	1.247e+00
## race.ethnicity.5levelWhite	1.469e+00	1.052e+00
## demo_race_hispanic1	6.537e-02	4.231e-01
## interview_age	2.411e-03	1.755e-02
## MRI_minus_hormone_date_time	1.969e-05	1.865e-05
## bmi	2.597e-02	3.799e-02
## household.income[>=200K]	-3.330e+00	1.041e+00
## household.income[100K-200K]	-2.967e+00	9.846e-01
## household.income[12K-16K]	-7.016e-01	1.257e+00
## household.income[16K-25K]	1.133e-01	1.079e+00
## household.income[25K-35K]	-1.022e+00	1.066e+00
## household.income[35K-50K]	-9.407e-01	1.034e+00
## household.income[50K-75K]	-2.307e+00	9.827e-01
## household.income[5K-12K]	4.254e-02	1.140e+00
## household.income[75K-100K]	-2.952e+00	1.003e+00
## high.educBachelor	1.280e+00	9.646e-01
## high.educHS Diploma/GED	-1.084e+00	9.945e-01
## high.educPost Graduate Degree	4.597e-01	9.674e-01
## high.educSome College	8.071e-01	9.206e-01
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z	-1.046e-03	1.234e-02
##	t value	Pr(> t)
## (Intercept)	1.120	0.26301
## PDS_score	2.828	0.00474 **
## hormone_sal_end_min_since_midnight	0.731	0.46472
## hormone_scr_ert_mean	0.489	0.62474
## accumbens_posvsneg_feedback_z	-0.477	0.63338
## race.ethnicity.5levelBlack	0.004	0.99642
## race.ethnicity.5levelMixed	1.170	0.24198
## race.ethnicity.5levelOther	0.336	0.73722
## race.ethnicity.5levelWhite	1.396	0.16298
## demo_race_hispanic1	0.154	0.87724
## interview_age	0.137	0.89076
## MRI_minus_hormone_date_time	1.056	0.29126
## bmi	0.684	0.49430
## household.income[>=200K]	-3.199	0.00141 **
## household.income[100K-200K]	-3.013	0.00263 **
## household.income[12K-16K]	-0.558	0.57684
## household.income[16K-25K]	0.105	0.91634
## household.income[25K-35K]	-0.958	0.33801
## household.income[35K-50K]	-0.910	0.36314
## household.income[50K-75K]	-2.347	0.01903 *
## household.income[5K-12K]	0.037	0.97022
## household.income[75K-100K]	-2.943	0.00330 **
## high.educBachelor	1.327	0.18461
## high.educHS Diploma/GED	-1.090	0.27585
## high.educPost Graduate Degree	0.475	0.63469
## high.educSome College	0.877	0.38076
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z	-0.085	0.93242


```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0391
## lmer.REML = 10499  Scale est. = 11.678    n = 1692
```

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

Females

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

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##   hormone_scr_ert_mean * caudate_posvsneg_feedback_z + race.ethnicity.5level +
##   demo_race_hispanic + interview_age + MRI_minus_hormone_date_time +
##   bmi + household.income + high.educ
##
## Parametric coefficients:
##
##               Estimate Std. Error t value
## (Intercept)    -5.841e-01  2.615e+00  -0.223
## PDS_score        8.067e-01  2.058e-01   3.919
## hormone_sal_end_min_since_midnight -2.040e-05  8.007e-04  -0.025
## hormone_scr_ert_mean -2.745e-03  8.232e-03  -0.333
## caudate_posvsneg_feedback_z -1.008e-01  3.496e-01  -0.288
## race.ethnicity.5levelBlack -8.449e-01  9.111e-01  -0.927
## race.ethnicity.5levelMixed  8.695e-01  8.737e-01   0.995
## race.ethnicity.5levelOther -5.496e-01  1.053e+00  -0.522
## race.ethnicity.5levelWhite  1.468e+00  8.079e-01   1.817
## demo_race_hispanic1 -1.677e-01  4.058e-01  -0.413
## interview_age    2.722e-02  1.828e-02   1.489
## MRI_minus_hormone_date_time  4.026e-05  1.642e-05   2.451
## bmi              5.339e-02  3.676e-02   1.452
## household.income[>=200K] -2.613e+00  9.933e-01  -2.630
## household.income[100K-200K] -1.747e+00  9.219e-01  -1.894
## household.income[12K-16K] -5.951e-01  1.154e+00  -0.516
## household.income[16K-25K] -1.659e+00  1.064e+00  -1.559
## household.income[25K-35K] -2.102e-01  9.625e-01  -0.218
## household.income[35K-50K] -1.273e+00  9.431e-01  -1.349
## household.income[50K-75K] -1.560e+00  9.273e-01  -1.682
## household.income[5K-12K] -7.702e-01  1.125e+00  -0.685
## household.income[75K-100K] -1.521e+00  9.322e-01  -1.632
## high.educBachelor    2.517e-01  8.831e-01   0.285
## high.educHS Diploma/GED  4.783e-02  8.967e-01   0.053
## high.educPost Graduate Degree  6.008e-01  8.976e-01   0.669
## high.educSome College  8.141e-01  8.315e-01   0.979
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z  8.726e-04  9.032e-03   0.097
##
## Pr(>|t|)
```

```

## (Intercept) 0.82329
## PDS_score 9.24e-05 ***
## hormone_sal_end_min_since_midnight 0.97967
## hormone_scr_ert_mean 0.73884
## caudate_posvsneg_feedback_z 0.77321
## race.ethnicity.5levelBlack 0.35389
## race.ethnicity.5levelMixed 0.31978
## race.ethnicity.5levelOther 0.60183
## race.ethnicity.5levelWhite 0.06944 .
## demo_race_hispanic1 0.67949
## interview_age 0.13666
## MRI_minus_hormone_date_time 0.01435 *
## bmi 0.14658
## household.income[>=200K] 0.00862 **
## household.income[100K-200K] 0.05834 .
## household.income[12K-16K] 0.60613
## household.income[16K-25K] 0.11913
## household.income[25K-35K] 0.82713
## household.income[35K-50K] 0.17739
## household.income[50K-75K] 0.09267 .
## household.income[5K-12K] 0.49370
## household.income[75K-100K] 0.10288
## high.educBachelor 0.77564
## high.educHS Diploma/GED 0.95746
## high.educPost Graduate Degree 0.50334
## high.educSome College 0.32772
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.92305
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.029
## lmer.REML = 10268 Scale est. = 16.02 n = 1670

```

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) 2.833e+00 2.698e+00 1.050
## PDS_score 7.713e-01 2.807e-01 2.747
## hormone_sal_end_min_since_midnight 9.527e-04 8.087e-04 1.178
## hormone_scr_ert_mean 5.297e-03 9.382e-03 0.565

