Supplement A

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

Contents

Results for Sample 1

1—Int~Puberty—

1.1 Model: CBCL internalizing factor ~ PDS

Females

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

```
## cbcl_scr_syn_internal_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  3.364047   1.858610   1.810 0.070413 .
## PDS_score                    0.599362   0.157687   3.801 0.000147 ***
## race.ethnicity.5levelBlack   0.135086   0.792591   0.170 0.864681
## race.ethnicity.5levelMixed   1.837143   0.789510   2.327 0.020044 *
## race.ethnicity.5levelOther   2.439633   0.901292   2.707 0.006837 **
## race.ethnicity.5levelWhite   1.354995   0.742020   1.826 0.067950 .
## interview_age               -0.005834   0.014591  -0.400 0.689307
## demo_race_hispanic1          0.216061   0.316107   0.684 0.494348
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0121
## lmer.REML =  16403  Scale est. = 13.201    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  2.2809201  1.7753641   1.285  0.19898
## PDS_score                    0.8365766  0.1977954   4.230 2.42e-05 ***
## race.ethnicity.5levelBlack   1.3712129  0.7410409   1.850  0.06436 .
## race.ethnicity.5levelMixed   2.0935551  0.7424989   2.820  0.00484 **
## race.ethnicity.5levelOther   1.9518383  0.8504461   2.295  0.02180 *
## race.ethnicity.5levelWhite   1.5430121  0.6950591   2.220  0.02650 *
## interview_age               -0.0002827  0.0139368  -0.020  0.98382
## demo_race_hispanic1          0.2406567  0.2999262   0.802  0.42240
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00686
## lmer.REML =  17796  Scale est. = 15.403    n = 2863
```

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 +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.738267   1.046826   1.661   0.0969 .
## PDS_score                    0.192989   0.088633   2.177   0.0295 *
## race.ethnicity.5levelBlack   0.034518   0.442769   0.078   0.9379
## race.ethnicity.5levelMixed   0.899818   0.441294   2.039   0.0415 *
## race.ethnicity.5levelOther   0.960117   0.504377   1.904   0.0571 .
## race.ethnicity.5levelWhite   0.798545   0.414637   1.926   0.0542 .
## interview_age               -0.002110   0.008232  -0.256   0.7977
## demo_race_hispanic1          0.024025   0.176180   0.136   0.8915
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00724
## lmer.REML =  13376  Scale est. = 4.9862    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ PDS_score + race.ethnicity.5level + interview_age +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.330887   0.992219   1.341 0.179922
## PDS_score                    0.417375   0.110221   3.787 0.000156 ***
## race.ethnicity.5levelBlack   0.617362   0.412907   1.495 0.134983
## race.ethnicity.5levelMixed   1.145515   0.414049   2.767 0.005701 **
## race.ethnicity.5levelOther   1.105289   0.473273   2.335 0.019591 *
## race.ethnicity.5levelWhite   1.049243   0.387670   2.707 0.006839 **
## interview_age               -0.003445   0.007791  -0.442 0.658426
## demo_race_hispanic1          0.095636   0.165991   0.576 0.564557
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00662
## lmer.REML =  14478  Scale est. = 6.4889    n = 2863
```

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 + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.560842   0.544323   1.030   0.3029
## PDS_score                    0.192902   0.046013   4.192 2.85e-05 ***
## race.ethnicity.5levelBlack   0.185794   0.228387   0.814   0.4160
## race.ethnicity.5levelMixed   0.401589   0.227843   1.763   0.0781 .
## race.ethnicity.5levelOther   0.569861   0.260772   2.185   0.0290 *
## race.ethnicity.5levelWhite   0.218364   0.213975   1.021   0.3076
## interview_age               -0.002093   0.004288  -0.488   0.6254
## demo_race_hispanic1          0.175618   0.090490   1.941   0.0524 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0126
## lmer.REML = 9937.2  Scale est. = 1.6344    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.4374992  0.5584173   0.783  0.43342
## PDS_score                    0.1834951  0.0623571   2.943  0.00328 **
## race.ethnicity.5levelBlack   0.5724725  0.2315140   2.473  0.01347 *
## race.ethnicity.5levelMixed   0.6113634  0.2333716   2.620  0.00885 **
## race.ethnicity.5levelOther   0.4633966  0.2670815   1.735  0.08284 .
## race.ethnicity.5levelWhite   0.3815731  0.2174408   1.755  0.07939 .
## interview_age               -0.0003452  0.0043968  -0.079  0.93743
## demo_race_hispanic1          0.0289864  0.0888073   0.326  0.74415
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00609
## lmer.REML =  11239  Scale est. = 2.0316    n = 2863
```

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 + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.500757   0.632217   0.792 0.428394
## PDS_score                   0.191889   0.053684   3.574 0.000357 ***
## race.ethnicity.5levelBlack  0.220848   0.266590   0.828 0.407508
## race.ethnicity.5levelMixed  0.677402   0.266390   2.543 0.011051 *
## race.ethnicity.5levelOther  0.837469   0.304982   2.746 0.006075 **
## race.ethnicity.5levelWhite  0.519547   0.249759   2.080 0.037604 *
## interview_age              -0.001794   0.004979  -0.360 0.718640
## demo_race_hispanic1         0.107590   0.104881   1.026 0.305064
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0102
## lmer.REML =  10738  Scale est. = 1.7625    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ PDS_score + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.492148   0.681833   0.722  0.47048
## PDS_score                   0.224419   0.075947   2.955  0.00315 **
## race.ethnicity.5levelBlack  0.494325   0.283505   1.744  0.08133 .
## race.ethnicity.5levelMixed  0.666470   0.284770   2.340  0.01933 *
## race.ethnicity.5levelOther  0.585783   0.325805   1.798  0.07229 .
## race.ethnicity.5levelWhite  0.503771   0.266178   1.893  0.05851 .
## interview_age               0.000558   0.005360   0.104  0.91709
## demo_race_hispanic1        -0.046977   0.112531  -0.417  0.67637
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00221
## lmer.REML =  12347  Scale est. = 2.8477    n = 2863
```

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 + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  4.19492    1.89422   2.215 0.026873 *
## pds_p_ss_categoryEarly       1.04585    0.28906   3.618 0.000302 ***
## pds_p_ss_categoryLate        1.70710    0.71494   2.388 0.017023 *
## pds_p_ss_categoryMid         1.20889    0.27421   4.409 1.08e-05 ***
## race.ethnicity.5levelBlack   0.19295    0.79221   0.244 0.807589
## race.ethnicity.5levelMixed   1.90499    0.78883   2.415 0.015805 *
## race.ethnicity.5levelOther   2.49651    0.89969   2.775 0.005562 **
## race.ethnicity.5levelWhite   1.42253    0.74138   1.919 0.055123 .
## interview_age               -0.01158    0.01481  -0.782 0.434254
## demo_race_hispanic1          0.14868    0.31697   0.469 0.639063
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0143
## lmer.REML =  16394  Scale est. = 13.028    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 2.790351   1.791324   1.558  0.11941
## pds_p_ss_categoryEarly      0.692142   0.246778   2.805  0.00507 **
## pds_p_ss_categoryLate       0.399464   1.458693   0.274  0.78422
## pds_p_ss_categoryMid        1.178074   0.494928   2.380  0.01736 *
## race.ethnicity.5levelBlack 1.452171   0.742233   1.956  0.05051 .
## race.ethnicity.5levelMixed 2.137389   0.743411   2.875  0.00407 **
## race.ethnicity.5levelOther 1.994357   0.851793   2.341  0.01928 *
## race.ethnicity.5levelWhite 1.580709   0.695941   2.271  0.02320 *
## interview_age               0.002656   0.013927   0.191  0.84879
## demo_race_hispanic1         0.222230   0.301085   0.738  0.46052
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00485
## lmer.REML =  17799  Scale est. = 15.679    n = 2863
```

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 + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.915933   1.067993   1.794  0.07293 .
## pds_p_ss_categoryEarly       0.483184   0.163247   2.960  0.00311 **
## pds_p_ss_categoryLate        0.412744   0.403926   1.022  0.30696
## pds_p_ss_categoryMid         0.404799   0.154202   2.625  0.00871 **
## race.ethnicity.5levelBlack   0.084441   0.442742   0.191  0.84876
## race.ethnicity.5levelMixed   0.937872   0.441088   2.126  0.03357 *
## race.ethnicity.5levelOther   0.990706   0.503685   1.967  0.04930 *
## race.ethnicity.5levelWhite   0.830010   0.414449   2.003  0.04531 *
## interview_age               -0.003648   0.008362  -0.436  0.66271
## demo_race_hispanic1          0.006521   0.176760   0.037  0.97058
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00866
## lmer.REML =  13371  Scale est. = 4.9568    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.614082   1.000348   1.614  0.10674
## pds_p_ss_categoryEarly       0.439962   0.137774   3.193  0.00142 **
## pds_p_ss_categoryLate        0.348194   0.816709   0.426  0.66989
## pds_p_ss_categoryMid         0.435000   0.275220   1.581  0.11409
## race.ethnicity.5levelBlack   0.657875   0.413354   1.592  0.11160
## race.ethnicity.5levelMixed   1.172391   0.414333   2.830  0.00469 **
## race.ethnicity.5levelOther   1.138695   0.473780   2.403  0.01631 *
## race.ethnicity.5levelWhite   1.070465   0.387972   2.759  0.00583 **
## interview_age               -0.002383   0.007777  -0.306  0.75929
## demo_race_hispanic1          0.085058   0.166620   0.510  0.60975
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.00522
## lmer.REML =  14480  Scale est. = 6.5751    n = 2863
```

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 + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.983908   0.554434   1.775  0.07608 .
## pds_p_ss_categoryEarly       0.254666   0.084977   2.997  0.00275 **
## pds_p_ss_categoryLate        0.905884   0.210356   4.306 1.72e-05 ***
## pds_p_ss_categoryMid         0.374417   0.079913   4.685 2.94e-06 ***
## race.ethnicity.5levelBlack   0.180349   0.227835   0.792  0.42868
## race.ethnicity.5levelMixed   0.414586   0.227277   1.824  0.06824 .
## race.ethnicity.5levelOther   0.568592   0.259949   2.187  0.02881 *
## race.ethnicity.5levelWhite   0.236442   0.213381   1.108  0.26793
## interview_age               -0.005017   0.004349  -1.154  0.24877
## demo_race_hispanic1          0.140478   0.090445   1.553  0.12050
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0172
## lmer.REML =   9927  Scale est. = 1.6132    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.5565464  0.5628504   0.989  0.32284
## pds_p_ss_categoryEarly      0.1336213  0.0780413   1.712  0.08697 .
## pds_p_ss_categoryLate       0.0223448  0.4634322   0.048  0.96155
## pds_p_ss_categoryMid        0.3988227  0.1560753   2.555  0.01066 *
## race.ethnicity.5levelBlack 0.5787781  0.2317015   2.498  0.01255 *
## race.ethnicity.5levelMixed 0.6172272  0.2334494   2.644  0.00824 **
## race.ethnicity.5levelOther 0.4623218  0.2672974   1.730  0.08381 .
```

```
## race.ethnicity.5levelWhite 0.3887382  0.2175459   1.787  0.07406 .
## interview_age              0.0002541  0.0043870   0.058  0.95382
## demo_race_hispanic1        0.0215693  0.0892130   0.242  0.80897
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00556
## lmer.REML =  11240  Scale est. = 2.0434    n = 2863
```

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 + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.861575   0.644696   1.336  0.18153
## pds_p_ss_categoryEarly       0.256133   0.098889   2.590  0.00965 **
## pds_p_ss_categoryLate        0.731980   0.244492   2.994  0.00278 **
## pds_p_ss_categoryMid         0.380329   0.093369   4.073 4.77e-05 ***
## race.ethnicity.5levelBlack   0.216245   0.266521   0.811  0.41723
## race.ethnicity.5levelMixed   0.687983   0.266189   2.585  0.00980 **
## race.ethnicity.5levelOther   0.840944   0.304487   2.762  0.00579 **
## race.ethnicity.5levelWhite   0.535046   0.249565   2.144  0.03213 *
## interview_age               -0.004198   0.005054  -0.831  0.40625
## demo_race_hispanic1          0.079854   0.105192   0.759  0.44785
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0122
## lmer.REML =  10734  Scale est. = 1.7498    n = 2640
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ pds_p_ss_category + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.6734292  0.6869407   0.980   0.3270
## pds_p_ss_categoryEarly       0.2219863  0.0948566   2.340   0.0193 *
```

```
## pds_p_ss_categoryLate      -0.0676606  0.5620808  -0.120   0.9042
## pds_p_ss_categoryMid        0.4770340  0.1897216   2.514   0.0120 *
## race.ethnicity.5levelBlack  0.4945426  0.2836059   1.744   0.0813 .
## race.ethnicity.5levelMixed  0.6740106  0.2847557   2.367   0.0180 *
## race.ethnicity.5levelOther  0.5872294  0.3259433   1.802   0.0717 .
## race.ethnicity.5levelWhite  0.5138833  0.2661769   1.931   0.0536 .
## interview_age               0.0008821  0.0053471   0.165   0.8690
## demo_race_hispanic1        -0.0588658  0.1128725  -0.522   0.6020
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00245
## lmer.REML =  12346  Scale est. = 2.8531    n = 2863
```

1.9 Model: CBCL internalizing factor ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.98935    1.92717   1.032  0.30205
## hormone_scr_ert_mean_z       0.11092    0.14103   0.787  0.43165
## race.ethnicity.5levelBlack   0.35281    0.79371   0.445  0.65671
## race.ethnicity.5levelMixed   1.82435    0.79375   2.298  0.02162 *
## race.ethnicity.5levelOther   2.64127    0.90874   2.907  0.00369 **
## race.ethnicity.5levelWhite   1.43759    0.74505   1.930  0.05378 .
## interview_age                0.01330    0.01488   0.894  0.37145
## demo_race_hispanic1          0.11174    0.32610   0.343  0.73189
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00669
## lmer.REML =  15262  Scale est. = 12.986    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
```

```
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  2.288704   1.886421   1.213  0.22514
## hormone_scr_ert_mean_z       0.042062   0.145369   0.289  0.77234
## race.ethnicity.5levelBlack 1.730202   0.770231   2.246  0.02476 *
## race.ethnicity.5levelMixed 2.137600   0.772813   2.766  0.00571 **
## race.ethnicity.5levelOther 1.867855   0.890529   2.097  0.03605 *
## race.ethnicity.5levelWhite 1.586971   0.723139   2.195  0.02828 *
## interview_age              0.008748   0.014636   0.598  0.55009
## demo_race_hispanic1        0.361685   0.311735   1.160  0.24606
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000816
## lmer.REML =  16637  Scale est. = 16.117    n = 2662
```

1.10 Model: CBCL Anxious-Depressed ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.356564   1.089604   1.245   0.2132
## hormone_scr_ert_mean_z       0.096447   0.079720   1.210   0.2265
## race.ethnicity.5levelBlack   0.032975   0.445097   0.074   0.9409
## race.ethnicity.5levelMixed   0.856813   0.445341   1.924   0.0545 .
## race.ethnicity.5levelOther   1.034197   0.510424   2.026   0.0429 *
## race.ethnicity.5levelWhite   0.849795   0.417979   2.033   0.0421 *
## interview_age                0.003515   0.008426   0.417   0.6766
## demo_race_hispanic1         -0.026234   0.182648  -0.144   0.8858
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00677
## lmer.REML =  12463  Scale est. = 4.9139    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
```