```

```

## caudate_posvsneg_feedback_z -1.304e-01 3.366e-01 -0.387
## race.ethnicity.5levelBlack 8.907e-02 1.129e+00 0.079
## race.ethnicity.5levelMixed 1.275e+00 1.098e+00 1.161
## race.ethnicity.5levelOther 4.340e-01 1.235e+00 0.351
## race.ethnicity.5levelWhite 1.398e+00 1.036e+00 1.349
## demo_race_hispanic1 6.808e-02 4.235e-01 0.161
## interview_age 2.357e-03 1.763e-02 0.134
## MRI_minus_hormone_date_time 1.947e-05 1.818e-05 1.071
## bmi 7.264e-03 3.794e-02 0.191
## household.income[>=200K] -2.966e+00 1.026e+00 -2.890
## household.income[100K-200K] -2.557e+00 9.697e-01 -2.637
## household.income[12K-16K] -3.698e-01 1.248e+00 -0.296
## household.income[16K-25K] 4.298e-01 1.068e+00 0.402
## household.income[25K-35K] -6.436e-01 1.052e+00 -0.612
## household.income[35K-50K] -5.728e-01 1.020e+00 -0.561
## household.income[50K-75K] -1.931e+00 9.673e-01 -1.996
## household.income[5K-12K] 6.400e-02 1.124e+00 0.057
## household.income[75K-100K] -2.570e+00 9.873e-01 -2.603
## high.educBachelor 1.231e+00 9.668e-01 1.273
## high.educHS Diploma/GED -1.079e+00 1.000e+00 -1.079
## high.educPost Graduate Degree 3.709e-01 9.697e-01 0.382
## high.educSome College 7.195e-01 9.219e-01 0.781
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 1.719e-03 9.777e-03 0.176
## Pr(>|t|)
## (Intercept) 0.29383
## PDS_score 0.00607 **
## hormone_sal_end_min_since_midnight 0.23897
## hormone_scr_ert_mean 0.57242
## caudate_posvsneg_feedback_z 0.69848
## race.ethnicity.5levelBlack 0.93712
## race.ethnicity.5levelMixed 0.24575
## race.ethnicity.5levelOther 0.72539
## race.ethnicity.5levelWhite 0.17749
## demo_race_hispanic1 0.87230
## interview_age 0.89367
## MRI_minus_hormone_date_time 0.28447
## bmi 0.84820
## household.income[>=200K] 0.00390 **
## household.income[100K-200K] 0.00844 **
## household.income[12K-16K] 0.76705
## household.income[16K-25K] 0.68756
## household.income[25K-35K] 0.54066
## household.income[35K-50K] 0.57456
## household.income[50K-75K] 0.04605 *
## household.income[5K-12K] 0.95459
## household.income[75K-100K] 0.00932 **
## high.educBachelor 0.20321
## high.educHS Diploma/GED 0.28092
## high.educPost Graduate Degree 0.70216
## high.educSome College 0.43520
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.86044
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##

```

```
##
## R-sq.(adj) = 0.0348
## lmer.REML = 10471 Scale est. = 12.369 n = 1685
```

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)      -7.672e-01  2.616e+00  -0.293
## PDS_score          8.623e-01  2.064e-01   4.178
## hormone_sal_end_min_since_midnight  1.615e-05  8.024e-04   0.020
## hormone_scr_ert_mean    -4.140e-03  8.260e-03  -0.501
## putamen_posvsneg_feedback_z    1.294e-01  3.542e-01   0.365
## race.ethnicity.5levelBlack    -7.112e-01  9.080e-01  -0.783
## race.ethnicity.5levelMixed    9.082e-01  8.718e-01   1.042
## race.ethnicity.5levelOther    -6.296e-01  1.054e+00  -0.597
## race.ethnicity.5levelWhite    1.503e+00  8.064e-01   1.863
## demo_race_hispanic1    -9.560e-02  4.067e-01  -0.235
## interview_age        2.668e-02  1.823e-02   1.463
## MRI_minus_hormone_date_time    4.047e-05  1.641e-05   2.466
## bmi                4.551e-02  3.676e-02   1.238
## household.income[>=200K]    -2.409e+00  9.972e-01  -2.416
## household.income[100K-200K]    -1.508e+00  9.271e-01  -1.627
## household.income[12K-16K]    -2.799e-01  1.160e+00  -0.241
## household.income[16K-25K]    -1.362e+00  1.066e+00  -1.278
## household.income[25K-35K]    9.007e-02  9.684e-01   0.093
## household.income[35K-50K]    -9.729e-01  9.485e-01  -1.026
## household.income[50K-75K]    -1.269e+00  9.346e-01  -1.358
## household.income[5K-12K]    -4.818e-01  1.130e+00  -0.426
## household.income[75K-100K]    -1.301e+00  9.379e-01  -1.387
## high.educBachelor        2.732e-01  8.825e-01   0.310
## high.educHS Diploma/GED    -8.317e-02  8.955e-01  -0.093
## high.educPost Graduate Degree    6.473e-01  8.958e-01   0.723
## high.educSome College    7.895e-01  8.304e-01   0.951
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z    -7.443e-03  8.916e-03  -0.835
##
##               Pr(>|t|)
## (Intercept)          0.7694
## PDS_score            3.09e-05 ***
## hormone_sal_end_min_since_midnight    0.9839
```

```

## hormone_scr_ert_mean 0.6163
## putamen_posvsneg_feedback_z 0.7150
## race.ethnicity.5levelBlack 0.4336
## race.ethnicity.5levelMixed 0.2977
## race.ethnicity.5levelOther 0.5504
## race.ethnicity.5levelWhite 0.0626 .
## demo_race_hispanic1 0.8142
## interview_age 0.1436
## MRI_minus_hormone_date_time 0.0138 *
## bmi 0.2158
## household.income[>=200K] 0.0158 *
## household.income[100K-200K] 0.1040
## household.income[12K-16K] 0.8093
## household.income[16K-25K] 0.2013
## household.income[25K-35K] 0.9259
## household.income[35K-50K] 0.3052
## household.income[50K-75K] 0.1746
## household.income[5K-12K] 0.6699
## household.income[75K-100K] 0.1655
## high.educBachelor 0.7569
## high.educHS Diploma/GED 0.9260
## high.educPost Graduate Degree 0.4701
## high.educSome College 0.3419
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z 0.4040
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0304
## lmer.REML = 10266 Scale est. = 16.538 n = 1670

```

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)  2.879e+00  2.710e+00  1.062
## PDS_score    7.523e-01  2.813e-01  2.674
## hormone_sal_end_min_since_midnight 8.810e-04  8.083e-04  1.090
## hormone_scr_ert_mean 5.409e-03  9.363e-03  0.578
## putamen_posvsneg_feedback_z 1.389e-01  3.389e-01  0.410
## race.ethnicity.5levelBlack 1.278e-01  1.130e+00  0.113
## race.ethnicity.5levelMixed 1.330e+00  1.100e+00  1.210

```

```

## race.ethnicity.5levelOther          4.885e-01  1.237e+00  0.395
## race.ethnicity.5levelWhite          1.458e+00  1.037e+00  1.406
## demo_race_hispanic1                 1.964e-02  4.228e-01  0.046
## interview_age                       2.889e-03  1.763e-02  0.164
## MRI_minus_hormone_date_time         1.872e-05  1.821e-05  1.028
## bmi                                 1.284e-02  3.787e-02  0.339
## household.income[>=200K]            -3.060e+00  1.033e+00 -2.961
## household.income[100K-200K]         -2.674e+00  9.766e-01 -2.738
## household.income[12K-16K]           -4.563e-01  1.253e+00 -0.364
## household.income[16K-25K]           3.242e-01  1.079e+00  0.301
## household.income[25K-35K]           -7.384e-01  1.059e+00 -0.697
## household.income[35K-50K]           -6.642e-01  1.026e+00 -0.647
## household.income[50K-75K]           -1.992e+00  9.744e-01 -2.044
## household.income[5K-12K]            -6.026e-02  1.131e+00 -0.053
## household.income[75K-100K]          -2.649e+00  9.944e-01 -2.664
## high.educBachelor                   1.111e+00  9.731e-01  1.141
## high.educHS Diploma/GED            -1.193e+00  1.007e+00 -1.184
## high.educPost Graduate Degree        3.014e-01  9.759e-01  0.309
## high.educSome College                6.385e-01  9.289e-01  0.687
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z -1.565e-03  1.009e-02 -0.155
##                                     Pr(>|t|)
## (Intercept)                         0.28822
## PDS_score                           0.00757 **
## hormone_sal_end_min_since_midnight  0.27590
## hormone_scr_ert_mean                 0.56352
## putamen_posvsneg_feedback_z         0.68200
## race.ethnicity.5levelBlack           0.90993
## race.ethnicity.5levelMixed           0.22656
## race.ethnicity.5levelOther           0.69307
## race.ethnicity.5levelWhite           0.15996
## demo_race_hispanic1                 0.96296
## interview_age                       0.86988
## MRI_minus_hormone_date_time         0.30393
## bmi                                 0.73455
## household.income[>=200K]            0.00311 **
## household.income[100K-200K]         0.00625 **
## household.income[12K-16K]           0.71585
## household.income[16K-25K]           0.76378
## household.income[25K-35K]           0.48559
## household.income[35K-50K]           0.51770
## household.income[50K-75K]           0.04111 *
## household.income[5K-12K]            0.95753
## household.income[75K-100K]          0.00779 **
## high.educBachelor                   0.25393
## high.educHS Diploma/GED            0.23650
## high.educPost Graduate Degree        0.75745
## high.educSome College                0.49196
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z 0.87677
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0343
## lmer.REML = 10500  Scale est. = 12.687    n = 1689

```

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)   -3.576e-01  2.632e+00  -0.136  0.891931
## PDS_score       7.860e-01  2.081e-01   3.777  0.000165 ***
## hormone_sal_end_min_since_midnight -1.128e-04  8.038e-04  -0.140  0.888419
## hormone_scr_ert_mean -4.293e-03  8.278e-03  -0.519  0.604115
## lOFC_rvs_n_ant_z   6.104e-01  5.218e-01   1.170  0.242248
## race.ethnicity.5levelBlack -7.362e-01  9.112e-01  -0.808  0.419225
## race.ethnicity.5levelMixed   9.211e-01  8.745e-01   1.053  0.292372
## race.ethnicity.5levelOther -4.026e-01  1.057e+00  -0.381  0.703414
## race.ethnicity.5levelWhite   1.486e+00  8.081e-01   1.838  0.066195 .
## demo_race_hispanic1 -2.115e-01  4.071e-01  -0.520  0.603430
## interview_age     2.787e-02  1.833e-02   1.520  0.128701
## MRI_minus_hormone_date_time   4.028e-05  1.649e-05   2.443  0.014667 *
## bmi              5.615e-02  3.685e-02   1.524  0.127799
## household.income[>=200K] -2.815e+00  1.006e+00  -2.797  0.005211 **
## household.income[100K-200K] -1.934e+00  9.363e-01  -2.065  0.039040 *
## household.income[12K-16K]  -6.029e-01  1.170e+00  -0.515  0.606359
## household.income[16K-25K]  -1.797e+00  1.074e+00  -1.673  0.094437 .
## household.income[25K-35K]  -3.892e-01  9.778e-01  -0.398  0.690686
## household.income[35K-50K]  -1.382e+00  9.568e-01  -1.444  0.148919
## household.income[50K-75K]  -1.667e+00  9.413e-01  -1.771  0.076733 .
## household.income[5K-12K]   -8.864e-01  1.141e+00  -0.777  0.437233
## household.income[75K-100K] -1.696e+00  9.467e-01  -1.791  0.073468 .
## high.educBachelor    1.784e-01  8.990e-01   0.198  0.842708
## high.educHS Diploma/GED -1.461e-01  9.125e-01  -0.160  0.872835
## high.educPost Graduate Degree  6.039e-01  9.139e-01   0.661  0.508835
## high.educSome College   7.079e-01  8.470e-01   0.836  0.403433
## hormone_scr_ert_mean:lOFC_rvs_n_ant_z -9.843e-03  1.361e-02  -0.723  0.469561
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0294
## lmer.REML = 10216 Scale est. = 15.996    n = 1661
```

Males

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

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_sal_end_min_since_midnight +
##     hormone_scr_ert_mean * lOFC_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)	2.153e+00	2.683e+00	0.802	0.4225
## PDS_score	7.038e-01	2.835e-01	2.483	0.0131 *
## hormone_sal_end_min_since_midnight	6.258e-04	8.082e-04	0.774	0.4389
## hormone_scr_ert_mean	8.209e-03	9.252e-03	0.887	0.3750
## lOFC_rvs_n_ant_z	3.036e-01	4.810e-01	0.631	0.5280
## race.ethnicity.5levelBlack	3.257e-02	1.138e+00	0.029	0.9772
## race.ethnicity.5levelMixed	1.294e+00	1.105e+00	1.171	0.2419
## race.ethnicity.5levelOther	5.329e-01	1.238e+00	0.430	0.6670
## race.ethnicity.5levelWhite	1.437e+00	1.043e+00	1.379	0.1682
## demo_race_hispanic1	1.181e-02	4.245e-01	0.028	0.9778
## interview_age	7.332e-03	1.746e-02	0.420	0.6746
## MRI_minus_hormone_date_time	2.214e-05	1.864e-05	1.188	0.2349
## bmi	2.609e-03	3.761e-02	0.069	0.9447
## household.income[>=200K]	-2.423e+00	1.042e+00	-2.324	0.0202 *
## household.income[100K-200K]	-1.999e+00	9.879e-01	-2.023	0.0432 *
## household.income[12K-16K]	1.545e-01	1.278e+00	0.121	0.9038
## household.income[16K-25K]	1.056e+00	1.085e+00	0.974	0.3304
## household.income[25K-35K]	-1.815e-01	1.065e+00	-0.170	0.8647
## household.income[35K-50K]	-8.433e-02	1.035e+00	-0.081	0.9351
## household.income[50K-75K]	-1.451e+00	9.862e-01	-1.471	0.1415
## household.income[5K-12K]	6.733e-01	1.135e+00	0.593	0.5530
## household.income[75K-100K]	-2.071e+00	1.005e+00	-2.060	0.0395 *
## high.educBachelor	1.081e+00	9.526e-01	1.135	0.2565
## high.educHS Diploma/GED	-1.063e+00	9.922e-01	-1.071	0.2841
## high.educPost Graduate Degree	2.050e-01	9.554e-01	0.215	0.8301
## high.educSome College	5.604e-01	9.100e-01	0.616	0.5381
## hormone_scr_ert_mean:lOFC_rvs_n_ant_z	-1.398e-02	1.308e-02	-1.069	0.2854

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.037
## lmer.REML = 10406  Scale est. = 11.833    n = 1682
```