```
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.4506517  1.0531635   1.377  0.16850
## hormone_scr_ert_mean_z     -0.0163616  0.0811269  -0.202  0.84018
## race.ethnicity.5levelBlack  0.8160606  0.4291215   1.902  0.05732 .
## race.ethnicity.5levelMixed  1.1553141  0.4310551   2.680  0.00740 **
## race.ethnicity.5levelOther  1.0693544  0.4955891   2.158  0.03104 *
## race.ethnicity.5levelWhite  1.0419610  0.4034186   2.583  0.00985 **
## interview_age               0.0002377  0.0081704   0.029  0.97679
## demo_race_hispanic1         0.1487317  0.1724590   0.862  0.38854
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00155
## lmer.REML =  13552  Scale est. = 6.9729    n = 2662
```

1.11 Model: CBCL Withdrawn-Depressed ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.188476   0.559617   0.337   0.7363
## hormone_scr_ert_mean_z      0.028288   0.040942   0.691   0.4897
## race.ethnicity.5levelBlack 0.276466   0.226294   1.222   0.2219
## race.ethnicity.5levelMixed 0.432674   0.226727   1.908   0.0565 .
## race.ethnicity.5levelOther 0.595452   0.260329   2.287   0.0223 *
## race.ethnicity.5levelWhite 0.253102   0.212688   1.190   0.2342
## interview_age               0.003404   0.004338   0.785   0.4327
## demo_race_hispanic1         0.144974   0.092467   1.568   0.1170
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00436
## lmer.REML = 9204.8  Scale est. = 1.6289    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
```

```
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.390499   0.584535   0.668  0.50416
## hormone_scr_ert_mean_z      0.032110   0.044736   0.718  0.47296
## race.ethnicity.5levelBlack 0.677569   0.236922   2.860  0.00427 **
## race.ethnicity.5levelMixed 0.653259   0.239425   2.728  0.00641 **
## race.ethnicity.5levelOther 0.451677   0.275602   1.639  0.10136
## race.ethnicity.5levelWhite 0.415233   0.222934   1.863  0.06263 .
## interview_age               0.001831   0.004546   0.403  0.68714
## demo_race_hispanic1         0.058716   0.090960   0.646  0.51865
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0036
## lmer.REML =  10467  Scale est. = 2.1906    n = 2662
```

1.12 Model: CBCL Depressed DSM-5 ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean_z + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.126990   0.654459   0.194  0.84616
## hormone_scr_ert_mean_z      0.032777   0.047943   0.684  0.49425
## race.ethnicity.5levelBlack 0.288922   0.265880   1.087  0.27729
## race.ethnicity.5levelMixed 0.688931   0.267039   2.580  0.00994 **
## race.ethnicity.5levelOther 0.886017   0.306909   2.887  0.00392 **
## race.ethnicity.5levelWhite 0.551231   0.249945   2.205  0.02752 *
## interview_age               0.003798   0.005072   0.749  0.45402
## demo_race_hispanic1         0.067683   0.107691   0.628  0.52974
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00536
## lmer.REML = 9990.2  Scale est. = 1.7457    n = 2455
```

Males

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

```
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.484792   0.722624   0.671   0.5024
## hormone_scr_ert_mean_z       0.014469   0.055563   0.260   0.7946
## race.ethnicity.5levelBlack   0.593223   0.293932   2.018   0.0437 *
## race.ethnicity.5levelMixed   0.706967   0.295869   2.389   0.0169 *
## race.ethnicity.5levelOther   0.535419   0.340694   1.572   0.1162
## race.ethnicity.5levelWhite   0.514409   0.276302   1.862   0.0627 .
## interview_age                0.003136   0.005614   0.559   0.5764
## demo_race_hispanic1         -0.020224   0.116498  -0.174   0.8622
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000396
## lmer.REML =  11562  Scale est. = 2.8469    n = 2662
```

1.13 Model: CBCL internalizing factor ~ Testosterone + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  2.516389   1.928130   1.305 0.191984
## hormone_scr_ert_mean_z      -0.011605   0.144809  -0.080 0.936130
## PDS_score                    0.606502   0.169662   3.575 0.000357 ***
## race.ethnicity.5levelBlack -0.039791   0.799334  -0.050 0.960302
## race.ethnicity.5levelMixed  1.642126   0.793441   2.070 0.038592 *
## race.ethnicity.5levelOther  2.406230   0.908905   2.647 0.008164 **
## race.ethnicity.5levelWhite  1.345234   0.743649   1.809 0.070579 .
## interview_age                0.001635   0.015196   0.108 0.914321
## demo_race_hispanic1          0.099045   0.325274   0.304 0.760774
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.011
## lmer.REML =  15251  Scale est. = 12.934    n = 2455
```

Males

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

```
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  2.354331   1.879856   1.252   0.2105
## hormone_scr_ert_mean_z      -0.030295   0.145767  -0.208   0.8354
## PDS_score                    0.946480   0.210791   4.490 7.42e-06 ***
## race.ethnicity.5levelBlack   1.361023   0.772027   1.763   0.0780 .
## race.ethnicity.5levelMixed   2.047911   0.770394   2.658   0.0079 **
## race.ethnicity.5levelOther   1.743224   0.887939   1.963   0.0497 *
## race.ethnicity.5levelWhite   1.549586   0.720716   2.150   0.0316 *
## interview_age               -0.001733   0.014772  -0.117   0.9066
## demo_race_hispanic1          0.280794   0.311400   0.902   0.3673
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00709
## lmer.REML =  16618  Scale est. = 15.845    n = 2662
```

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_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  3.230046   1.957474   1.650  0.09905 .
## hormone_scr_ert_mean_z       0.009319   0.143430   0.065  0.94820
## pds_p_ss_categoryEarly       0.930597   0.298032   3.122  0.00181 **
## pds_p_ss_categoryLate        1.103831   0.773750   1.427  0.15382
## pds_p_ss_categoryMid         1.227407   0.288817   4.250 2.22e-05 ***
## race.ethnicity.5levelBlack   0.001752   0.799273   0.002  0.99825
## race.ethnicity.5levelMixed   1.690778   0.793001   2.132  0.03310 *
## race.ethnicity.5levelOther   2.475647   0.907556   2.728  0.00642 **
## race.ethnicity.5levelWhite   1.400154   0.743189   1.884  0.05969 .
## interview_age               -0.002717   0.015394  -0.176  0.85992
## demo_race_hispanic1          0.051251   0.326287   0.157  0.87520
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0124
## lmer.REML =  15243  Scale est. = 12.777    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  3.230046   1.957474   1.650  0.09905 .
## hormone_scr_ert_mean_z       0.009319   0.143430   0.065  0.94820
## pds_p_ss_categoryEarly       0.930597   0.298032   3.122  0.00181 **
## pds_p_ss_categoryLate        1.103831   0.773750   1.427  0.15382
## pds_p_ss_categoryMid         1.227407   0.288817   4.250 2.22e-05 ***
## race.ethnicity.5levelBlack   0.001752   0.799273   0.002  0.99825
## race.ethnicity.5levelMixed   1.690778   0.793001   2.132  0.03310 *
## race.ethnicity.5levelOther   2.475647   0.907556   2.728  0.00642 **
## race.ethnicity.5levelWhite   1.400154   0.743189   1.884  0.05969 .
## interview_age               -0.002717   0.015394  -0.176  0.85992
## demo_race_hispanic1          0.051251   0.326287   0.157  0.87520
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0124
## lmer.REML =  15243  Scale est. = 12.777    n = 2455
```

1.15 Model: CBCL Anxious-Depressed ~ Testosterone + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.5085714  1.0921893   1.381   0.1673
## hormone_scr_ert_mean_z       0.0604191  0.0820705   0.736   0.4617
## PDS_score                    0.1757743  0.0959317   1.832   0.0670 .
## race.ethnicity.5levelBlack -0.0813774  0.4492013  -0.181   0.8563
## race.ethnicity.5levelMixed  0.8036564  0.4460337   1.802   0.0717 .
## race.ethnicity.5levelOther  0.9652041  0.5115285   1.887   0.0593 .
## race.ethnicity.5levelWhite  0.8226179  0.4179988   1.968   0.0492 *
## interview_age               0.0001454  0.0086195   0.017   0.9865
## demo_race_hispanic1        -0.0298528  0.1825416  -0.164   0.8701
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.00769
## lmer.REML =  12463  Scale est. = 4.9213    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.493694   1.050366   1.422   0.1551
## hormone_scr_ert_mean_z     -0.053354   0.081421  -0.655   0.5123
## PDS_score                   0.482040   0.117552   4.101 4.24e-05 ***
## race.ethnicity.5levelBlack  0.625500   0.430524   1.453   0.1464
## race.ethnicity.5levelMixed  1.107946   0.430019   2.577   0.0100 *
## race.ethnicity.5levelOther  1.006492   0.494473   2.035   0.0419 *
## race.ethnicity.5levelWhite  1.021452   0.402377   2.539   0.0112 *
## interview_age              -0.005176   0.008255  -0.627   0.5307
## demo_race_hispanic1         0.108151   0.172504   0.627   0.5307
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00678
## lmer.REML =  13538  Scale est. = 6.8744    n = 2662
```

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_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.641011   1.109420   1.479  0.13923
## hormone_scr_ert_mean_z      0.071923   0.081310   0.885  0.37649
## pds_p_ss_categoryEarly      0.455204   0.169054   2.693  0.00714 **
## pds_p_ss_categoryLate       0.101533   0.440028   0.231  0.81753
## pds_p_ss_categoryMid        0.401992   0.163236   2.463  0.01386 *
## race.ethnicity.5levelBlack -0.041493   0.449227  -0.092  0.92642
## race.ethnicity.5levelMixed  0.831790   0.445833   1.866  0.06220 .
## race.ethnicity.5levelOther  0.999392   0.510807   1.956  0.05052 .
```

```
## race.ethnicity.5levelWhite  0.848107   0.417800   2.030  0.04247 *
## interview_age              -0.001117   0.008738  -0.128  0.89827
## demo_race_hispanic1        -0.039209   0.183181  -0.214  0.83053
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0089
## lmer.REML =  12458  Scale est. = 4.8824    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.641011   1.109420   1.479  0.13923
## hormone_scr_ert_mean_z       0.071923   0.081310   0.885  0.37649
## pds_p_ss_categoryEarly       0.455204   0.169054   2.693  0.00714 **
## pds_p_ss_categoryLate        0.101533   0.440028   0.231  0.81753
## pds_p_ss_categoryMid         0.401992   0.163236   2.463  0.01386 *
## race.ethnicity.5levelBlack -0.041493   0.449227  -0.092  0.92642
## race.ethnicity.5levelMixed  0.831790   0.445833   1.866  0.06220 .
## race.ethnicity.5levelOther  0.999392   0.510807   1.956  0.05052 .
## race.ethnicity.5levelWhite  0.848107   0.417800   2.030  0.04247 *
## interview_age              -0.001117   0.008738  -0.128  0.89827
## demo_race_hispanic1        -0.039209   0.183181  -0.214  0.83053
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0089
## lmer.REML =  12458  Scale est. = 4.8824    n = 2455
```

1.17 Model: CBCL Withdrawn-Depressed ~ Testosterone + PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 3.453e-01  5.595e-01   0.617 0.537147
```

```
## hormone_scr_ert_mean_z     -9.991e-03  4.208e-02  -0.237 0.812332
## PDS_score                   1.825e-01  4.910e-02   3.717 0.000206 ***
## race.ethnicity.5levelBlack  1.588e-01  2.278e-01   0.697 0.485872
## race.ethnicity.5levelMixed  3.786e-01  2.265e-01   1.671 0.094838 .
## race.ethnicity.5levelOther  5.241e-01  2.603e-01   2.013 0.044202 *
## race.ethnicity.5levelWhite  2.258e-01  2.121e-01   1.064 0.287241
## interview_age              -8.579e-05  4.425e-03  -0.019 0.984533
## demo_race_hispanic1         1.397e-01  9.203e-02   1.518 0.129068
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00942
## lmer.REML = 9195.3  Scale est. = 1.6056    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.4126580  0.5835381   0.707  0.47953
## hormone_scr_ert_mean_z      0.0148393  0.0449711   0.330  0.74145
## PDS_score                   0.2141085  0.0656348   3.262  0.00112 **
## race.ethnicity.5levelBlack  0.5867078  0.2381327   2.464  0.01381 *
## race.ethnicity.5levelMixed  0.6305339  0.2390971   2.637  0.00841 **
## race.ethnicity.5levelOther  0.4254271  0.2752322   1.546  0.12230
## race.ethnicity.5levelWhite  0.4066557  0.2225500   1.827  0.06777 .
## interview_age              -0.0005826  0.0045981  -0.127  0.89919
## demo_race_hispanic1         0.0383757  0.0910183   0.422  0.67333
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00703
## lmer.REML =  10460  Scale est. = 2.1766    n = 2662
```

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_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
```

```
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.675084   0.568042   1.188  0.23478
## hormone_scr_ert_mean_z      -0.009769   0.041665  -0.234  0.81464
## pds_p_ss_categoryEarly       0.224127   0.086839   2.581  0.00991 **
## pds_p_ss_categoryLate        0.687064   0.226587   3.032  0.00245 **
## pds_p_ss_categoryMid         0.353545   0.083446   4.237 2.35e-05 ***
## race.ethnicity.5levelBlack  0.155685   0.227556   0.684  0.49394
## race.ethnicity.5levelMixed  0.389760   0.226221   1.723  0.08503 .
## race.ethnicity.5levelOther  0.529425   0.259799   2.038  0.04168 *
## race.ethnicity.5levelWhite  0.240926   0.211748   1.138  0.25532
## interview_age               -0.002197   0.004484  -0.490  0.62424
## demo_race_hispanic1          0.113657   0.092119   1.234  0.21739
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0118
## lmer.REML = 9191.2  Scale est. = 1.5913    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.675084   0.568042   1.188  0.23478
## hormone_scr_ert_mean_z      -0.009769   0.041665  -0.234  0.81464
## pds_p_ss_categoryEarly       0.224127   0.086839   2.581  0.00991 **
## pds_p_ss_categoryLate        0.687064   0.226587   3.032  0.00245 **
## pds_p_ss_categoryMid         0.353545   0.083446   4.237 2.35e-05 ***
## race.ethnicity.5levelBlack  0.155685   0.227556   0.684  0.49394
## race.ethnicity.5levelMixed  0.389760   0.226221   1.723  0.08503 .
## race.ethnicity.5levelOther  0.529425   0.259799   2.038  0.04168 *
## race.ethnicity.5levelWhite  0.240926   0.211748   1.138  0.25532
## interview_age               -0.002197   0.004484  -0.490  0.62424
## demo_race_hispanic1          0.113657   0.092119   1.234  0.21739
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0118
## lmer.REML = 9191.2  Scale est. = 1.5913    n = 2455
```

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_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.2847402  0.6551781   0.435  0.66389
## hormone_scr_ert_mean_z     -0.0043878  0.0492851  -0.089  0.92907
## PDS_score                   0.1822921  0.0577433   3.157  0.00161 **
## race.ethnicity.5levelBlack  0.1673208  0.2681581   0.624  0.53271
## race.ethnicity.5levelMixed  0.6324275  0.2671364   2.367  0.01799 *
## race.ethnicity.5levelOther  0.8147984  0.3071627   2.653  0.00804 **
## race.ethnicity.5levelWhite  0.5222341  0.2496410   2.092  0.03655 *
## interview_age               0.0003155  0.0051817   0.061  0.95146
## demo_race_hispanic1         0.0636657  0.1074903   0.592  0.55371
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00871
## lmer.REML = 9984.2  Scale est. = 1.7421    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean_z + PDS_score +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 0.5047512  0.7214946   0.700  0.48424
## hormone_scr_ert_mean_z     -0.0060578  0.0558437  -0.108  0.91362
## PDS_score                   0.2628445  0.0810019   3.245  0.00119 **
## race.ethnicity.5levelBlack  0.4870818  0.2953160   1.649  0.09919 .
## race.ethnicity.5levelMixed  0.6807554  0.2954991   2.304  0.02131 *
## race.ethnicity.5levelOther  0.5015710  0.3403008   1.474  0.14063
## race.ethnicity.5levelWhite  0.5035789  0.2759050   1.825  0.06808 .
## interview_age               0.0002189  0.0056777   0.039  0.96925
## demo_race_hispanic1        -0.0428367  0.1166713  -0.367  0.71353
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0025
## lmer.REML =  11554  Scale est. = 2.8294    n = 2662
```