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)   -5.152e-01  2.631e+00  -0.196  0.844796
## PDS_score      7.833e-01  2.083e-01   3.760  0.000176 ***
## hormone_sal_end_min_since_midnight -1.243e-04  8.037e-04  -0.155  0.877142
## hormone_scr_ert_mean -3.450e-03  8.260e-03  -0.418  0.676204
## mOFC_rvs_n_ant_z  5.145e-01  4.421e-01   1.164  0.244700
## race.ethnicity.5levelBlack -7.166e-01  9.106e-01  -0.787  0.431409
## race.ethnicity.5levelMixed  8.955e-01  8.751e-01   1.023  0.306322
## race.ethnicity.5levelOther -4.112e-01  1.056e+00  -0.390  0.696916
## race.ethnicity.5levelWhite  1.512e+00  8.080e-01   1.871  0.061506 .
## demo_race_hispanic1 -2.349e-01  4.073e-01  -0.577  0.564241
## interview_age  2.814e-02  1.835e-02   1.533  0.125465
## MRI_minus_hormone_date_time  3.977e-05  1.648e-05   2.413  0.015912 *
## bmi           5.756e-02  3.685e-02   1.562  0.118485
## household.income[>=200K] -2.924e+00  1.006e+00  -2.905  0.003719 **
## household.income[100K-200K] -1.954e+00  9.363e-01  -2.087  0.037036 *
## household.income[12K-16K] -7.172e-01  1.163e+00  -0.617  0.537600
## household.income[16K-25K] -1.792e+00  1.073e+00  -1.670  0.095061 .
## household.income[25K-35K] -3.777e-01  9.745e-01  -0.388  0.698376
## household.income[35K-50K] -1.436e+00  9.568e-01  -1.501  0.133618
## household.income[50K-75K] -1.705e+00  9.411e-01  -1.812  0.070152 .
## household.income[5K-12K] -9.008e-01  1.141e+00  -0.790  0.429911
## household.income[75K-100K] -1.735e+00  9.465e-01  -1.832  0.067062 .
## high.educBachelor  3.065e-01  8.933e-01   0.343  0.731563
## high.educHS Diploma/GED -2.041e-02  9.045e-01  -0.023  0.981997
## high.educPost Graduate Degree  7.162e-01  9.087e-01   0.788  0.430681
## high.educSome College  7.948e-01  8.405e-01   0.946  0.344476
## hormone_scr_ert_mean:mOFC_rvs_n_ant_z -7.698e-03  1.118e-02  -0.689  0.491147
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0299
## lmer.REML = 10216 Scale est. = 15.823    n = 1661
```

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)	2.522e+00	2.693e+00	0.937	0.34905
## PDS_score	7.781e-01	2.836e-01	2.744	0.00613 **
## hormone_sal_end_min_since_midnight	4.793e-04	8.088e-04	0.593	0.55353
## hormone_scr_ert_mean	7.646e-03	9.325e-03	0.820	0.41235
## mOFC_rvs_n_ant_z	-7.050e-02	4.172e-01	-0.169	0.86583
## race.ethnicity.5levelBlack	1.507e-01	1.145e+00	0.132	0.89527
## race.ethnicity.5levelMixed	1.265e+00	1.110e+00	1.139	0.25474
## race.ethnicity.5levelOther	5.754e-01	1.247e+00	0.462	0.64449
## race.ethnicity.5levelWhite	1.459e+00	1.049e+00	1.391	0.16444
## demo_race_hispanic1	-7.490e-03	4.255e-01	-0.018	0.98596
## interview_age	8.085e-03	1.754e-02	0.461	0.64497
## MRI_minus_hormone_date_time	2.091e-05	1.865e-05	1.121	0.26247
## bmi	4.234e-03	3.775e-02	0.112	0.91071
## household.income[>=200K]	-3.038e+00	1.035e+00	-2.936	0.00337 **
## household.income[100K-200K]	-2.657e+00	9.791e-01	-2.714	0.00672 **
## household.income[12K-16K]	-4.961e-01	1.253e+00	-0.396	0.69228
## household.income[16K-25K]	3.392e-01	1.075e+00	0.315	0.75244
## household.income[25K-35K]	-9.388e-01	1.058e+00	-0.887	0.37503
## household.income[35K-50K]	-6.748e-01	1.028e+00	-0.657	0.51156
## household.income[50K-75K]	-2.109e+00	9.758e-01	-2.161	0.03080 *
## household.income[5K-12K]	4.686e-02	1.129e+00	0.042	0.96689
## household.income[75K-100K]	-2.677e+00	9.966e-01	-2.686	0.00730 **
## high.educBachelor	1.212e+00	9.566e-01	1.267	0.20529
## high.educHS Diploma/GED	-1.061e+00	9.938e-01	-1.068	0.28567
## high.educPost Graduate Degree	3.777e-01	9.593e-01	0.394	0.69384
## high.educSome College	7.714e-01	9.121e-01	0.846	0.39779
## hormone_scr_ert_mean:mOFC_rvs_n_ant_z	-4.307e-03	1.176e-02	-0.366	0.71426

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0359
## lmer.REML = 10465  Scale est. = 11.76      n = 1688
```

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)    -6.786e-01  2.622e+00  -0.259
## PDS_score       7.605e-01  2.078e-01   3.661
## hormone_sal_end_min_since_midnight -1.261e-04  8.027e-04  -0.157
## hormone_scr_ert_mean -3.526e-03  8.277e-03  -0.426
## lOFC_posvsneg_feedback_z  7.349e-02  5.803e-01   0.127
## race.ethnicity.5levelBlack -6.927e-01  9.109e-01  -0.760
## race.ethnicity.5levelMixed  9.582e-01  8.729e-01   1.098
## race.ethnicity.5levelOther -6.081e-01  1.056e+00  -0.576
## race.ethnicity.5levelWhite  1.471e+00  8.068e-01   1.824
## demo_race_hispanic1 -2.006e-01  4.089e-01  -0.490
## interview_age  2.929e-02  1.833e-02   1.598
## MRI_minus_hormone_date_time  4.161e-05  1.646e-05   2.528
## bmi  5.384e-02  3.675e-02   1.465
## household.income[>=200K] -2.683e+00  9.934e-01  -2.701
## household.income[100K-200K] -1.750e+00  9.228e-01  -1.897
## household.income[12K-16K] -5.499e-01  1.157e+00  -0.475
## household.income[16K-25K] -1.625e+00  1.061e+00  -1.531
## household.income[25K-35K] -1.229e-01  9.647e-01  -0.127
## household.income[35K-50K] -1.140e+00  9.448e-01  -1.206
## household.income[50K-75K] -1.490e+00  9.291e-01  -1.604
## household.income[5K-12K] -9.107e-01  1.131e+00  -0.805
## household.income[75K-100K] -1.536e+00  9.334e-01  -1.646
## high.educBachelor  2.144e-01  8.760e-01   0.245
## high.educHS Diploma/GED  3.681e-02  8.911e-01   0.041
## high.educPost Graduate Degree  6.310e-01  8.909e-01   0.708
## high.educSome College  7.253e-01  8.248e-01   0.879
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z -1.863e-03  1.539e-02  -0.121
##
##               Pr(>|t|)
## (Intercept)    0.79578
## PDS_score      0.00026 ***
## hormone_sal_end_min_since_midnight  0.87517
## hormone_scr_ert_mean  0.67015
## lOFC_posvsneg_feedback_z  0.89924
## race.ethnicity.5levelBlack  0.44708
## race.ethnicity.5levelMixed  0.27247
```

```

## race.ethnicity.5levelOther          0.56467
## race.ethnicity.5levelWhite          0.06837 .
## demo_race_hispanic1                 0.62386
## interview_age                       0.11017
## MRI_minus_hormone_date_time         0.01156 *
## bmi                                0.14310
## household.income[>=200K]            0.00699 **
## household.income[100K-200K]         0.05806 .
## household.income[12K-16K]           0.63451
## household.income[16K-25K]           0.12592
## household.income[25K-35K]           0.89867
## household.income[35K-50K]           0.22790
## household.income[50K-75K]           0.10884
## household.income[5K-12K]            0.42097
## household.income[75K-100K]          0.10004
## high.educBachelor                   0.80668
## high.educHS Diploma/GED            0.96706
## high.educPost Graduate Degree       0.47892
## high.educSome College               0.37931
## hormone_scr_ert_mean:l0FC_posvsneg_feedback_z 0.90367
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0273
## lmer.REML = 10243 Scale est. = 16.292    n = 1666

```

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)    2.611e+00  2.690e+00   0.971
## PDS_score       7.359e-01  2.834e-01   2.597
## hormone_sal_end_min_since_midnight 7.077e-04  8.097e-04   0.874
## hormone_scr_ert_mean 6.805e-03  9.290e-03   0.732
## l0FC_posvsneg_feedback_z 1.458e-01  5.366e-01   0.272
## race.ethnicity.5levelBlack 7.510e-02  1.140e+00   0.066
## race.ethnicity.5levelMixed 1.322e+00  1.110e+00   1.190
## race.ethnicity.5levelOther 4.538e-01  1.244e+00   0.365
## race.ethnicity.5levelWhite 1.481e+00  1.048e+00   1.413
## demo_race_hispanic1 6.928e-02  4.261e-01   0.163
## interview_age    3.230e-03  1.754e-02   0.184

```

```

## MRI_minus_hormone_date_time      2.169e-05  1.819e-05  1.192
## bmi                              1.259e-02  3.787e-02  0.332
## household.income[>=200K]         -2.829e+00  1.070e+00 -2.644
## household.income[100K-200K]      -2.432e+00  1.016e+00 -2.393
## household.income[12K-16K]        -3.800e-01  1.289e+00 -0.295
## household.income[16K-25K]         7.200e-01  1.120e+00  0.643
## household.income[25K-35K]        -8.232e-01  1.098e+00 -0.750
## household.income[35K-50K]        -5.240e-01  1.063e+00 -0.493
## household.income[50K-75K]        -1.815e+00  1.015e+00 -1.788
## household.income[5K-12K]          5.079e-01  1.153e+00  0.441
## household.income[75K-100K]       -2.468e+00  1.033e+00 -2.389
## high.educBachelor                 1.216e+00  9.686e-01  1.255
## high.educHS Diploma/GED          -8.353e-01  1.002e+00 -0.834
## high.educPost Graduate Degree     3.880e-01  9.711e-01  0.400
## high.educSome College             7.799e-01  9.251e-01  0.843
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z -1.843e-03  1.510e-02 -0.122
##                                Pr(>|t|)
## (Intercept)                      0.33183
## PDS_score                        0.00950 **
## hormone_sal_end_min_since_midnight 0.38219
## hormone_scr_ert_mean              0.46397
## lOFC_posvsneg_feedback_z          0.78590
## race.ethnicity.5levelBlack        0.94749
## race.ethnicity.5levelMixed        0.23413
## race.ethnicity.5levelOther        0.71523
## race.ethnicity.5levelWhite        0.15788
## demo_race_hispanic1               0.87087
## interview_age                     0.85392
## MRI_minus_hormone_date_time       0.23335
## bmi                               0.73967
## household.income[>=200K]           0.00827 **
## household.income[100K-200K]       0.01681 *
## household.income[12K-16K]         0.76812
## household.income[16K-25K]         0.52039
## household.income[25K-35K]         0.45356
## household.income[35K-50K]         0.62194
## household.income[50K-75K]         0.07391 .
## household.income[5K-12K]          0.65952
## household.income[75K-100K]        0.01702 *
## high.educBachelor                 0.20948
## high.educHS Diploma/GED          0.40448
## high.educPost Graduate Degree     0.68957
## high.educSome College             0.39934
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z 0.90287
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0355
## lmer.REML = 10403  Scale est. = 11.792    n = 1679

```

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)	-6.142e-01	2.617e+00	-0.235
## PDS_score	7.911e-01	2.069e-01	3.824
## hormone_sal_end_min_since_midnight	-5.056e-05	8.017e-04	-0.063
## hormone_scr_ert_mean	-3.903e-03	8.260e-03	-0.472
## mOFC_posvsneg_feedback_z	3.936e-01	5.025e-01	0.783
## race.ethnicity.5levelBlack	-6.661e-01	9.109e-01	-0.731
## race.ethnicity.5levelMixed	9.851e-01	8.728e-01	1.129
## race.ethnicity.5levelOther	-5.960e-01	1.056e+00	-0.564
## race.ethnicity.5levelWhite	1.503e+00	8.072e-01	1.861
## demo_race_hispanic1	-2.092e-01	4.078e-01	-0.513
## interview_age	2.728e-02	1.827e-02	1.493
## MRI_minus_hormone_date_time	4.078e-05	1.643e-05	2.482
## bmi	5.696e-02	3.668e-02	1.553
## household.income[>=200K]	-2.661e+00	9.925e-01	-2.681
## household.income[100K-200K]	-1.704e+00	9.215e-01	-1.849
## household.income[12K-16K]	-5.174e-01	1.154e+00	-0.448
## household.income[16K-25K]	-1.642e+00	1.061e+00	-1.549
## household.income[25K-35K]	-1.177e-01	9.637e-01	-0.122
## household.income[35K-50K]	-1.178e+00	9.428e-01	-1.249
## household.income[50K-75K]	-1.469e+00	9.280e-01	-1.583
## household.income[5K-12K]	-9.146e-01	1.131e+00	-0.809
## household.income[75K-100K]	-1.525e+00	9.331e-01	-1.635
## high.educBachelor	1.956e-01	8.755e-01	0.223
## high.educHS Diploma/GED	1.015e-02	8.910e-01	0.011
## high.educPost Graduate Degree	6.173e-01	8.906e-01	0.693
## high.educSome College	7.275e-01	8.244e-01	0.883
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z	-4.174e-03	1.327e-02	-0.315

```
##
## Pr(>|t|)
## (Intercept) 0.814439
## PDS_score 0.000136 ***
## hormone_sal_end_min_since_midnight 0.949727
## hormone_scr_ert_mean 0.636645
## mOFC_posvsneg_feedback_z 0.433582
## race.ethnicity.5levelBlack 0.464763
## race.ethnicity.5levelMixed 0.259182
```

```

## race.ethnicity.5levelOther          0.572527
## race.ethnicity.5levelWhite          0.062876 .
## demo_race_hispanic1                 0.607953
## interview_age                       0.135541
## MRI_minus_hormone_date_time         0.013168 *
## bmi                                0.120659
## household.income[>=200K]            0.007420 **
## household.income[100K-200K]         0.064593 .
## household.income[12K-16K]           0.653978
## household.income[16K-25K]           0.121655
## household.income[25K-35K]           0.902848
## household.income[35K-50K]           0.211811
## household.income[50K-75K]           0.113684
## household.income[5K-12K]            0.418873
## household.income[75K-100K]          0.102275
## high.educBachelor                   0.823204
## high.educHS Diploma/GED            0.990915
## high.educPost Graduate Degree       0.488311
## high.educSome College               0.377611
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 0.753118
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.029
## lmer.REML = 10273  Scale est. = 16.096    n = 1671