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_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.584728   0.665454   0.879  0.37966
## hormone_scr_ert_mean_z      -0.003839   0.048826  -0.079  0.93733
## pds_p_ss_categoryEarly       0.221817   0.101911   2.177  0.02961 *
## pds_p_ss_categoryLate        0.484378   0.264889   1.829  0.06758 .
## pds_p_ss_categoryMid         0.387541   0.098255   3.944 8.23e-05 ***
## race.ethnicity.5levelBlack   0.152286   0.268220   0.568  0.57025
## race.ethnicity.5levelMixed   0.633976   0.267029   2.374  0.01766 *
## race.ethnicity.5levelOther   0.819772   0.306764   2.672  0.00758 **
## race.ethnicity.5levelWhite   0.531661   0.249522   2.131  0.03321 *
## interview_age               -0.001587   0.005251  -0.302  0.76251
## demo_race_hispanic1          0.044392   0.107867   0.412  0.68071
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0101
## lmer.REML =   9981  Scale est. = 1.7258    n = 2455
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean_z + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.584728   0.665454   0.879  0.37966
## hormone_scr_ert_mean_z      -0.003839   0.048826  -0.079  0.93733
## pds_p_ss_categoryEarly       0.221817   0.101911   2.177  0.02961 *
## pds_p_ss_categoryLate        0.484378   0.264889   1.829  0.06758 .
## pds_p_ss_categoryMid         0.387541   0.098255   3.944 8.23e-05 ***
## race.ethnicity.5levelBlack   0.152286   0.268220   0.568  0.57025
## race.ethnicity.5levelMixed   0.633976   0.267029   2.374  0.01766 *
## race.ethnicity.5levelOther   0.819772   0.306764   2.672  0.00758 **
## race.ethnicity.5levelWhite   0.531661   0.249522   2.131  0.03321 *
## interview_age               -0.001587   0.005251  -0.302  0.76251
## demo_race_hispanic1          0.044392   0.107867   0.412  0.68071
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0101
## lmer.REML =   9981  Scale est. = 1.7258    n = 2455
```

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
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.395004   0.306222   1.290  0.19719
## PDS_score      0.074620   0.027064   2.757  0.00587 **
## interview_age -0.004768   0.002628  -1.814  0.06972 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00449
## lmer.REML = 7547.8  Scale est. = 0.75326   n = 2690
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.151113   0.289140   0.523  0.60127
## PDS_score      0.091019   0.033898   2.685  0.00729 **
## interview_age -0.001715   0.002449  -0.700  0.48382
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00282
## lmer.REML = 8064.5  Scale est. = 0.72377   n = 2913
```

2.2 Model : Reaction Time ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.571406   0.316653  -1.805   0.0713 .
## PDS_score     -0.020896   0.028544  -0.732   0.4642
## interview_age  0.005458   0.002729   2.000   0.0456 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00104
## lmer.REML = 5939.4  Scale est. = 0.67983   n = 2201
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.347746   0.318216  -1.093    0.275
## PDS_score     -0.026961   0.028607  -0.942    0.346
## interview_age  0.003429   0.002742   1.250    0.211
##
##
## R-sq.(adj) =  0.000134
## lmer.REML = 5963.6  Scale est. = 0.77204   n = 2201
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.1377075  0.2925250   0.471   0.6379
## PDS_score     -0.0677145  0.0353646  -1.915   0.0556 .
## interview_age -0.0004923  0.0024809  -0.198   0.8427
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.00137
## lmer.REML = 5951.9  Scale est. = 0.66838   n = 2303
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0768858  0.2956580   0.260    0.795
## PDS_score     -0.0336578  0.0356573  -0.944    0.345
## interview_age -0.0002174  0.0025086  -0.087    0.931
##
##
## R-sq.(adj) =  -0.000241
## lmer.REML = 6019.1  Scale est. = 0.7024    n = 2303
```

2.3 Model: Caudate Anticipation ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.483420   0.318838  -1.516   0.1296
## PDS_score     -0.049471   0.028595  -1.730   0.0838 .
## interview_age  0.004869   0.002743   1.775   0.0760 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00193
## lmer.REML = 5350.3  Scale est. = 0.77536   n = 2044
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
```

```
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.209124   0.340919  -0.613    0.540
## PDS_score     -0.003916   0.041426  -0.095    0.925
## interview_age  0.001764   0.002892   0.610    0.542
##
##
## R-sq.(adj) =  -0.000702
## lmer.REML = 5743.7  Scale est. = 0.74176   n = 2067
```

2.4 Model B: Putamen Anticipation ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.372726   0.310423  -1.201  0.23001
## PDS_score     -0.077949   0.027849  -2.799  0.00517 **
## interview_age  0.004245   0.002670   1.590  0.11202
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00378
## lmer.REML = 5233.6  Scale est. = 0.73005   n = 2041
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.475074   0.329473  -1.442    0.149
## PDS_score      0.015271   0.040212   0.380    0.704
## interview_age  0.003848   0.002798   1.375    0.169
##
##
## R-sq.(adj) =  0.000503
## lmer.REML = 5589.5  Scale est. = 0.75739   n = 2064
```

2.5 Model: Accumbens Anticipation ~ PDS

Females

```
##
```

```
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.0968160  0.2446591  -0.396    0.692
## PDS_score     -0.0008552  0.0219117  -0.039    0.969
## interview_age  0.0009134  0.0021051   0.434    0.664
##
##
## R-sq.(adj) =  -0.000795
## lmer.REML = 4276.4  Scale est. = 0.44122   n = 2044
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.318694   0.255800   1.246    0.213
## PDS_score      0.006030   0.030835   0.196    0.845
## interview_age -0.002683   0.002173  -1.235    0.217
##
##
## R-sq.(adj) =  -0.000226
## lmer.REML = 4583.4  Scale est. = 0.50525   n = 2066
```

2.6 Model: Caudate Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.879700   0.304751   2.887  0.00394 **
## PDS_score     -0.021140   0.027194  -0.777  0.43703
## interview_age -0.007289   0.002625  -2.777  0.00553 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
```

```
## R-sq.(adj) =  0.00389
## lmer.REML = 5192.5  Scale est. = 0.73778   n = 2042
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.031564   0.307208  -0.103   0.9182
## PDS_score     -0.078845   0.036926  -2.135   0.0329 *
## interview_age  0.001472   0.002611   0.564   0.5729
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0013
## lmer.REML = 5332.8  Scale est. = 0.76745   n = 2065
```

2.7 Model: Putamen Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.553835   0.291446   1.900   0.0575 .
## PDS_score      0.005590   0.026008   0.215   0.8298
## interview_age -0.005130   0.002509  -2.044   0.0410 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00101
## lmer.REML = 5000.7  Scale est. = 0.67013   n = 2042
```

Males

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

```
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.2672445  0.3067924   0.871    0.384
## PDS_score     -0.0619678  0.0369846  -1.676    0.094 .
## interview_age -0.0008925  0.0026000  -0.343    0.731
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000443
## lmer.REML = 5304.4  Scale est. = 0.74767   n = 2068
```

2.8 Model: Accumbens Feedback ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.457769   0.230801   1.983   0.0475 *
## PDS_score     -0.001013   0.020566  -0.049   0.9607
## interview_age -0.003938   0.001988  -1.981   0.0477 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00106
## lmer.REML = 4078.6  Scale est. = 0.42369   n = 2050
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.066775   0.248298  -0.269    0.788
## PDS_score     -0.041154   0.030143  -1.365    0.172
## interview_age  0.001413   0.002106   0.671    0.502
##
##
## R-sq.(adj) =  -2.21e-05
## lmer.REML = 4403.4  Scale est. = 0.40091   n = 2061
```

2.9 Model: OFC activation (anticipation stage) ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0590386  0.2040969   0.289    0.772
## PDS_score      0.0037308  0.0182241   0.205    0.838
## interview_age -0.0004418  0.0017592  -0.251    0.802
##
##
## R-sq.(adj) =  -0.000933
## lmer.REML = 3536.8  Scale est. = 0.29608   n = 2038
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.039678   0.234446   0.169    0.866
## PDS_score      0.008097   0.020912   0.387    0.699
## interview_age -0.000431   0.002020  -0.213    0.831
##
##
## R-sq.(adj) =  -0.000901
## lmer.REML = 4110.5  Scale est. = 0.43526   n = 2039
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.242985   0.216367  -1.123    0.262
## PDS_score      0.031944   0.026501   1.205    0.228
## interview_age  0.001747   0.001839   0.950    0.342
##
##
## R-sq.(adj) =  0.00126
## lmer.REML = 3846.2  Scale est. = 0.29898   n = 2060
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.1174623  0.2355002  -0.499  0.61799
## PDS_score      0.0776497  0.0286198   2.713  0.00672 **
## interview_age  0.0001156  0.0020019   0.058  0.95395
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00338
## lmer.REML = 4197.2  Scale est. = 0.37935   n = 2055
```

2.10 Model: OFC activation (feedback stage) ~ PDS

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.250497   0.179292   1.397    0.163
## PDS_score      0.009944   0.016003   0.621    0.534
## interview_age -0.002448   0.001545  -1.585    0.113
##
##
## R-sq.(adj) =  0.000286
## lmer.REML = 3018.9  Scale est. = 0.22332   n = 2039
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0649136  0.2204114   0.295    0.768
## PDS_score      0.0101010  0.0197079   0.513    0.608
## interview_age -0.0007488  0.0018984  -0.394    0.693
##
##
## R-sq.(adj) =  -0.000837
```

```
## lmer.REML = 3842.5  Scale est. = 0.34392   n = 2040
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.255465   0.194367  -1.314    0.189
## PDS_score      0.008297   0.023443   0.354    0.723
## interview_age  0.002312   0.001652   1.399    0.162
##
##
## R-sq.(adj) =  0.000168
## lmer.REML = 3469.7  Scale est. = 0.30665   n = 2070
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.0389465  0.2241386  -0.174    0.862
## PDS_score      0.0047312  0.0273317   0.173    0.863
## interview_age  0.0005657  0.0019042   0.297    0.766
##
##
## R-sq.(adj) =  -0.000974
## lmer.REML =   4032  Scale est. = 0.29495   n = 2068
```

2.11 Model: Caudate Anticipation ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.591761   0.335016  -1.766   0.0775 .
## hormone_scr_ert_mean_z -0.030690   0.026111  -1.175   0.2400
## interview_age           0.005087   0.002808   1.812   0.0702 .
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0013
## lmer.REML = 5024.1  Scale est. = 0.79373   n = 1914
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.074125   0.349808  -0.212    0.832
## hormone_scr_ert_mean_z  0.013253   0.028742   0.461    0.645
## interview_age           0.000623   0.002915   0.214    0.831
##
##
## R-sq.(adj) =  -0.000807
## lmer.REML = 5205.4  Scale est. = 0.63774   n = 1912
```

2.12 Model B: Putamen Anticipation ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.383966   0.325368  -1.180    0.238
## hormone_scr_ert_mean_z -0.020326   0.025357  -0.802    0.423
## interview_age           0.003171   0.002727   1.163    0.245
##
##
## R-sq.(adj) =  -4.16e-05
## lmer.REML = 4908.1  Scale est. = 0.74258   n = 1912
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
```

```
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.327936   0.346500  -0.946    0.344
## hormone_scr_ert_mean_z  0.041862   0.028598   1.464    0.143
## interview_age           0.002867   0.002885   0.994    0.321
##
##
## R-sq.(adj) =  0.00137
## lmer.REML = 5165.6  Scale est. = 0.67645   n = 1912
```

2.13 Model: Accumbens Anticipation ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.244643   0.254957  -0.960   0.3374
## hormone_scr_ert_mean_z -0.034201   0.019891  -1.719   0.0857 .
## interview_age           0.002162   0.002140   1.010   0.3124
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000903
## lmer.REML = 3995.4  Scale est. = 0.43175   n = 1915
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0.3072737  0.2726446   1.127    0.260
## hormone_scr_ert_mean_z -0.0002691  0.0222342  -0.012    0.990
## interview_age          -0.0025160  0.0022728  -1.107    0.268
##
##
## R-sq.(adj) =  -0.000402
## lmer.REML = 4290.1  Scale est. = 0.48971   n = 1915
```

2.14 Model: Caudate Feedback ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              1.045803   0.320271   3.265 0.001113 **
## hormone_scr_ert_mean_z  0.051043   0.024845   2.054 0.040066 *
## interview_age           -0.009016   0.002691  -3.350 0.000823 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00575
## lmer.REML = 4869.7  Scale est. = 0.74228   n = 1910
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.131005   0.322819   0.406    0.685
## hormone_scr_ert_mean_z  0.032040   0.026431   1.212    0.226
## interview_age           -0.000708   0.002690  -0.263    0.792
##
##
## R-sq.(adj) =  -0.000313
## lmer.REML = 4926.5  Scale est. = 0.76028   n = 1913
```

2.15 Model: Putamen Feedback ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.713151   0.303944   2.346  0.01906 *
```

```
## hormone_scr_ert_mean_z  0.066484   0.023695   2.806  0.00507 **
## interview_age          -0.006442   0.002554  -2.523  0.01173 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00502
## lmer.REML = 4670.9  Scale est. = 0.66712   n = 1911
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.452903   0.320646   1.412    0.158
## hormone_scr_ert_mean_z  0.030225   0.026440   1.143    0.253
## interview_age          -0.003121   0.002665  -1.171    0.242
##
##
## R-sq.(adj) =  -5.75e-05
## lmer.REML = 4892.1  Scale est. = 0.70784   n = 1917
```

2.16 Model: Accumbens Feedback ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.471274   0.236219   1.995   0.0462 *
## hormone_scr_ert_mean_z  0.004098   0.018377   0.223   0.8235
## interview_age          -0.004118   0.001985  -2.075   0.0382 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00121
## lmer.REML = 3728.7  Scale est. = 0.40449   n = 1918
```