```

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)    2.511e+00  2.678e+00   0.938
## PDS_score       7.417e-01  2.823e-01   2.627
## hormone_sal_end_min_since_midnight 7.106e-04  8.063e-04   0.881
## hormone_scr_ert_mean      8.016e-03  9.279e-03   0.864
## mOFC_posvsneg_feedback_z  -5.348e-01  4.493e-01  -1.190
## race.ethnicity.5levelBlack  -2.489e-02  1.136e+00  -0.022
## race.ethnicity.5levelMixed   1.320e+00  1.107e+00   1.193
## race.ethnicity.5levelOther   4.460e-01  1.239e+00   0.360
## race.ethnicity.5levelWhite   1.468e+00  1.045e+00   1.405
## demo_race_hispanic1         4.966e-02  4.228e-01   0.117
## interview_age              4.272e-03  1.747e-02   0.244

```

```

## MRI_minus_hormone_date_time      2.144e-05  1.865e-05  1.150
## bmi                               1.332e-02  3.770e-02  0.353
## household.income[>=200K]         -2.908e+00  1.060e+00 -2.742
## household.income[100K-200K]      -2.492e+00  1.006e+00 -2.477
## household.income[12K-16K]        -3.503e-01  1.270e+00 -0.276
## household.income[16K-25K]         6.461e-01  1.099e+00  0.588
## household.income[25K-35K]        -8.751e-01  1.088e+00 -0.804
## household.income[35K-50K]        -5.765e-01  1.053e+00 -0.547
## household.income[50K-75K]        -1.851e+00  1.004e+00 -1.844
## household.income[5K-12K]          4.640e-01  1.143e+00  0.406
## household.income[75K-100K]       -2.518e+00  1.023e+00 -2.461
## high.educBachelor                 1.205e+00  9.580e-01  1.258
## high.educHS Diploma/GED          -8.462e-01  9.896e-01 -0.855
## high.educPost Graduate Degree     3.971e-01  9.605e-01  0.413
## high.educSome College             7.853e-01  9.137e-01  0.859
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 1.348e-02  1.269e-02  1.062
##                                     Pr(>|t|)
## (Intercept)                       0.34859
## PDS_score                          0.00868 **
## hormone_sal_end_min_since_midnight 0.37832
## hormone_scr_ert_mean               0.38774
## mOFC_posvsneg_feedback_z           0.23403
## race.ethnicity.5levelBlack          0.98252
## race.ethnicity.5levelMixed          0.23298
## race.ethnicity.5levelOther          0.71888
## race.ethnicity.5levelWhite          0.16025
## demo_race_hispanic1                 0.90650
## interview_age                       0.80688
## MRI_minus_hormone_date_time         0.25043
## bmi                                 0.72392
## household.income[>=200K]             0.00616 **
## household.income[100K-200K]          0.01333 *
## household.income[12K-16K]            0.78278
## household.income[16K-25K]            0.55657
## household.income[25K-35K]            0.42149
## household.income[35K-50K]            0.58415
## household.income[50K-75K]            0.06530 .
## household.income[5K-12K]             0.68488
## household.income[75K-100K]           0.01394 *
## high.educBachelor                   0.20867
## high.educHS Diploma/GED             0.39262
## high.educPost Graduate Degree        0.67933
## high.educSome College                0.39021
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 0.28836
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0364
## lmer.REML = 10436  Scale est. = 11.797    n = 1685

```


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)	-2.2881141	2.4859836	-0.920	0.357463
## PDS_score	0.6990737	0.1807471	3.868	0.000113
## hormone_sal_end_min_since_midnight	0.0005025	0.0007016	0.716	0.473926
## hormone_scr_ert_mean	0.0355740	0.0271762	1.309	0.190669
## bisbas_ss_basm_rr	0.1145067	0.1128078	1.015	0.310191
## race.ethnicity.5levelBlack	-0.8215660	0.8157206	-1.007	0.313968
## race.ethnicity.5levelMixed	1.0382209	0.7917347	1.311	0.189888
## race.ethnicity.5levelOther	-0.4027054	0.9344986	-0.431	0.666561
## race.ethnicity.5levelWhite	1.1360019	0.7349889	1.546	0.122347
## demo_race_hispanic1	-0.0254809	0.3617656	-0.070	0.943854
## interview_age	0.0293723	0.0162086	1.812	0.070103
## bmi	0.0467351	0.0324171	1.442	0.149537
## household.income[>=200K]	-2.8694103	0.8677004	-3.307	0.000959
## household.income[100K-200K]	-1.9970589	0.8044696	-2.482	0.013124
## household.income[12K-16K]	-0.5572779	1.0414608	-0.535	0.592641
## household.income[16K-25K]	-1.4534527	0.8964733	-1.621	0.105099
## household.income[25K-35K]	-0.4815663	0.8406688	-0.573	0.566815
## household.income[35K-50K]	-1.4876909	0.8175625	-1.820	0.068948
## household.income[50K-75K]	-1.5588882	0.8037028	-1.940	0.052554
## household.income[5K-12K]	-0.5648003	0.9240168	-0.611	0.541102
## household.income[75K-100K]	-1.7545814	0.8157066	-2.151	0.031587
## high.educBachelor	1.2047441	0.7573489	1.591	0.111815
## high.educHS Diploma/GED	1.1642626	0.7608834	1.530	0.126127
## high.educPost Graduate Degree	1.6518817	0.7718419	2.140	0.032452
## high.educSome College	1.5162082	0.7070525	2.144	0.032112
## hormone_scr_ert_mean:bisbas_ss_basm_rr	-0.0045127	0.0029733	-1.518	0.129226

```
##
## (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) =  0.0253
## lmer.REML = 13484 Scale est. = 17.482    n = 2187
```

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)    2.9361822   2.4425892   1.202 0.229454
## PDS_score       0.6330724   0.2235903   2.831 0.004674
## hormone_sal_end_min_since_midnight 0.0012221 0.0006813   1.794 0.072980
## hormone_scr_ert_mean    0.0316107 0.0288597   1.095 0.273487
## bisbas_ss_basm_rr      0.0119582 0.1108948   0.108 0.914137
## race.ethnicity.5levelBlack -0.6400082 0.8939529  -0.716 0.474105
## race.ethnicity.5levelMixed  1.0654701 0.8692779   1.226 0.220436
## race.ethnicity.5levelOther  0.1529120 0.9884501   0.155 0.877072
## race.ethnicity.5levelWhite  1.0379065 0.8171476   1.270 0.204154
## demo_race_hispanic1    -0.0423483 0.3577009  -0.118 0.905769
## interview_age      0.0041823 0.0150166   0.279 0.780646
## bmi              0.0202849 0.0312642   0.649 0.516517
## household.income[>=200K]    -3.2107221 0.8508788  -3.773 0.000165
## household.income[100K-200K] -2.6504216 0.7962866  -3.328 0.000887
## household.income[12K-16K]   -0.2270083 1.0344246  -0.219 0.826316
## household.income[16K-25K]   -0.1570177 0.8538220  -0.184 0.854108
## household.income[25K-35K]   -0.7385400 0.8538233  -0.865 0.387138
## household.income[35K-50K]   -1.3046091 0.8126758  -1.605 0.108556
## household.income[50K-75K]   -1.8208521 0.7872545  -2.313 0.020813
```

```

## household.income[5K-12K] -0.1857202 0.8810502 -0.211 0.833066
## household.income[75K-100K] -2.7732703 0.8110737 -3.419 0.000639
## high.educBachelor 1.1885861 0.7954839 1.494 0.135266
## high.educHS Diploma/GED -0.8109329 0.7889599 -1.028 0.304126
## high.educPost Graduate Degree 0.4091689 0.7995941 0.512 0.608894
## high.educSome College 0.7577111 0.7578829 1.000 0.317523
## hormone_scr_ert_mean:bisbas_ss_basm_rr -0.0033120 0.0031515 -1.051 0.293387
##
## (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) = 0.0353
## lmer.REML = 14771 Scale est. = 14.668 n = 2382

```

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)    -5.916e-01  2.483e+00  -0.238
## PDS_score       8.877e-01  1.990e-01   4.460
## hormone_sal_end_min_since_midnight -2.705e-05  7.565e-04  -0.036
## hormone_scr_ert_mean -5.649e-03  8.066e-03  -0.700
## rt_diff_large_neutral_z -1.473e-01  3.038e-01  -0.485
## race.ethnicity.5levelBlack -1.092e+00  8.701e-01  -1.255
## race.ethnicity.5levelMixed  5.577e-01  8.378e-01   0.666
## race.ethnicity.5levelOther -7.441e-01  9.840e-01  -0.756
## race.ethnicity.5levelWhite  1.138e+00  7.763e-01   1.466
## demo_race_hispanic1 -1.245e-01  3.891e-01  -0.320
## interview_age    2.927e-02  1.757e-02   1.666
## bmi             4.134e-02  3.479e-02   1.188
## household.income[>=200K] -2.399e+00  9.464e-01  -2.535
## household.income[100K-200K] -1.535e+00  8.795e-01  -1.746
## household.income[12K-16K] -4.214e-01  1.125e+00  -0.374
## household.income[16K-25K] -1.283e+00  9.862e-01  -1.301
## household.income[25K-35K]  1.342e-01  9.171e-01   0.146
## household.income[35K-50K] -9.464e-01  8.920e-01  -1.061
## household.income[50K-75K] -1.318e+00  8.805e-01  -1.497
## household.income[5K-12K] -1.625e-01  1.066e+00  -0.152
## household.income[75K-100K] -1.368e+00  8.932e-01  -1.532
## high.educBachelor  3.142e-01  8.241e-01   0.381
## high.educHS Diploma/GED  3.990e-01  8.371e-01   0.477
## high.educPost Graduate Degree  8.209e-01  8.393e-01   0.978
## high.educSome College  9.385e-01  7.738e-01   1.213
## hormone_scr_ert_mean:rt_diff_large_neutral_z  9.980e-03  7.773e-03   1.284
##
##              Pr(>|t|)
## (Intercept)      0.8117
## PDS_score        8.69e-06 ***
## hormone_sal_end_min_since_midnight  0.9715
## hormone_scr_ert_mean  0.4838
## rt_diff_large_neutral_z  0.6278
## race.ethnicity.5levelBlack  0.2096
## race.ethnicity.5levelMixed  0.5057
## race.ethnicity.5levelOther  0.4496
## race.ethnicity.5levelWhite  0.1428
## demo_race_hispanic1  0.7489
## interview_age    0.0960 .
## bmi             0.2348
## household.income[>=200K]  0.0113 *
## household.income[100K-200K]  0.0810 .
## household.income[12K-16K]  0.7081
## household.income[16K-25K]  0.1934
## household.income[25K-35K]  0.8837
## household.income[35K-50K]  0.2889
## household.income[50K-75K]  0.1345
## household.income[5K-12K]  0.8788
## household.income[75K-100K]  0.1258
## high.educBachelor  0.7031
## high.educHS Diploma/GED  0.6337

```

```
## high.educPost Graduate Degree          0.3282
## high.educSome College                  0.2253
## hormone_scr_ert_mean:rt_diff_large_neutral_z  0.1993
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0308
## lmer.REML = 11335  Scale est. = 16.64      n = 1844
```

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)      1.269e+00  2.535e+00   0.500
## PDS_score         8.296e-01  2.569e-01   3.230
## hormone_sal_end_min_since_midnight  1.202e-03  7.493e-04   1.604
## hormone_scr_ert_mean    7.503e-03  8.668e-03   0.866
## rt_diff_large_neutral_z  -6.436e-02  3.066e-01  -0.210
## race.ethnicity.5levelBlack  -6.042e-01  1.085e+00  -0.557
## race.ethnicity.5levelMixed    8.183e-01  1.061e+00   0.772
## race.ethnicity.5levelOther  -3.453e-02  1.176e+00  -0.029
## race.ethnicity.5levelWhite    9.387e-01  1.002e+00   0.936
## demo_race_hispanic1  -1.581e-02  3.977e-01  -0.040
## interview_age        4.926e-03  1.648e-02   0.299
## bmi                1.955e-02  3.535e-02   0.553
## household.income[>=200K]  -2.041e+00  9.747e-01  -2.094
## household.income[100K-200K] -1.685e+00  9.209e-01  -1.829
## household.income[12K-16K]    9.759e-01  1.166e+00   0.837
## household.income[16K-25K]    1.413e+00  1.007e+00   1.404
## household.income[25K-35K]    2.868e-01  9.915e-01   0.289
## household.income[35K-50K]    2.929e-01  9.450e-01   0.310
## household.income[50K-75K]  -9.253e-01  9.145e-01  -1.012
## household.income[5K-12K]     9.014e-01  1.042e+00   0.865
## household.income[75K-100K]  -1.635e+00  9.368e-01  -1.745
## high.educBachelor          1.492e+00  9.150e-01   1.630
## high.educHS Diploma/GED    -7.888e-02  9.279e-01  -0.085
## high.educPost Graduate Degree  7.420e-01  9.159e-01   0.810
## high.educSome College       9.089e-01  8.705e-01   1.044
## hormone_scr_ert_mean:rt_diff_large_neutral_z -4.021e-05  8.588e-03  -0.005
##
##               Pr(>|t|)
## (Intercept)      0.61680
## PDS_score         0.00126 **
## hormone_sal_end_min_since_midnight  0.10890
```

```

## hormone_scr_ert_mean 0.38677
## rt_diff_large_neutral_z 0.83374
## race.ethnicity.5levelBlack 0.57773
## race.ethnicity.5levelMixed 0.44045
## race.ethnicity.5levelOther 0.97658
## race.ethnicity.5levelWhite 0.34914
## demo_race_hispanic1 0.96829
## interview_age 0.76503
## bmi 0.58041
## household.income[>=200K] 0.03643 *
## household.income[100K-200K] 0.06751 .
## household.income[12K-16K] 0.40270
## household.income[16K-25K] 0.16059
## household.income[25K-35K] 0.77240
## household.income[35K-50K] 0.75661
## household.income[50K-75K] 0.31177
## household.income[5K-12K] 0.38716
## household.income[75K-100K] 0.08112 .
## high.educBachelor 0.10317
## high.educHS Diploma/GED 0.93227
## high.educPost Graduate Degree 0.41795
## high.educSome College 0.29652
## hormone_scr_ert_mean:rt_diff_large_neutral_z 0.99626
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0342
## lmer.REML = 11868 Scale est. = 11.153 n = 1918