Males

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

```
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0.0951261  0.2637942   0.361    0.718
## hormone_scr_ert_mean_z  0.0302771  0.0216948   1.396    0.163
## interview_age          -0.0003079  0.0021966  -0.140    0.889
##
##
## R-sq.(adj) =  0.000179
## lmer.REML = 4110.6  Scale est. = 0.40831   n = 1909
```

2.17 Model: OFC activation (anticipation stage) ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.0141014  0.2148549  -0.066    0.948
## hormone_scr_ert_mean_z -0.0125712  0.0167194  -0.752    0.452
## interview_age           0.0002391  0.0018052   0.132    0.895
##
##
## R-sq.(adj) =  -0.000731
## lmer.REML = 3330.6  Scale est. = 0.30454   n = 1908
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0.0841768  0.2462446   0.342    0.733
## hormone_scr_ert_mean_z  0.0049225  0.0191536   0.257    0.797
## interview_age          -0.0007006  0.0020693  -0.339    0.735
##
##
## R-sq.(adj) =  -0.000971
## lmer.REML = 3856.2  Scale est. = 0.43719   n = 1908
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.355274   0.229261  -1.550    0.121
## hormone_scr_ert_mean_z -0.030847   0.018868  -1.635    0.102
## interview_age           0.003033   0.001911   1.587    0.113
##
##
## R-sq.(adj) =  0.00138
## lmer.REML = 3591.8  Scale est. = 0.29077   n = 1909
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.249360   0.250089  -0.997    0.319
## hormone_scr_ert_mean_z -0.019065   0.020418  -0.934    0.351
## interview_age           0.002128   0.002085   1.020    0.308
##
##
## R-sq.(adj) =  -0.000168
## lmer.REML = 3920.4  Scale est. = 0.37746   n = 1905
```

2.18 Model: OFC activation (feedback stage) ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0.326363   0.187426   1.741   0.0818 .
## hormone_scr_ert_mean_z  0.025014   0.014583   1.715   0.0865 .
## interview_age          -0.002987   0.001575  -1.896   0.0581 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) =  0.00188
## lmer.REML = 2823.9  Scale est. = 0.21672   n = 1910
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.147132   0.228833   0.643     0.52
## hormone_scr_ert_mean_z   0.014706   0.017849   0.824     0.41
## interview_age           -0.001327   0.001921  -0.691     0.49
##
##
## R-sq.(adj) =  -0.000438
## lmer.REML = 3568.5  Scale est. = 0.33149   n = 1912
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)             -0.122210   0.204604  -0.597    0.550
## hormone_scr_ert_mean_z   0.001823   0.016784   0.109    0.914
## interview_age            0.001347   0.001705   0.790    0.430
##
##
## R-sq.(adj) =  -0.000688
## lmer.REML = 3218.3  Scale est. = 0.3098    n = 1919
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.0571267  0.2376761   0.240    0.810
## hormone_scr_ert_mean_z   0.0164587  0.0194398   0.847    0.397
## interview_age           -0.0001319  0.0019825  -0.067    0.947
##
##
## R-sq.(adj) =  -0.000783
```

```
## lmer.REML = 3764.8  Scale est. = 0.30053   n = 1917
```

2.19 Model: MID Reaction Time ~ Testosterone

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.681474   0.329314  -2.069   0.0386 *
## hormone_scr_ert_mean_z -0.029941   0.025743  -1.163   0.2449
## interview_age           0.006150   0.002765   2.224   0.0262 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00186
## lmer.REML = 5546.3  Scale est. = 0.69013   n = 2062
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            -0.396605   0.332388  -1.193    0.233
## hormone_scr_ert_mean_z -0.016785   0.025964  -0.646    0.518
## interview_age           0.003421   0.002791   1.226    0.220
##
##
## R-sq.(adj) =  3.89e-06
## lmer.REML = 5585.5  Scale est. = 0.75016   n = 2062
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0.089835   0.306788   0.293    0.770
## hormone_scr_ert_mean_z -0.011286   0.025188  -0.448    0.654
```

```
## interview_age          -0.000843   0.002557  -0.330    0.742
##
##
## R-sq.(adj) =  -0.000666
## lmer.REML = 5529.7  Scale est. = 0.66098   n = 2142
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0.1260063  0.3077940   0.409    0.682
## hormone_scr_ert_mean_z -0.0333926  0.0251146  -1.330    0.184
## interview_age          -0.0009739  0.0025665  -0.379    0.704
##
##
## R-sq.(adj) =  9.15e-05
## lmer.REML = 5558.9  Scale est. = 0.67172   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_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.330045   0.321009   1.028    0.304
## hormone_scr_ert_mean_z -0.018668   0.024980  -0.747    0.455
## interview_age          -0.003113   0.002685  -1.160    0.246
##
##
## R-sq.(adj) =  0.000515
## lmer.REML = 7031.4  Scale est. = 0.70731   n = 2504
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ hormone_scr_ert_mean_z + interview_age
##
## Parametric coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)             0.255006   0.302870   0.842   0.3999
## hormone_scr_ert_mean_z  0.045069   0.024816   1.816   0.0695 .
## interview_age          -0.001467   0.002523  -0.581   0.5610
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00114
## lmer.REML = 7488.5  Scale est. = 0.70183   n = 2708
```

3—Int~Reward—

3.1 Model: CBCL internalizing factor ~ Nucleus Accumbens activity (anticipation stage - All reward v. neutral)

Females

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

Males

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

```
## (Intercept)                 0.90981    2.01145   0.452 0.651089
## accumbens_rvsn_ant_z       -0.13397    0.15780  -0.849 0.396000
## interview_age               0.01412    0.01545   0.914 0.361018
## race.ethnicity.5levelBlack  1.42784    0.86544   1.650 0.099129 .
## race.ethnicity.5levelMixed  2.86668    0.86090   3.330 0.000885 ***
## race.ethnicity.5levelOther  2.88778    0.99103   2.914 0.003609 **
## race.ethnicity.5levelWhite  2.12172    0.80947   2.621 0.008830 **
## demo_race_hispanic1         0.09777    0.33410   0.293 0.769826
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00616
## lmer.REML =  12392  Scale est. = 17.372    n = 2024
```

3.2 Model: CBCL internalizing factor ~ Caudate activity (anticipation stage - All reward v. neutral)

Females

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

Males

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

```
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   1.13846    2.02066   0.563  0.57322
## caudate_rvsn_ant_z           -0.11700    0.12316  -0.950  0.34225
## interview_age                 0.01280    0.01548   0.827  0.40846
## race.ethnicity.5levelBlack    1.35206    0.88553   1.527  0.12696
## race.ethnicity.5levelMixed    2.78962    0.88126   3.165  0.00157 **
## race.ethnicity.5levelOther    2.88797    1.00597   2.871  0.00414 **
## race.ethnicity.5levelWhite    2.05860    0.83114   2.477  0.01334 *
## demo_race_hispanic1           0.13001    0.33630   0.387  0.69911
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00574
## lmer.REML =  12383  Scale est. = 17.514    n = 2022
```

3.3 Model: CBCL internalizing factor ~ Putamen activity (anticipation stage - All reward v. neutral)

Females

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

Males

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

```
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.94564    2.01703   0.469  0.63924
## putamen_rvsn_ant_z          -0.16425    0.12296  -1.336  0.18174
## interview_age                0.01425    0.01545   0.922  0.35646
## race.ethnicity.5levelBlack   1.42743    0.88405   1.615  0.10654
## race.ethnicity.5levelMixed   2.82456    0.87774   3.218  0.00131 **
## race.ethnicity.5levelOther   2.75170    1.00721   2.732  0.00635 **
## race.ethnicity.5levelWhite   2.08091    0.82917   2.510  0.01216 *
## demo_race_hispanic1          0.08926    0.33586   0.266  0.79046
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00557
## lmer.REML =  12378  Scale est. = 17.128    n = 2023
```

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

Females

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

Males

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

```
## cbcl_scr_syn_internal_r ~ accumbens_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    0.77475    1.99660   0.388 0.698032
## accumbens_posvsneg_feedback_z  0.32566    0.16284   2.000 0.045644 *
## interview_age                  0.01477    0.01534   0.963 0.335823
## race.ethnicity.5levelBlack     1.51036    0.85866   1.759 0.078735 .
## race.ethnicity.5levelMixed     2.91146    0.85216   3.417 0.000647 ***
## race.ethnicity.5levelOther     3.04869    0.98188   3.105 0.001930 **
## race.ethnicity.5levelWhite     2.12718    0.80145   2.654 0.008013 **
## demo_race_hispanic1            0.06274    0.33218   0.189 0.850220
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00785
## lmer.REML =  12336  Scale est. = 17.742    n = 2021
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   4.174121   2.078905   2.008  0.04479 *
## caudate_posvsneg_feedback_z -0.178458   0.133986  -1.332  0.18304
## interview_age               -0.007524   0.015835  -0.475  0.63473
## race.ethnicity.5levelBlack   1.026575   0.888082   1.156  0.24784
## race.ethnicity.5levelMixed   2.438043   0.876042   2.783  0.00544 **
## race.ethnicity.5levelOther   2.443722   0.992035   2.463  0.01385 *
## race.ethnicity.5levelWhite   1.358837   0.825732   1.646  0.10000
## demo_race_hispanic1          0.542136   0.350534   1.547  0.12212
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0083
## lmer.REML =  12316  Scale est. = 11.382    n = 1997
```

Males

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

```
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.421202   2.024330   0.702  0.48272
## caudate_posvsneg_feedback_z 0.118954   0.130857   0.909  0.36344
## interview_age                0.009903   0.015487   0.639  0.52261
## race.ethnicity.5levelBlack  1.426455   0.874856   1.631  0.10315
## race.ethnicity.5levelMixed  2.846507   0.869937   3.272  0.00109 **
## race.ethnicity.5levelOther  2.962154   0.995131   2.977  0.00295 **
## race.ethnicity.5levelWhite  2.094779   0.819002   2.558  0.01061 *
## demo_race_hispanic1         0.154159   0.335180   0.460  0.64562
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00595
## lmer.REML =  12389  Scale est. = 17.501    n = 2023
```

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

Females

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

Males

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

```
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   1.05524    2.01873   0.523 0.601223
## putamen_posvsneg_feedback_z  0.14036    0.13237   1.060 0.289116
## interview_age                 0.01249    0.01549   0.806 0.420296
## race.ethnicity.5levelBlack   1.46805    0.86859   1.690 0.091153 .
## race.ethnicity.5levelMixed   2.91149    0.86315   3.373 0.000757 ***
## race.ethnicity.5levelOther   2.98856    0.99153   3.014 0.002610 **
## race.ethnicity.5levelWhite   2.17694    0.81221   2.680 0.007416 **
## demo_race_hispanic1          0.08749    0.33699   0.260 0.795178
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00591
## lmer.REML =  12432  Scale est. = 17.729    n = 2028
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  3.945689   2.088229   1.889  0.05897 .
## lOFC_rvsn_ant_z              0.092356   0.206649   0.447  0.65498
## interview_age               -0.005135   0.015862  -0.324  0.74617
## race.ethnicity.5levelBlack  0.949446   0.895071   1.061  0.28893
## race.ethnicity.5levelMixed  2.410749   0.885797   2.722  0.00655 **
## race.ethnicity.5levelOther  2.446597   1.001979   2.442  0.01470 *
## race.ethnicity.5levelWhite  1.303526   0.834533   1.562  0.11845
## demo_race_hispanic1         0.566955   0.349537   1.622  0.10496
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0076
## lmer.REML =  12300  Scale est. = 11.614    n = 1994
```

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

```
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  3.887753   2.085389   1.864  0.06243 .
## mOFC_rvsn_ant_z              0.184766   0.174982   1.056  0.29114
## interview_age               -0.004795   0.015837  -0.303  0.76210
## race.ethnicity.5levelBlack   0.946118   0.895477   1.057  0.29084
## race.ethnicity.5levelMixed   2.424899   0.886298   2.736  0.00627 **
## race.ethnicity.5levelOther   2.516611   1.004105   2.506  0.01228 *
## race.ethnicity.5levelWhite   1.342866   0.835098   1.608  0.10799
## demo_race_hispanic1          0.557219   0.349619   1.594  0.11114
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0082
## lmer.REML =  12308  Scale est. = 11.42     n = 1995
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvsn_ant_z + interview_age + race.ethnicity.5level +
##     demo_race_hispanic
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  2.649e-01  1.995e+00   0.133  0.89436
## lOFC_rvsn_ant_z              3.840e-03  1.865e-01   0.021  0.98357
## interview_age                1.992e-02  1.533e-02   1.300  0.19371
## race.ethnicity.5levelBlack   1.417e+00  8.574e-01   1.653  0.09856 .
## race.ethnicity.5levelMixed   2.804e+00  8.524e-01   3.290  0.00102 **
## race.ethnicity.5levelOther   2.880e+00  9.798e-01   2.940  0.00332 **
## race.ethnicity.5levelWhite   2.044e+00  8.009e-01   2.552  0.01080 *
## demo_race_hispanic1         -6.687e-05  3.323e-01   0.000  0.99984
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00548
## lmer.REML =  12332  Scale est. = 17.059     n = 2021
```

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

```
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.42987    2.00279   0.215  0.83007
## mOFC_rvsn_ant_z              0.27046    0.17117   1.580  0.11426
## interview_age                0.01874    0.01538   1.218  0.22323
## race.ethnicity.5levelBlack  1.34471    0.86121   1.561  0.11858
## race.ethnicity.5levelMixed  2.73744    0.85492   3.202  0.00139 **
## race.ethnicity.5levelOther  2.86734    0.98038   2.925  0.00349 **
## race.ethnicity.5levelWhite  2.03045    0.80355   2.527  0.01159 *
## demo_race_hispanic1          0.03911    0.33258   0.118  0.90639
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00707
## lmer.REML =  12301  Scale est. = 17.183    n = 2014
```

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

Females

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

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

```
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  4.023520   2.074379   1.940  0.05257 .
## mOFC_posvsneg_feedback_z    -0.167758   0.189547  -0.885  0.37624
## interview_age               -0.006339   0.015808  -0.401  0.68849
## race.ethnicity.5levelBlack   1.004855   0.886400   1.134  0.25708
## race.ethnicity.5levelMixed   2.433716   0.874753   2.782  0.00545 **
## race.ethnicity.5levelOther   2.575923   0.991115   2.599  0.00942 **
## race.ethnicity.5levelWhite   1.380283   0.823927   1.675  0.09404 .
## demo_race_hispanic1          0.518458   0.348645   1.487  0.13716
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00815
## lmer.REML =  12295  Scale est. = 11.469    n = 1994
```

Males

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

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_posvsneg_feedback_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.80386    1.99379   0.403 0.686858
```

```
## mOFC_posvsneg_feedback_z    0.27553    0.17865   1.542 0.123160
## interview_age               0.01508    0.01531   0.985 0.324691
## race.ethnicity.5levelBlack  1.44976    0.85958   1.687 0.091839 .
## race.ethnicity.5levelMixed  2.90987    0.85377   3.408 0.000667 ***
## race.ethnicity.5levelOther  2.90159    0.98245   2.953 0.003179 **
## race.ethnicity.5levelWhite  2.08983    0.80305   2.602 0.009326 **
## demo_race_hispanic1         0.03963    0.33252   0.119 0.905135
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00704
## lmer.REML =  12380  Scale est. = 17.178    n = 2027
```