```

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) -5.687e-01 2.483e+00 -0.229
## PDS_score    8.905e-01 1.991e-01 4.473
## hormone_sal_end_min_since_midnight -6.999e-05 7.562e-04 -0.093
## hormone_scr_ert_mean -4.928e-03 8.056e-03 -0.612
## rt_diff_large_small_z 1.820e-02 2.858e-01 0.064
## race.ethnicity.5levelBlack -1.067e+00 8.703e-01 -1.226
## race.ethnicity.5levelMixed 5.845e-01 8.383e-01 0.697

```

```

## race.ethnicity.5levelOther          -7.186e-01  9.843e-01 -0.730
## race.ethnicity.5levelWhite          1.165e+00  7.762e-01  1.500
## demo_race_hispanic1                 -1.503e-01  3.892e-01 -0.386
## interview_age                       2.970e-02  1.756e-02  1.691
## bmi                                 3.930e-02  3.482e-02  1.129
## household.income[>=200K]            -2.447e+00  9.467e-01 -2.585
## household.income[100K-200K]         -1.596e+00  8.793e-01 -1.815
## household.income[12K-16K]           -4.373e-01  1.125e+00 -0.389
## household.income[16K-25K]           -1.347e+00  9.865e-01 -1.365
## household.income[25K-35K]           1.189e-01  9.170e-01  0.130
## household.income[35K-50K]           -1.008e+00  8.922e-01 -1.129
## household.income[50K-75K]           -1.370e+00  8.807e-01 -1.555
## household.income[5K-12K]            -1.649e-01  1.067e+00 -0.155
## household.income[75K-100K]          -1.429e+00  8.931e-01 -1.600
## high.educBachelor                   3.283e-01  8.241e-01  0.398
## high.educHS Diploma/GED            3.838e-01  8.376e-01  0.458
## high.educPost Graduate Degree       8.203e-01  8.403e-01  0.976
## high.educSome College               9.564e-01  7.742e-01  1.235
## hormone_scr_ert_mean:rt_diff_large_small_z  6.515e-03  7.618e-03  0.855
##                                     Pr(>|t|)
## (Intercept)                         0.81887
## PDS_score                           8.17e-06 ***
## hormone_sal_end_min_since_midnight  0.92627
## hormone_scr_ert_mean                0.54076
## rt_diff_large_small_z               0.94922
## race.ethnicity.5levelBlack          0.22021
## race.ethnicity.5levelMixed          0.48575
## race.ethnicity.5levelOther          0.46543
## race.ethnicity.5levelWhite          0.13371
## demo_race_hispanic1                 0.69943
## interview_age                       0.09102 .
## bmi                                 0.25918
## household.income[>=200K]             0.00982 **
## household.income[100K-200K]          0.06967 .
## household.income[12K-16K]           0.69762
## household.income[16K-25K]           0.17230
## household.income[25K-35K]           0.89683
## household.income[35K-50K]           0.25889
## household.income[50K-75K]           0.12011
## household.income[5K-12K]            0.87718
## household.income[75K-100K]          0.10982
## high.educBachelor                   0.69036
## high.educHS Diploma/GED            0.64686
## high.educPost Graduate Degree       0.32907
## high.educSome College               0.21686
## hormone_scr_ert_mean:rt_diff_large_small_z  0.39255
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0312
## lmer.REML = 11334 Scale est. = 16.629    n = 1844

```

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)	1.3294383	2.5328745	0.525
## PDS_score	0.8320804	0.2572010	3.235
## hormone_sal_end_min_since_midnight	0.0011871	0.0007491	1.585
## hormone_scr_ert_mean	0.0074901	0.0086712	0.864
## rt_diff_large_small_z	0.0376750	0.3152954	0.119
## race.ethnicity.5levelBlack	-0.6024476	1.0848947	-0.555
## race.ethnicity.5levelMixed	0.8057005	1.0598366	0.760
## race.ethnicity.5levelOther	-0.0315678	1.1756835	-0.027
## race.ethnicity.5levelWhite	0.9345866	1.0015867	0.933
## demo_race_hispanic1	-0.0131740	0.3980185	-0.033
## interview_age	0.0046234	0.0164597	0.281
## bmi	0.0194357	0.0353483	0.550
## household.income[>=200K]	-2.0502423	0.9746178	-2.104
## household.income[100K-200K]	-1.6957801	0.9214032	-1.840
## household.income[12K-16K]	0.9678014	1.1660630	0.830
## household.income[16K-25K]	1.4038531	1.0085776	1.392
## household.income[25K-35K]	0.2745226	0.9927545	0.277
## household.income[35K-50K]	0.2848239	0.9446810	0.302
## household.income[50K-75K]	-0.9332962	0.9142851	-1.021
## household.income[5K-12K]	0.8982026	1.0423185	0.862
## household.income[75K-100K]	-1.6446442	0.9372595	-1.755
## high.educBachelor	1.4877089	0.9145794	1.627
## high.educHS Diploma/GED	-0.0791811	0.9269201	-0.085
## high.educPost Graduate Degree	0.7434428	0.9155015	0.812
## high.educSome College	0.9080163	0.8695853	1.044
## hormone_scr_ert_mean:rt_diff_large_small_z	-0.0017463	0.0091524	-0.191

```
## Pr(>|t|)
## (Intercept) 0.59973
## PDS_score 0.00124 **
## hormone_sal_end_min_since_midnight 0.11318
## hormone_scr_ert_mean 0.38781
## rt_diff_large_small_z 0.90490
## race.ethnicity.5levelBlack 0.57875
## race.ethnicity.5levelMixed 0.44722
## race.ethnicity.5levelOther 0.97858
## race.ethnicity.5levelWhite 0.35088
## demo_race_hispanic1 0.97360
## interview_age 0.77882
## bmi 0.58250
## household.income[>=200K] 0.03554 *
```



```

## household.income[100K-200K]          0.06586 .
## household.income[12K-16K]            0.40666
## household.income[16K-25K]            0.16411
## household.income[25K-35K]            0.78217
## household.income[35K-50K]            0.76306
## household.income[50K-75K]            0.30748
## household.income[5K-12K]             0.38894
## household.income[75K-100K]           0.07947 .
## high.educBachelor                    0.10398
## high.educHS Diploma/GED             0.93193
## high.educPost Graduate Degree         0.41686
## high.educSome College                 0.29653
## hormone_scr_ert_mean:rt_diff_large_small_z 0.84870
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0342
## lmer.REML = 11868 Scale est. = 11.131    n = 1918

```