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

Females

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

Males

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

```
## (Intercept)                2.183626   1.837663   1.188  0.23483
## bisbas_ss_basm_rr          0.003817   0.044574   0.086  0.93177
## interview_age              0.009560   0.013816   0.692  0.48905
## race.ethnicity.5levelBlack 1.610755   0.750902   2.145  0.03203 *
## race.ethnicity.5levelMixed 2.100595   0.755919   2.779  0.00549 **
## race.ethnicity.5levelOther 1.983774   0.862904   2.299  0.02158 *
## race.ethnicity.5levelWhite 1.502642   0.709067   2.119  0.03416 *
## demo_race_hispanic1        0.317069   0.301590   1.051  0.29320
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000948
## lmer.REML =  17729  Scale est. = 15.738    n = 2847
```

3.10 Model: CBCL internalizing factor ~ MID Reaction Time (reward vs. neutral trials)

Females

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

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

```
## (Intercept)                 4.464661   1.980676   2.254  0.02429 *
## rt_diff_large_small_z      -0.123532   0.120640  -1.024  0.30597
## interview_age              -0.009608   0.015124  -0.635  0.52528
## race.ethnicity.5levelBlack  0.926365   0.839755   1.103  0.27009
## race.ethnicity.5levelMixed  2.326042   0.833976   2.789  0.00533 **
## race.ethnicity.5levelOther  2.779393   0.948352   2.931  0.00342 **
## race.ethnicity.5levelWhite  1.364444   0.782899   1.743  0.08151 .
## demo_race_hispanic1         0.485413   0.341768   1.420  0.15567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00793
## lmer.REML =  13269  Scale est. = 11.747    n = 2153
```

Males

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

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_small_z + interview_age +
##     race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  1.28604    1.93561   0.664   0.5065
## rt_diff_large_small_z       -0.07689    0.12414  -0.619   0.5357
## interview_age                0.01678    0.01481   1.133   0.2574
```

```
## race.ethnicity.5levelBlack  0.93933    0.84074   1.117   0.2640
## race.ethnicity.5levelMixed  2.15237    0.83755   2.570   0.0102 *
## race.ethnicity.5levelOther  1.96006    0.96117   2.039   0.0415 *
## race.ethnicity.5levelWhite  1.42757    0.79053   1.806   0.0711 .
## demo_race_hispanic1         0.16026    0.32289   0.496   0.6197
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00316
## lmer.REML =  13877  Scale est. = 16.926    n = 2257
```

4—Int~Puberty x Reward—

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_rvsn_ant_z +
##     race.ethnicity.5level + demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     4.93246    2.07818   2.373 0.017717 *
## PDS_score                       0.66789    0.17883   3.735 0.000193 ***
## accumbens_rvsn_ant_z           -0.74666    0.42905  -1.740 0.081967 .
## race.ethnicity.5levelBlack      0.54545    0.89101   0.612 0.540495
## race.ethnicity.5levelMixed      2.34273    0.87490   2.678 0.007473 **
## race.ethnicity.5levelOther      2.34680    0.99199   2.366 0.018089 *
## race.ethnicity.5levelWhite      1.35252    0.82265   1.644 0.100314
## demo_race_hispanic1             0.49442    0.34785   1.421 0.155373
## interview_age                  -0.02243    0.01629  -1.377 0.168697
## PDS_score:accumbens_rvsn_ant_z  0.42529    0.23874   1.781 0.074993 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0145
## lmer.REML =  12315  Scale est. = 11.173    n = 1999
```

Males

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

```
##     race.ethnicity.5level + demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    1.110491   2.008771   0.553  0.58045
## PDS_score                      0.740908   0.231386   3.202  0.00139 **
## accumbens_rvsn_ant_z          -0.176926   0.431793  -0.410  0.68204
## race.ethnicity.5levelBlack     1.132855   0.868851   1.304  0.19243
## race.ethnicity.5levelMixed     2.813468   0.859400   3.274  0.00108 **
## race.ethnicity.5levelOther     2.805836   0.989336   2.836  0.00461 **
## race.ethnicity.5levelWhite     2.102584   0.807941   2.602  0.00933 **
## demo_race_hispanic1            0.031163   0.334900   0.093  0.92587
## interview_age                  0.004686   0.015705   0.298  0.76543
## PDS_score:accumbens_rvsn_ant_z 0.028997   0.297822   0.097  0.92245
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00996
## lmer.REML =  12383  Scale est. = 17.312    n = 2024
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    5.16482    2.08805   2.474 0.013462 *
## PDS_score                      0.69019    0.17965   3.842 0.000126 ***
## caudate_rvsn_ant_z            -0.11993    0.32559  -0.368 0.712651
## race.ethnicity.5levelBlack     0.54705    0.89316   0.612 0.540289
## race.ethnicity.5levelMixed     2.29666    0.87576   2.622 0.008796 **
## race.ethnicity.5levelOther     2.30580    0.99182   2.325 0.020181 *
## race.ethnicity.5levelWhite     1.32860    0.82400   1.612 0.107037
## demo_race_hispanic1            0.49035    0.34786   1.410 0.158803
## interview_age                 -0.02440    0.01638  -1.490 0.136466
## PDS_score:caudate_rvsn_ant_z   0.05174    0.18124   0.285 0.775296
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0131
## lmer.REML =  12316  Scale est. = 11.35     n = 1998
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   1.330434   2.016643   0.660 0.509505
## PDS_score                     0.764180   0.231367   3.303 0.000974 ***
## caudate_rvsn_ant_z            0.289141   0.350447   0.825 0.409433
## race.ethnicity.5levelBlack    1.031591   0.888271   1.161 0.245639
## race.ethnicity.5levelMixed    2.698742   0.879861   3.067 0.002189 **
## race.ethnicity.5levelOther    2.786111   1.003964   2.775 0.005569 **
## race.ethnicity.5levelWhite    2.024026   0.829244   2.441 0.014740 *
## demo_race_hispanic1           0.053239   0.336319   0.158 0.874237
## interview_age                 0.003358   0.015718   0.214 0.830824
## PDS_score:caudate_rvsn_ant_z -0.302925   0.243097  -1.246 0.212869
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0105
## lmer.REML =  12373  Scale est. = 17.352    n = 2022
```

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
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   4.97477    2.07632   2.396 0.016669 *
## PDS_score                     0.69413    0.17949   3.867 0.000114 ***
## putamen_rvsn_ant_z           -0.37583    0.32746  -1.148 0.251214
## race.ethnicity.5levelBlack    0.59070    0.88838   0.665 0.506182
## race.ethnicity.5levelMixed    2.32554    0.87167   2.668 0.007695 **
## race.ethnicity.5levelOther    2.29813    0.98931   2.323 0.020281 *
## race.ethnicity.5levelWhite    1.29941    0.81989   1.585 0.113158
## demo_race_hispanic1           0.50620    0.34697   1.459 0.144749
## interview_age                -0.02287    0.01628  -1.404 0.160369
## PDS_score:putamen_rvsn_ant_z  0.18597    0.18035   1.031 0.302586
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.014
## lmer.REML =  12281  Scale est. = 11.319    n = 1995
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * putamen_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   1.069415   2.010972   0.532 0.594930
## PDS_score                     0.795180   0.232011   3.427 0.000622 ***
## putamen_rvsn_ant_z            0.685059   0.347481   1.972 0.048803 *
## race.ethnicity.5levelBlack    1.112071   0.885549   1.256 0.209335
## race.ethnicity.5levelMixed    2.732836   0.874919   3.124 0.001812 **
## race.ethnicity.5levelOther    2.668475   1.003956   2.658 0.007924 **
## race.ethnicity.5levelWhite    2.059818   0.826294   2.493 0.012752 *
## demo_race_hispanic1          -0.002783   0.335825  -0.008 0.993388
## interview_age                 0.005000   0.015680   0.319 0.749830
## PDS_score:putamen_rvsn_ant_z -0.641137   0.244624  -2.621 0.008836 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0126
## lmer.REML =  12362  Scale est. = 16.639    n = 2023
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  4.90115    2.09807   2.336 0.019589 *
## PDS_score                    0.66515    0.17977   3.700 0.000222 ***
## lOFC_rvsn_ant_z              0.01527    0.52247   0.029 0.976689
## race.ethnicity.5levelBlack   0.52114    0.89989   0.579 0.562581
## race.ethnicity.5levelMixed   2.24412    0.88436   2.538 0.011239 *
```

```
## race.ethnicity.5levelOther  2.23647    1.00065   2.235 0.025527 *
## race.ethnicity.5levelWhite  1.24974    0.83231   1.502 0.133380
## demo_race_hispanic1         0.51354    0.34902   1.471 0.141342
## interview_age              -0.02142    0.01641  -1.305 0.192031
## PDS_score:lOFC_rvsn_ant_z   0.03931    0.28333   0.139 0.889677
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0124
## lmer.REML =  12288  Scale est. = 11.562    n = 1994
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.44213    1.99293   0.222  0.82445
## PDS_score                    0.64668    0.23294   2.776  0.00555 **
## lOFC_rvsn_ant_z             -0.45904    0.50823  -0.903  0.36652
## race.ethnicity.5levelBlack   1.15256    0.86113   1.338  0.18091
## race.ethnicity.5levelMixed   2.77674    0.85121   3.262  0.00112 **
## race.ethnicity.5levelOther   2.81757    0.97872   2.879  0.00403 **
## race.ethnicity.5levelWhite   2.03354    0.79959   2.543  0.01106 *
## demo_race_hispanic1         -0.05669    0.33250  -0.170  0.86464
## interview_age                0.01160    0.01560   0.744  0.45719
## PDS_score:lOFC_rvsn_ant_z    0.32821    0.34564   0.950  0.34245
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0085
## lmer.REML =  12324  Scale est. = 16.899    n = 2021
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
```

```
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   4.84149    2.09453   2.311 0.020908 *
## PDS_score                     0.66802    0.17956   3.720 0.000204 ***
## mOFC_rvsn_ant_z              -0.03687    0.43630  -0.085 0.932667
## race.ethnicity.5levelBlack    0.51760    0.90004   0.575 0.565296
## race.ethnicity.5levelMixed    2.25855    0.88469   2.553 0.010757 *
## race.ethnicity.5levelOther    2.31830    1.00294   2.312 0.020907 *
## race.ethnicity.5levelWhite    1.29551    0.83274   1.556 0.119937
## demo_race_hispanic1           0.49881    0.34895   1.429 0.153030
## interview_age                -0.02114    0.01638  -1.291 0.196961
## PDS_score:mOFC_rvsn_ant_z     0.13133    0.23937   0.549 0.583311
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0134
## lmer.REML =  12296  Scale est. = 11.364    n = 1995
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_rvsn_ant_z + race.ethnicity.5level +
##     demo_race_hispanic + interview_age
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0.624062   2.000859   0.312  0.75515
## PDS_score                    0.683251   0.232281   2.941  0.00330 **
## mOFC_rvsn_ant_z              0.219209   0.460608   0.476  0.63419
## race.ethnicity.5levelBlack   1.077705   0.864995   1.246  0.21294
## race.ethnicity.5levelMixed   2.695055   0.854542   3.154  0.00164 **
## race.ethnicity.5levelOther   2.785797   0.979830   2.843  0.00451 **
## race.ethnicity.5levelWhite   2.014115   0.802688   2.509  0.01218 *
## demo_race_hispanic1         -0.015705   0.332742  -0.047  0.96236
## interview_age                0.009928   0.015649   0.634  0.52589
## PDS_score:mOFC_rvsn_ant_z    0.015746   0.300671   0.052  0.95824
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0101
## lmer.REML =  12294  Scale est. = 17.078    n = 2014
```

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
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                           4.86589    2.07602   2.344  0.01918
## PDS_score                             0.68636    0.17813   3.853  0.00012
## accumbens_posvsneg_feedback_z        -0.39320    0.44400  -0.886  0.37595
## race.ethnicity.5levelBlack            0.54437    0.88849   0.613  0.54015
## race.ethnicity.5levelMixed            2.21939    0.87236   2.544  0.01103
## race.ethnicity.5levelOther            2.36260    0.98666   2.395  0.01673
## race.ethnicity.5levelWhite            1.34627    0.82071   1.640  0.10108
## demo_race_hispanic1                   0.42095    0.34808   1.209  0.22667
## interview_age                        -0.02196    0.01627  -1.349  0.17744
## PDS_score:accumbens_posvsneg_feedback_z  0.20945    0.24541   0.853  0.39350
##
## (Intercept)                          *
## PDS_score                            ***
## accumbens_posvsneg_feedback_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed           *
## race.ethnicity.5levelOther           *
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## PDS_score:accumbens_posvsneg_feedback_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0121
## lmer.REML =  12340  Scale est. = 11.244    n = 2005
```

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
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          0.974341   1.993967   0.489 0.625147
## PDS_score                            0.709079   0.229247   3.093 0.002008
## accumbens_posvsneg_feedback_z        0.015265   0.446047   0.034 0.972703
## race.ethnicity.5levelBlack           1.234169   0.861883   1.432 0.152315
## race.ethnicity.5levelMixed           2.847060   0.850813   3.346 0.000834
## race.ethnicity.5levelOther           2.960141   0.980339   3.020 0.002564
## race.ethnicity.5levelWhite           2.098703   0.800058   2.623 0.008777
## demo_race_hispanic1                 -0.001489   0.332586  -0.004 0.996427
```

```
## interview_age                              0.005746   0.015588   0.369 0.712435
## PDS_score:accumbens_posvsneg_feedback_z  0.235992   0.304036   0.776 0.437724
##
## (Intercept)
## PDS_score                                **
## accumbens_posvsneg_feedback_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed               ***
## race.ethnicity.5levelOther               **
## race.ethnicity.5levelWhite               **
## demo_race_hispanic1
## interview_age
## PDS_score:accumbens_posvsneg_feedback_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0113
## lmer.REML =  12328  Scale est. = 17.656    n = 2021
```

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
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          5.24064    2.08996   2.508   0.0122 *
## PDS_score                            0.70970    0.17965   3.951 8.07e-05 ***
## caudate_posvsneg_feedback_z         -0.42312    0.33771  -1.253   0.2104
## race.ethnicity.5levelBlack           0.54975    0.89324   0.615   0.5383
## race.ethnicity.5levelMixed           2.22349    0.87503   2.541   0.0111 *
## race.ethnicity.5levelOther           2.17874    0.99090   2.199   0.0280 *
## race.ethnicity.5levelWhite           1.27525    0.82348   1.549   0.1216
## demo_race_hispanic1                  0.49242    0.34972   1.408   0.1593
## interview_age                       -0.02506    0.01638  -1.530   0.1263
## PDS_score:caudate_posvsneg_feedback_z  0.15205    0.18800   0.809   0.4187
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0138
## lmer.REML =  12303  Scale est. = 11.31     n = 1997
```

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
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          1.662714   2.020642   0.823 0.410682
## PDS_score                            0.794117   0.232017   3.423 0.000633 ***
## caudate_posvsneg_feedback_z         -0.149997   0.355454  -0.422 0.673080
## race.ethnicity.5levelBlack           1.113313   0.877511   1.269 0.204689
## race.ethnicity.5levelMixed           2.793385   0.867905   3.219 0.001309 **
## race.ethnicity.5levelOther           2.896433   0.993050   2.917 0.003577 **
## race.ethnicity.5levelWhite           2.067674   0.817029   2.531 0.011458 *
## demo_race_hispanic1                  0.068190   0.335459   0.203 0.838942
## interview_age                       -0.000349   0.015732  -0.022 0.982303
## PDS_score:caudate_posvsneg_feedback_z  0.207256   0.237647   0.872 0.383250
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0107
## lmer.REML =  12379  Scale est. = 17.388    n = 2023
```

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
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          4.86580    2.08450   2.334 0.019680 *
## PDS_score                            0.67167    0.17939   3.744 0.000186 ***
## putamen_posvsneg_feedback_z          0.04503    0.35173   0.128 0.898143
## race.ethnicity.5levelBlack           0.63545    0.89359   0.711 0.477091
## race.ethnicity.5levelMixed           2.29627    0.87490   2.625 0.008742 **
## race.ethnicity.5levelOther           2.27889    0.99332   2.294 0.021882 *
## race.ethnicity.5levelWhite           1.32205    0.82379   1.605 0.108689
## demo_race_hispanic1                  0.51174    0.34948   1.464 0.143267
## interview_age                       -0.02187    0.01634  -1.338 0.181011
## PDS_score:putamen_posvsneg_feedback_z -0.08259    0.19310  -0.428 0.668914
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0131
## lmer.REML =  12299  Scale est. = 11.345    n = 1996
```

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
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         1.358783   2.015957   0.674 0.500380
## PDS_score                           0.760030   0.231803   3.279 0.001060 **
## putamen_posvsneg_feedback_z        -0.306904   0.361874  -0.848 0.396484
## race.ethnicity.5levelBlack          1.152753   0.871332   1.323 0.185993
## race.ethnicity.5levelMixed          2.856253   0.861081   3.317 0.000926 ***
## race.ethnicity.5levelOther          2.929340   0.989325   2.961 0.003103 **
## race.ethnicity.5levelWhite          2.150420   0.810173   2.654 0.008010 **
## demo_race_hispanic1                 0.005966   0.337119   0.018 0.985883
## interview_age                       0.002089   0.015740   0.133 0.894431
## PDS_score:putamen_posvsneg_feedback_z  0.334041   0.243549   1.372 0.170354
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0108
## lmer.REML =  12422  Scale est. = 17.593    n = 2028
```

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
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        4.92052    2.08082   2.365 0.018140 *
## PDS_score                          0.68518    0.17862   3.836 0.000129 ***
## lOFC_posvsneg_feedback_z          -0.67670    0.57385  -1.179 0.238452
## race.ethnicity.5levelBlack         0.54472    0.88932   0.613 0.540267
## race.ethnicity.5levelMixed         2.21866    0.87231   2.543 0.011052 *
## race.ethnicity.5levelOther         2.47787    0.99339   2.494 0.012699 *
## race.ethnicity.5levelWhite         1.30039    0.82024   1.585 0.113041
## demo_race_hispanic1                0.41769    0.34743   1.202 0.229419
## interview_age                     -0.02219    0.01632  -1.360 0.173911
## PDS_score:lOFC_posvsneg_feedback_z  0.26950    0.31121   0.866 0.386603
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0134
## lmer.REML =  12272  Scale est. = 11.19     n = 1994
```

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
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       0.979171   1.992072   0.492 0.623102
## PDS_score                         0.705574   0.230936   3.055 0.002278 **
## lOFC_posvsneg_feedback_z         -0.260592   0.564728  -0.461 0.644528
## race.ethnicity.5levelBlack        1.164644   0.863426   1.349 0.177532
## race.ethnicity.5levelMixed        2.820399   0.852772   3.307 0.000958 ***
## race.ethnicity.5levelOther        2.748041   0.983799   2.793 0.005267 **
## race.ethnicity.5levelWhite        2.053822   0.801858   2.561 0.010499 *
## demo_race_hispanic1              -0.004806   0.333205  -0.014 0.988495
## interview_age                     0.006403   0.015580   0.411 0.681151
## PDS_score:lOFC_posvsneg_feedback_z  0.221057   0.382530   0.578 0.563408
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00919
## lmer.REML =  12384  Scale est. = 17.008    n = 2029
```

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
##
## Parametric coefficients:
##                                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       5.04965    2.08298   2.424  0.01543 *
## PDS_score                         0.68950    0.17888   3.855  0.00012 ***
## mOFC_posvsneg_feedback_z         -0.69715    0.48406  -1.440  0.14996
## race.ethnicity.5levelBlack        0.53721    0.89106   0.603  0.54665
## race.ethnicity.5levelMixed        2.19349    0.87432   2.509  0.01219 *
```

```
## race.ethnicity.5levelOther          2.30312    0.98997   2.326  0.02009 *
## race.ethnicity.5levelWhite          1.28148    0.82167   1.560  0.11901
## demo_race_hispanic1                 0.46194    0.34777   1.328  0.18423
## interview_age                      -0.02318    0.01634  -1.419  0.15610
## PDS_score:mOFC_posvsneg_feedback_z  0.30275    0.26566   1.140  0.25459
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0142
## lmer.REML =  12281  Scale est. = 11.435    n = 1994
```

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
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.031307   1.991116   0.518 0.604547
## PDS_score                          0.708314   0.230857   3.068 0.002182 **
## mOFC_posvsneg_feedback_z          -0.061820   0.505986  -0.122 0.902771
## race.ethnicity.5levelBlack         1.158695   0.862802   1.343 0.179441
## race.ethnicity.5levelMixed         2.837685   0.852570   3.328 0.000889 ***
## race.ethnicity.5levelOther         2.807415   0.980892   2.862 0.004252 **
## race.ethnicity.5levelWhite         2.061024   0.801557   2.571 0.010204 *
## demo_race_hispanic1               -0.023184   0.332785  -0.070 0.944465
## interview_age                      0.005845   0.015565   0.376 0.707313
## PDS_score:mOFC_posvsneg_feedback_z 0.248273   0.349561   0.710 0.477635
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0108
## lmer.REML =  12371  Scale est. = 17.106    n = 2027
```

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
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)                  2.191763   2.099766   1.044  0.29667
## PDS_score                    1.574106   0.551603   2.854  0.00436 **
## bisbas_ss_basm_rr            0.114562   0.111110   1.031  0.30260
## race.ethnicity.5levelBlack   0.201260   0.791776   0.254  0.79937
## race.ethnicity.5levelMixed   1.868473   0.787599   2.372  0.01775 *
## race.ethnicity.5levelOther   2.513910   0.901229   2.789  0.00532 **
## race.ethnicity.5levelWhite   1.340999   0.740403   1.811  0.07023 .
## demo_race_hispanic1          0.164739   0.316995   0.520  0.60332
## interview_age               -0.004925   0.014590  -0.338  0.73572
## PDS_score:bisbas_ss_basm_rr -0.107740   0.059762  -1.803  0.07153 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0132
## lmer.REML =  16324  Scale est. = 13.08     n = 2629
```

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
##
## Parametric coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 4.7423551  2.0817585   2.278  0.02280 *
## PDS_score                  -0.8680368  0.7884713  -1.101  0.27103
## bisbas_ss_basm_rr          -0.2504578  0.1186368  -2.111  0.03485 *
## race.ethnicity.5levelBlack  1.2560711  0.7530189   1.668  0.09542 .
## race.ethnicity.5levelMixed  1.9861319  0.7534441   2.636  0.00843 **
## race.ethnicity.5levelOther  1.8190748  0.8603645   2.114  0.03458 *
## race.ethnicity.5levelWhite  1.4449332  0.7064644   2.045  0.04092 *
## demo_race_hispanic1         0.2504211  0.3008454   0.832  0.40526
## interview_age              -0.0009387  0.0140026  -0.067  0.94656
## PDS_score:bisbas_ss_basm_rr  0.1859961  0.0825012   2.254  0.02424 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00812
## lmer.REML =  17710  Scale est. = 15.557    n = 2847
```

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
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       5.501255   1.992802   2.761 0.005819 **
## PDS_score                         0.641957   0.172929   3.712 0.000211 ***
## rt_diff_large_neutral_z           0.154540   0.311198   0.497 0.619525
## race.ethnicity.5levelBlack        0.560716   0.845384   0.663 0.507230
## race.ethnicity.5levelMixed        2.155255   0.833294   2.586 0.009763 **
## race.ethnicity.5levelOther        2.598824   0.947143   2.744 0.006123 **
## race.ethnicity.5levelWhite        1.320738   0.781113   1.691 0.091013 .
## demo_race_hispanic1               0.456433   0.341115   1.338 0.181018
## interview_age                    -0.026474   0.015690  -1.687 0.091696 .
## PDS_score:rt_diff_large_neutral_z -0.008305   0.171296  -0.048 0.961335
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0132
## lmer.REML =  13258  Scale est. = 11.823    n = 2153
```

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
##
## Parametric coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       1.437100   1.933083   0.743  0.45730
## PDS_score                         0.624857   0.221216   2.825  0.00477 **
## rt_diff_large_neutral_z           0.605150   0.344894   1.755  0.07946 .
## race.ethnicity.5levelBlack        0.739558   0.843849   0.876  0.38090
## race.ethnicity.5levelMixed        2.156381   0.836600   2.578  0.01001 *
## race.ethnicity.5levelOther        2.032814   0.962054   2.113  0.03471 *
## race.ethnicity.5levelWhite        1.469532   0.789459   1.861  0.06281 .
## demo_race_hispanic1               0.100016   0.322811   0.310  0.75672
## interview_age                     0.008459   0.015042   0.562  0.57393
## PDS_score:rt_diff_large_neutral_z -0.382233   0.238948  -1.600  0.10982
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0071
## lmer.REML =  13868  Scale est. = 16.958    n = 2257
```

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
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     1.462262   1.934052   0.756  0.44969
## PDS_score                       0.628312   0.221085   2.842  0.00452 **
## rt_diff_large_small_z           0.090408   0.345473   0.262  0.79358
## race.ethnicity.5levelBlack      0.694926   0.844009   0.823  0.41039
## race.ethnicity.5levelMixed      2.103226   0.836744   2.514  0.01202 *
## race.ethnicity.5levelOther      1.902684   0.960826   1.980  0.04780 *
## race.ethnicity.5levelWhite      1.409154   0.789449   1.785  0.07440 .
## demo_race_hispanic1             0.097283   0.323145   0.301  0.76340
## interview_age                   0.008768   0.015050   0.583  0.56023
## PDS_score:rt_diff_large_small_z -0.119670   0.241539  -0.495  0.62033
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00569
## lmer.REML =  13871  Scale est. = 16.827    n = 2257
```

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
##
## Parametric coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     1.462262   1.934052   0.756  0.44969
## PDS_score                       0.628312   0.221085   2.842  0.00452 **
## rt_diff_large_small_z           0.090408   0.345473   0.262  0.79358
## race.ethnicity.5levelBlack      0.694926   0.844009   0.823  0.41039
## race.ethnicity.5levelMixed      2.103226   0.836744   2.514  0.01202 *
## race.ethnicity.5levelOther      1.902684   0.960826   1.980  0.04780 *
## race.ethnicity.5levelWhite      1.409154   0.789449   1.785  0.07440 .
## demo_race_hispanic1             0.097283   0.323145   0.301  0.76340
## interview_age                   0.008768   0.015050   0.583  0.56023
## PDS_score:rt_diff_large_small_z -0.119670   0.241539  -0.495  0.62033
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00569
## lmer.REML =  13871  Scale est. = 16.827    n = 2257
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     accumbens_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                              4.460740   2.119085   2.105 0.035422
## PDS_score                                0.665395   0.191155   3.481 0.000511
## hormone_scr_ert_mean                     0.002798   0.008101   0.345 0.729815
## accumbens_rvsn_ant_z                     0.182512   0.418879   0.436 0.663095
## race.ethnicity.5levelBlack               0.220171   0.899271   0.245 0.806613
## race.ethnicity.5levelMixed               2.173556   0.878765   2.473 0.013471
## race.ethnicity.5levelOther               2.237816   0.998934   2.240 0.025195
## race.ethnicity.5levelWhite               1.325853   0.823882   1.609 0.107726
## demo_race_hispanic1                      0.355402   0.358674   0.991 0.321874
## interview_age                           -0.018447   0.016899  -1.092 0.275143
## hormone_scr_ert_mean:accumbens_rvsn_ant_z -0.006376   0.011134  -0.573 0.566914
##
## (Intercept)                             *
## PDS_score                               ***
## hormone_scr_ert_mean
## accumbens_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed              *
## race.ethnicity.5levelOther              *
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:accumbens_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0115
## lmer.REML =  11518  Scale est. = 10.565    n = 1870
```

Males

```
##
```

```
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     accumbens_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                              0.827482   2.101594   0.394  0.69382
## PDS_score                                0.803710   0.247925   3.242  0.00121
## hormone_scr_ert_mean                    -0.001469   0.008279  -0.177  0.85920
## accumbens_rvsn_ant_z                    -0.223974   0.362232  -0.618  0.53644
## race.ethnicity.5levelBlack               1.003326   0.916447   1.095  0.27375
## race.ethnicity.5levelMixed               2.772588   0.901195   3.077  0.00212
## race.ethnicity.5levelOther               2.732707   1.034747   2.641  0.00834
## race.ethnicity.5levelWhite               2.068040   0.847370   2.441  0.01476
## demo_race_hispanic1                      0.093109   0.347147   0.268  0.78857
## interview_age                            0.007231   0.016641   0.435  0.66395
## hormone_scr_ert_mean:accumbens_rvsn_ant_z  0.003830   0.010773   0.355  0.72227
##
## (Intercept)
## PDS_score                               **
## hormone_scr_ert_mean
## accumbens_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed              **
## race.ethnicity.5levelOther              **
## race.ethnicity.5levelWhite              *
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:accumbens_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00989
## lmer.REML =  11513  Scale est. = 17.508    n = 1873
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     caudate_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
```

```
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                             4.5348882  2.1219447   2.137 0.032717
## PDS_score                               0.6845890  0.1914868   3.575 0.000359
## hormone_scr_ert_mean                    0.0028676  0.0081083   0.354 0.723629
## caudate_rvsn_ant_z                     -0.0035716  0.3299659  -0.011 0.991365
## race.ethnicity.5levelBlack              0.2633481  0.8995029   0.293 0.769730
## race.ethnicity.5levelMixed              2.1525889  0.8777123   2.452 0.014278
## race.ethnicity.5levelOther              2.2184539  0.9953510   2.229 0.025945
## race.ethnicity.5levelWhite              1.3332409  0.8235547   1.619 0.105642
## demo_race_hispanic1                     0.3429821  0.3576367   0.959 0.337672
## interview_age                          -0.0193397  0.0169371  -1.142 0.253662
## hormone_scr_ert_mean:caudate_rvsn_ant_z 0.0001989  0.0087533   0.023 0.981876
##
## (Intercept)                            *
## PDS_score                              ***
## hormone_scr_ert_mean
## caudate_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed             *
## race.ethnicity.5levelOther             *
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:caudate_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0113
## lmer.REML =  11506  Scale est. = 10.618    n = 1868
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     caudate_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.085264   2.112341   0.514 0.607472
## PDS_score                          0.817312   0.247909   3.297 0.000996
## hormone_scr_ert_mean              -0.001257   0.008331  -0.151 0.880078
## caudate_rvsn_ant_z                 0.210667   0.287271   0.733 0.463445
## race.ethnicity.5levelBlack         0.898481   0.937823   0.958 0.338162
## race.ethnicity.5levelMixed         2.713893   0.923809   2.938 0.003347
## race.ethnicity.5levelOther         2.659580   1.052711   2.526 0.011606
## race.ethnicity.5levelWhite         1.977981   0.871688   2.269 0.023374
## demo_race_hispanic1                0.092823   0.349225   0.266 0.790425
```

```
## interview_age                              0.005767   0.016687   0.346 0.729694
## hormone_scr_ert_mean:caudate_rvsn_ant_z -0.009248   0.008064  -1.147 0.251597
##
## (Intercept)
## PDS_score                                ***
## hormone_scr_ert_mean
## caudate_rvsn_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed               **
## race.ethnicity.5levelOther               *
## race.ethnicity.5levelWhite               *
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:caudate_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0103
## lmer.REML =  11507  Scale est. = 17.744    n = 1871
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     putamen_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                              4.341820   2.117114   2.051 0.040425
## PDS_score                                0.685162   0.191490   3.578 0.000355
## hormone_scr_ert_mean                     0.001752   0.008077   0.217 0.828324
## putamen_rvsn_ant_z                      -0.194659   0.331833  -0.587 0.557532
## race.ethnicity.5levelBlack               0.318982   0.895454   0.356 0.721714
## race.ethnicity.5levelMixed               2.189852   0.874549   2.504 0.012366
## race.ethnicity.5levelOther               2.243043   0.994948   2.254 0.024285
## race.ethnicity.5levelWhite               1.316069   0.820336   1.604 0.108817
## demo_race_hispanic1                      0.361351   0.357142   1.012 0.311772
## interview_age                           -0.017509   0.016893  -1.036 0.300127
## hormone_scr_ert_mean:putamen_rvsn_ant_z  0.004550   0.008692   0.523 0.600715
##
## (Intercept)                              *
## PDS_score                                ***
## 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
## hormone_scr_ert_mean:putamen_rvsn_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0114
## lmer.REML =  11482  Scale est. = 10.569    n = 1866
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     putamen_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                              0.934510   2.107235   0.443 0.657473
## PDS_score                                0.833556   0.248783   3.351 0.000823
## hormone_scr_ert_mean                    -0.001062   0.008318  -0.128 0.898383
## putamen_rvsn_ant_z                       0.361272   0.284515   1.270 0.204322
## race.ethnicity.5levelBlack               0.931856   0.936204   0.995 0.319693
## race.ethnicity.5levelMixed               2.713552   0.919864   2.950 0.003218
## race.ethnicity.5levelOther               2.461640   1.054510   2.334 0.019681
## race.ethnicity.5levelWhite               1.962977   0.869640   2.257 0.024109
## demo_race_hispanic1                      0.054678   0.348490   0.157 0.875342
## interview_age                            0.007025   0.016652   0.422 0.673168
## hormone_scr_ert_mean:putamen_rvsn_ant_z -0.015096   0.007797  -1.936 0.053022
##
## (Intercept)
## PDS_score                               ***
## 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
## hormone_scr_ert_mean:putamen_rvsn_ant_z .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0113
```

```
## lmer.REML =  11495  Scale est. = 17.146    n = 1871
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     accumbens_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                                  Estimate Std. Error t value
## (Intercept)                                      4.189255   2.110672   1.985
## PDS_score                                        0.677795   0.190161   3.564
## hormone_scr_ert_mean                             0.002331   0.008078   0.289
## accumbens_posvsneg_feedback_z                    0.319909   0.465170   0.688
## race.ethnicity.5levelBlack                       0.284555   0.894195   0.318
## race.ethnicity.5levelMixed                       2.101703   0.874015   2.405
## race.ethnicity.5levelOther                       2.296337   0.991434   2.316
## race.ethnicity.5levelWhite                       1.361645   0.820086   1.660
## demo_race_hispanic1                              0.271252   0.357796   0.758
## interview_age                                   -0.016437   0.016839  -0.976
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z -0.010360   0.012227  -0.847
##                                                 Pr(>|t|)
## (Intercept)                                     0.047314 *
## PDS_score                                       0.000374 ***
## hormone_scr_ert_mean                            0.772937
## accumbens_posvsneg_feedback_z                   0.491712
## race.ethnicity.5levelBlack                      0.750350
## race.ethnicity.5levelMixed                      0.016285 *
## race.ethnicity.5levelOther                      0.020657 *
## race.ethnicity.5levelWhite                      0.097009 .
## demo_race_hispanic1                             0.448475
## interview_age                                   0.329146
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z 0.396926
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0107
## lmer.REML =  11518  Scale est. = 10.473    n = 1873
```

Males

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

```
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     accumbens_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                                  Estimate Std. Error t value
## (Intercept)                                      0.656423   2.086433   0.315
## PDS_score                                        0.765509   0.245555   3.117
## hormone_scr_ert_mean                            -0.002612   0.008365  -0.312
## accumbens_posvsneg_feedback_z                    0.304056   0.375225   0.810
## race.ethnicity.5levelBlack                       1.112216   0.908426   1.224
## race.ethnicity.5levelMixed                       2.833993   0.891611   3.179
## race.ethnicity.5levelOther                       2.908731   1.024126   2.840
## race.ethnicity.5levelWhite                       2.084747   0.838662   2.486
## demo_race_hispanic1                              0.062542   0.345129   0.181
## interview_age                                    0.008752   0.016534   0.529
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z  0.001400   0.010561   0.133
##                                                 Pr(>|t|)
## (Intercept)                                      0.75309
## PDS_score                                        0.00185 **
## hormone_scr_ert_mean                             0.75491
## accumbens_posvsneg_feedback_z                    0.41785
## race.ethnicity.5levelBlack                       0.22098
## race.ethnicity.5levelMixed                       0.00150 **
## race.ethnicity.5levelOther                       0.00456 **
## race.ethnicity.5levelWhite                       0.01301 *
## demo_race_hispanic1                              0.85622
## interview_age                                    0.59665
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z  0.89454
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0113
## lmer.REML =  11454  Scale est. = 18.024    n = 1869
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     caudate_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                                Estimate Std. Error t value
## (Intercept)                                   4.554e+00  2.125e+00   2.143
## PDS_score                                     7.006e-01  1.917e-01   3.656
```

```
## hormone_scr_ert_mean                                2.420e-03  8.112e-03   0.298
## caudate_posvsneg_feedback_z                        -1.997e-01  3.265e-01  -0.612
## race.ethnicity.5levelBlack                          2.948e-01  8.991e-01   0.328
## race.ethnicity.5levelMixed                          2.101e+00  8.768e-01   2.396
## race.ethnicity.5levelOther                          2.103e+00  9.960e-01   2.112
## race.ethnicity.5levelWhite                          1.291e+00  8.229e-01   1.569
## demo_race_hispanic1                                 3.428e-01  3.598e-01   0.953
## interview_age                                      -1.950e-02  1.697e-02  -1.149
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z -8.058e-06  8.468e-03  -0.001
##                                                   Pr(>|t|)
## (Intercept)                                       0.032269 *
## PDS_score                                         0.000264 ***
## hormone_scr_ert_mean                              0.765486
## caudate_posvsneg_feedback_z                       0.540722
## race.ethnicity.5levelBlack                        0.743000
## race.ethnicity.5levelMixed                        0.016683 *
## race.ethnicity.5levelOther                        0.034831 *
## race.ethnicity.5levelWhite                        0.116767
## demo_race_hispanic1                               0.340801
## interview_age                                     0.250598
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.999241
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0122
## lmer.REML =  11483  Scale est. = 10.562    n = 1865
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     caudate_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                                    Estimate Std. Error t value
## (Intercept)                                       1.3853505  2.1141365   0.655
## PDS_score                                         0.8405454  0.2482247   3.386
## hormone_scr_ert_mean                             -0.0003595  0.0083567  -0.043
## caudate_posvsneg_feedback_z                       0.0394484  0.3248035   0.121
## race.ethnicity.5levelBlack                        0.9893125  0.9257562   1.069
## race.ethnicity.5levelMixed                        2.7620204  0.9104401   3.034
## race.ethnicity.5levelOther                        2.7653144  1.0394684   2.660
## race.ethnicity.5levelWhite                        2.0516687  0.8573196   2.393
## demo_race_hispanic1                               0.1355263  0.3485331   0.389
## interview_age                                     0.0018915  0.0166800   0.113
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z  0.0037307  0.0092346   0.404
##                                                   Pr(>|t|)
## (Intercept)                                       0.512369
```

```
## PDS_score                                          0.000723 ***
## hormone_scr_ert_mean                               0.965687
## caudate_posvsneg_feedback_z                        0.903345
## race.ethnicity.5levelBlack                         0.285365
## race.ethnicity.5levelMixed                         0.002449 **
## race.ethnicity.5levelOther                         0.007874 **
## race.ethnicity.5levelWhite                         0.016804 *
## demo_race_hispanic1                                0.697433
## interview_age                                      0.909724
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.686270
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0103
## lmer.REML =  11503  Scale est. = 17.709    n = 1871
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     putamen_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                                    Estimate Std. Error t value
## (Intercept)                                        4.287337   2.120112   2.022
## PDS_score                                          0.674074   0.191044   3.528
## hormone_scr_ert_mean                               0.002856   0.008144   0.351
## putamen_posvsneg_feedback_z                       -0.057460   0.364195  -0.158
## race.ethnicity.5levelBlack                         0.353506   0.899655   0.393
## race.ethnicity.5levelMixed                         2.143254   0.876523   2.445
## race.ethnicity.5levelOther                         2.180848   0.997524   2.186
## race.ethnicity.5levelWhite                         1.325057   0.823209   1.610
## demo_race_hispanic1                                0.360481   0.359323   1.003
## interview_age                                     -0.017350   0.016925  -1.025
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z -0.003165   0.009367  -0.338
##                                                   Pr(>|t|)
## (Intercept)                                       0.043297 *
## PDS_score                                         0.000428 ***
## hormone_scr_ert_mean                              0.725826
## putamen_posvsneg_feedback_z                       0.874653
## race.ethnicity.5levelBlack                        0.694413
## race.ethnicity.5levelMixed                        0.014571 *
## race.ethnicity.5levelOther                        0.028921 *
## race.ethnicity.5levelWhite                        0.107650
## demo_race_hispanic1                               0.315884
```

```
## interview_age                                       0.305453
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z 0.735491
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0116
## lmer.REML =  11483  Scale est. = 10.565    n = 1865
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     putamen_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                                  Estimate Std. Error t value
## (Intercept)                                     0.9611155  2.1101773   0.455
## PDS_score                                       0.8176842  0.2484107   3.292
## hormone_scr_ert_mean                            0.0002681  0.0083787   0.032
## putamen_posvsneg_feedback_z                     0.3306721  0.3251871   1.017
## race.ethnicity.5levelBlack                      1.0236441  0.9185222   1.114
## race.ethnicity.5levelMixed                      2.8148709  0.9028527   3.118
## race.ethnicity.5levelOther                      2.8319892  1.0337642   2.739
## race.ethnicity.5levelWhite                      2.1176635  0.8496222   2.492
## demo_race_hispanic1                             0.0681445  0.3504727   0.194
## interview_age                                   0.0051637  0.0166850   0.309
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z -0.0049109  0.0091615  -0.536
##                                                 Pr(>|t|)
## (Intercept)                                      0.64883
## PDS_score                                        0.00101 **
## hormone_scr_ert_mean                             0.97447
## putamen_posvsneg_feedback_z                      0.30935
## race.ethnicity.5levelBlack                       0.26523
## race.ethnicity.5levelMixed                       0.00185 **
## race.ethnicity.5levelOther                       0.00621 **
## race.ethnicity.5levelWhite                       0.01277 *
## demo_race_hispanic1                              0.84586
## interview_age                                    0.75699
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z  0.59199
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0101
## lmer.REML =  11552  Scale est. = 17.82     n = 1877
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     lOFC_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         4.386035   2.139491   2.050 0.040501 *
## PDS_score                           0.658410   0.191838   3.432 0.000612 ***
## hormone_scr_ert_mean                0.003086   0.008159   0.378 0.705274
## lOFC_rvsn_ant_z                     0.330589   0.491379   0.673 0.501173
## race.ethnicity.5levelBlack          0.227744   0.906920   0.251 0.801751
## race.ethnicity.5levelMixed          2.115228   0.887612   2.383 0.017270 *
## race.ethnicity.5levelOther          2.179843   1.007403   2.164 0.030605 *
## race.ethnicity.5levelWhite          1.276544   0.832855   1.533 0.125512
## demo_race_hispanic1                 0.358385   0.359093   0.998 0.318396
## interview_age                      -0.017460   0.017050  -1.024 0.305924
## hormone_scr_ert_mean:lOFC_rvsn_ant_z -0.007097   0.012725  -0.558 0.577087
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0109
## lmer.REML =  11483  Scale est. = 10.83     n = 1864
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     lOFC_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         0.143556   2.082627   0.069  0.94505
## PDS_score                           0.732637   0.247926   2.955  0.00317 **
## hormone_scr_ert_mean               -0.003482   0.008272  -0.421  0.67386
## lOFC_rvsn_ant_z                     0.319893   0.424799   0.753  0.45152
## race.ethnicity.5levelBlack          0.983069   0.907154   1.084  0.27865
## race.ethnicity.5levelMixed          2.709157   0.891327   3.039  0.00240 **
## race.ethnicity.5levelOther          2.662592   1.023037   2.603  0.00932 **
## race.ethnicity.5levelWhite          1.966634   0.837446   2.348  0.01896 *
```

```
## demo_race_hispanic1                  -0.020222   0.345180  -0.059  0.95329
## interview_age                         0.014830   0.016517   0.898  0.36937
## hormone_scr_ert_mean:lOFC_rvsn_ant_z -0.011983   0.012283  -0.976  0.32939
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00876
## lmer.REML =  11454  Scale est. = 17.139    n = 1870
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     mOFC_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        4.202280   2.132609   1.970 0.048931 *
## PDS_score                          0.676571   0.191614   3.531 0.000424 ***
## hormone_scr_ert_mean               0.002583   0.008127   0.318 0.750694
## mOFC_rvsn_ant_z                    0.063317   0.437193   0.145 0.884864
## race.ethnicity.5levelBlack         0.216029   0.906342   0.238 0.811634
## race.ethnicity.5levelMixed         2.115741   0.887454   2.384 0.017223 *
## race.ethnicity.5levelOther         2.218632   1.008524   2.200 0.027938 *
## race.ethnicity.5levelWhite         1.295692   0.832708   1.556 0.119879
## demo_race_hispanic1                0.351711   0.358836   0.980 0.327142
## interview_age                     -0.016049   0.016989  -0.945 0.344951
## hormone_scr_ert_mean:mOFC_rvsn_ant_z  0.002991   0.011334   0.264 0.791898
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0115
## lmer.REML =  11480  Scale est. = 10.572    n = 1864
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     mOFC_rvsn_ant_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
```

```
## Parametric coefficients:
##                                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          0.3794183  2.0930053   0.181  0.85617
## PDS_score                            0.7418269  0.2477609   2.994  0.00279 **
## hormone_scr_ert_mean                -0.0047195  0.0082694  -0.571  0.56826
## mOFC_rvsn_ant_z                      0.2166667  0.3858311   0.562  0.57448
## race.ethnicity.5levelBlack           1.0066067  0.9112426   1.105  0.26945
## race.ethnicity.5levelMixed           2.6544268  0.8948998   2.966  0.00305 **
## race.ethnicity.5levelOther           2.6516682  1.0247281   2.588  0.00974 **
## race.ethnicity.5levelWhite           1.9777066  0.8411090   2.351  0.01881 *
## demo_race_hispanic1                  0.0431677  0.3460332   0.125  0.90073
## interview_age                        0.0130179  0.0165828   0.785  0.43254
## hormone_scr_ert_mean:mOFC_rvsn_ant_z -0.0003209  0.0108689  -0.030  0.97645
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00947
## lmer.REML =  11431  Scale est. = 17.29     n = 1864
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     lOFC_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                             Estimate Std. Error t value
## (Intercept)                                 4.334290   2.117637   2.047
## PDS_score                                   0.673271   0.190513   3.534
## hormone_scr_ert_mean                        0.001130   0.008091   0.140
## lOFC_posvsneg_feedback_z                    0.550378   0.567460   0.970
## race.ethnicity.5levelBlack                  0.298496   0.894428   0.334
## race.ethnicity.5levelMixed                  2.147933   0.873735   2.458
## race.ethnicity.5levelOther                  2.515196   0.999082   2.518
## race.ethnicity.5levelWhite                  1.364823   0.819389   1.666
## demo_race_hispanic1                         0.238185   0.357406   0.666
## interview_age                              -0.017253   0.016901  -1.021
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z -0.019692   0.014952  -1.317
##                                            Pr(>|t|)
## (Intercept)                                0.040823 *
## PDS_score                                  0.000419 ***
## hormone_scr_ert_mean                       0.888980
## lOFC_posvsneg_feedback_z                   0.332224
## race.ethnicity.5levelBlack                 0.738622
## race.ethnicity.5levelMixed                 0.014049 *
```

```
## race.ethnicity.5levelOther                    0.011903 *
## race.ethnicity.5levelWhite                    0.095950 .
## demo_race_hispanic1                           0.505222
## interview_age                                 0.307481
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z 0.188010
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0128
## lmer.REML =  11471  Scale est. = 10.543    n = 1865
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     lOFC_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                              Estimate Std. Error t value
## (Intercept)                                  0.708612   2.083849   0.340
## PDS_score                                    0.780740   0.246067   3.173
## hormone_scr_ert_mean                        -0.003771   0.008293  -0.455
## lOFC_posvsneg_feedback_z                     0.082718   0.469392   0.176
## race.ethnicity.5levelBlack                   1.065934   0.909266   1.172
## race.ethnicity.5levelMixed                   2.800502   0.892576   3.138
## race.ethnicity.5levelOther                   2.630253   1.028645   2.557
## race.ethnicity.5levelWhite                   2.031878   0.839607   2.420
## demo_race_hispanic1                          0.054049   0.346076   0.156
## interview_age                                0.009165   0.016504   0.555
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z  0.001315   0.013021   0.101
##                                             Pr(>|t|)
## (Intercept)                                  0.73386
## PDS_score                                    0.00153 **
## hormone_scr_ert_mean                         0.64939
## lOFC_posvsneg_feedback_z                     0.86014
## race.ethnicity.5levelBlack                   0.24123
## race.ethnicity.5levelMixed                   0.00173 **
## race.ethnicity.5levelOther                   0.01064 *
## race.ethnicity.5levelWhite                   0.01561 *
## demo_race_hispanic1                          0.87591
## interview_age                                0.57873
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z  0.91958
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00915
## lmer.REML =  11513  Scale est. = 17.224    n = 1878
```

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

Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     mOFC_posvsneg_feedback_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                             Estimate Std. Error t value
## (Intercept)                                 4.369334   2.116941   2.064
## PDS_score                                   0.684020   0.190714   3.587
## hormone_scr_ert_mean                        0.002015   0.008095   0.249
## mOFC_posvsneg_feedback_z                    0.562287   0.484833   1.160
## race.ethnicity.5levelBlack                  0.271402   0.896065   0.303
## race.ethnicity.5levelMixed                  2.143308   0.874392   2.451
## race.ethnicity.5levelOther                  2.290652   0.993534   2.306
## race.ethnicity.5levelWhite                  1.335606   0.819977   1.629
## demo_race_hispanic1                         0.315052   0.357365   0.882
## interview_age                              -0.017840   0.016903  -1.055
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z -0.019533   0.012998  -1.503
##                                            Pr(>|t|)
## (Intercept)                                0.039158 *
## PDS_score                                  0.000344 ***
## hormone_scr_ert_mean                       0.803458
## mOFC_posvsneg_feedback_z                   0.246298
## race.ethnicity.5levelBlack                 0.762013
## race.ethnicity.5levelMixed                 0.014330 *
## race.ethnicity.5levelOther                 0.021245 *
## race.ethnicity.5levelWhite                 0.103518
## demo_race_hispanic1                        0.378109
## interview_age                              0.291362
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 0.133070
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0133
## lmer.REML =  11481  Scale est. = 10.705    n = 1866
```

Males

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

```
##     interview_age
##
## Parametric coefficients:
##                                             Estimate Std. Error t value
## (Intercept)                                 0.698369   2.080425   0.336
## PDS_score                                   0.787679   0.246180   3.200
## hormone_scr_ert_mean                       -0.003648   0.008294  -0.440
## mOFC_posvsneg_feedback_z                    0.534975   0.419242   1.276
## race.ethnicity.5levelBlack                  1.032102   0.908791   1.136
## race.ethnicity.5levelMixed                  2.828046   0.892475   3.169
## race.ethnicity.5levelOther                  2.683977   1.025478   2.617
## race.ethnicity.5levelWhite                  2.028699   0.839404   2.417
## demo_race_hispanic1                         0.025745   0.345377   0.075
## interview_age                               0.009149   0.016473   0.555
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z -0.006684   0.012015  -0.556
##                                            Pr(>|t|)
## (Intercept)                                 0.73715
## PDS_score                                   0.00140 **
## hormone_scr_ert_mean                        0.66016
## mOFC_posvsneg_feedback_z                    0.20210
## race.ethnicity.5levelBlack                  0.25623
## race.ethnicity.5levelMixed                  0.00156 **
## race.ethnicity.5levelOther                  0.00893 **
## race.ethnicity.5levelWhite                  0.01575 *
## demo_race_hispanic1                         0.94059
## interview_age                               0.57869
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z  0.57807
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0111
## lmer.REML =  11500  Scale est. = 17.336    n = 1876
```

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_scr_ert_mean *
##     bisbas_ss_basm_rr + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                          3.020293   2.129138   1.419 0.156158
## PDS_score                            0.626624   0.169756   3.691 0.000228
## hormone_scr_ert_mean                -0.009565   0.025287  -0.378 0.705274
## bisbas_ss_basm_rr                   -0.084205   0.110618  -0.761 0.446597
## race.ethnicity.5levelBlack          -0.041861   0.799020  -0.052 0.958222
## race.ethnicity.5levelMixed           1.640258   0.791942   2.071 0.038447
```

```
## race.ethnicity.5levelOther              2.486882   0.909634   2.734 0.006304
## race.ethnicity.5levelWhite              1.312543   0.742548   1.768 0.077250
## demo_race_hispanic1                     0.027915   0.326365   0.086 0.931844
## interview_age                           0.003614   0.015214   0.238 0.812240
## hormone_scr_ert_mean:bisbas_ss_basm_rr  0.001030   0.002812   0.366 0.714173
##
## (Intercept)
## PDS_score                             ***
## 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
## hormone_scr_ert_mean:bisbas_ss_basm_rr
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.011
## lmer.REML =  15183  Scale est. = 12.902    n = 2443
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     bisbas_ss_basm_rr + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                        Estimate Std. Error t value Pr(>|t|)
## (Intercept)                           2.9448720  2.0990033   1.403   0.1607
## PDS_score                             0.9727679  0.2130504   4.566  5.2e-06
## hormone_scr_ert_mean                 -0.0077391  0.0275009  -0.281   0.7784
## bisbas_ss_basm_rr                    -0.0374799  0.1024260  -0.366   0.7145
## race.ethnicity.5levelBlack            1.2176099  0.7861775   1.549   0.1216
## race.ethnicity.5levelMixed            1.9522652  0.7835021   2.492   0.0128
## race.ethnicity.5levelOther            1.6180798  0.9000651   1.798   0.0723
## race.ethnicity.5levelWhite            1.4443559  0.7343462   1.967   0.0493
## demo_race_hispanic1                   0.3039554  0.3133667   0.970   0.3322
## interview_age                        -0.0030757  0.0148819  -0.207   0.8363
## hormone_scr_ert_mean:bisbas_ss_basm_rr  0.0007827  0.0029404   0.266   0.7901
##
## (Intercept)
## PDS_score                             ***
## 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
## hormone_scr_ert_mean:bisbas_ss_basm_rr
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00648
## lmer.REML =  16521  Scale est. = 16.034    n = 2641
```

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_scr_ert_mean *
##     rt_diff_large_neutral_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                           Estimate Std. Error t value
## (Intercept)                               4.907852   2.030911   2.417
## PDS_score                                 0.640865   0.184675   3.470
## hormone_scr_ert_mean                      0.002747   0.007808   0.352
## rt_diff_large_neutral_z                  -0.234637   0.297943  -0.788
## race.ethnicity.5levelBlack                0.234371   0.848919   0.276
## race.ethnicity.5levelMixed                2.018688   0.835051   2.417
## race.ethnicity.5levelOther                2.518939   0.951958   2.646
## race.ethnicity.5levelWhite                1.333646   0.780222   1.709
## demo_race_hispanic1                       0.310120   0.350440   0.885
## interview_age                            -0.021805   0.016262  -1.341
## hormone_scr_ert_mean:rt_diff_large_neutral_z  0.010522   0.007540   1.395
##                                          Pr(>|t|)
## (Intercept)                              0.015756 *
## PDS_score                                0.000531 ***
## hormone_scr_ert_mean                     0.725032
## rt_diff_large_neutral_z                  0.431069
## race.ethnicity.5levelBlack               0.782514
## race.ethnicity.5levelMixed               0.015719 *
## race.ethnicity.5levelOther               0.008207 **
## race.ethnicity.5levelWhite               0.087547 .
## demo_race_hispanic1                      0.376293
## interview_age                            0.180118
## hormone_scr_ert_mean:rt_diff_large_neutral_z 0.163025
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) =  0.0141
## lmer.REML =  12398  Scale est. = 11.344    n = 2014
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     rt_diff_large_neutral_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                            Estimate Std. Error t value
## (Intercept)                               1.417e+00  2.019e+00   0.702
## PDS_score                                 7.079e-01  2.365e-01   2.994
## hormone_scr_ert_mean                      3.882e-05  7.949e-03   0.005
## rt_diff_large_neutral_z                   4.941e-01  2.912e-01   1.697
## race.ethnicity.5levelBlack                6.221e-01  8.861e-01   0.702
## race.ethnicity.5levelMixed                2.099e+00  8.748e-01   2.399
## race.ethnicity.5levelOther                1.774e+00  1.003e+00   1.769
## race.ethnicity.5levelWhite                1.389e+00  8.256e-01   1.683
## demo_race_hispanic1                       1.517e-01  3.361e-01   0.451
## interview_age                             8.579e-03  1.592e-02   0.539
## hormone_scr_ert_mean:rt_diff_large_neutral_z -9.990e-03  8.000e-03  -1.249
##                                           Pr(>|t|)
## (Intercept)                                0.48275
## PDS_score                                  0.00279 **
## hormone_scr_ert_mean                       0.99610
## rt_diff_large_neutral_z                    0.08994 .
## race.ethnicity.5levelBlack                 0.48277
## race.ethnicity.5levelMixed                 0.01651 *
## race.ethnicity.5levelOther                 0.07711 .
## race.ethnicity.5levelWhite                 0.09253 .
## demo_race_hispanic1                        0.65185
## interview_age                              0.58996
## hormone_scr_ert_mean:rt_diff_large_neutral_z  0.21194
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0066
## lmer.REML =  12948  Scale est. = 17.517    n = 2097
```

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_scr_ert_mean *
##     rt_diff_large_small_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                          Estimate Std. Error t value
## (Intercept)                              4.831194   2.029794   2.380
## PDS_score                                0.653073   0.184699   3.536
## hormone_scr_ert_mean                     0.001929   0.007810   0.247
## rt_diff_large_small_z                   -0.398204   0.291988  -1.364
## race.ethnicity.5levelBlack               0.219699   0.848951   0.259
## race.ethnicity.5levelMixed               2.006919   0.835252   2.403
## race.ethnicity.5levelOther               2.487240   0.952491   2.611
## race.ethnicity.5levelWhite               1.329151   0.780631   1.703
## demo_race_hispanic1                      0.281757   0.350482   0.804
## interview_age                           -0.020947   0.016244  -1.289
## hormone_scr_ert_mean:rt_diff_large_small_z  0.007625   0.007555   1.009
##                                         Pr(>|t|)
## (Intercept)                             0.017399 *
## PDS_score                               0.000416 ***
## hormone_scr_ert_mean                    0.804974
## rt_diff_large_small_z                   0.172793
## race.ethnicity.5levelBlack              0.795825
## race.ethnicity.5levelMixed              0.016362 *
## race.ethnicity.5levelOther              0.009087 **
## race.ethnicity.5levelWhite              0.088786 .
## demo_race_hispanic1                     0.421543
## interview_age                           0.197374
## hormone_scr_ert_mean:rt_diff_large_small_z 0.312973
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0132
## lmer.REML =  12399  Scale est. = 11.209    n = 2014
```

Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##     rt_diff_large_small_z + race.ethnicity.5level + demo_race_hispanic +
##     interview_age
##
## Parametric coefficients:
##                                           Estimate Std. Error t value
## (Intercept)                              1.490e+00  2.021e+00   0.737
## PDS_score                                6.957e-01  2.364e-01   2.943
```

```
## hormone_scr_ert_mean                       -1.804e-05  7.958e-03  -0.002
## rt_diff_large_small_z                      -3.445e-02  2.898e-01  -0.119
## race.ethnicity.5levelBlack                  5.962e-01  8.868e-01   0.672
## race.ethnicity.5levelMixed                  2.051e+00  8.751e-01   2.343
## race.ethnicity.5levelOther                  1.703e+00  1.004e+00   1.697
## race.ethnicity.5levelWhite                  1.352e+00  8.260e-01   1.637
## demo_race_hispanic1                         1.438e-01  3.362e-01   0.428
## interview_age                               8.480e-03  1.594e-02   0.532
## hormone_scr_ert_mean:rt_diff_large_small_z -6.380e-04  8.294e-03  -0.077
##                                            Pr(>|t|)
## (Intercept)                                 0.46128
## PDS_score                                   0.00329 **
## hormone_scr_ert_mean                        0.99819
## rt_diff_large_small_z                       0.90539
## race.ethnicity.5levelBlack                  0.50146
## race.ethnicity.5levelMixed                  0.01921 *
## race.ethnicity.5levelOther                  0.08992 .
## race.ethnicity.5levelWhite                  0.10178
## demo_race_hispanic1                         0.66891
## interview_age                               0.59480
## hormone_scr_ert_mean:rt_diff_large_small_z  0.93869
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00521
## lmer.REML =  12951  Scale est. = 17.541    n = 2097
```