

# Supplement B

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

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## Results for Sample 2

### 1—Int~Puberty—

#### 1.1 Model: CBCL internalizing factor ~ PDS

Females

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

```
##      interview_age + demo_race_hispanic
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      1.00435    1.81456   0.553   0.5800
## PDS_score         0.78180    0.15854   4.931 8.69e-07 ***
## race.ethnicity.5levelBlack -0.25319    0.71823  -0.353   0.7245
## race.ethnicity.5levelMixed  1.22839    0.71864   1.709   0.0875 .
## race.ethnicity.5levelOther  0.39856    0.82932   0.481   0.6309
## race.ethnicity.5levelWhite  0.99113    0.66629   1.488   0.1370
## interview_age      0.01562    0.01471   1.062   0.2885
## demo_race_hispanic1  0.25310    0.32178   0.787   0.4316
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0128
## lmer.REML = 16187  Scale est. = 17.323    n = 2620
```

## 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)      2.916514    1.836811   1.588 0.112440
## PDS_score         0.668998    0.198120   3.377 0.000743 ***
## race.ethnicity.5levelBlack -0.774862    0.788636  -0.983 0.325920
## race.ethnicity.5levelMixed  0.474852    0.785132   0.605 0.545356
## race.ethnicity.5levelOther -0.839169    0.884062  -0.949 0.342590
## race.ethnicity.5levelWhite -0.009381    0.734578  -0.013 0.989812
## interview_age      0.010284    0.014072   0.731 0.464926
## demo_race_hispanic1  0.615472    0.322318   1.910 0.056296 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00513
## lmer.REML = 17791  Scale est. = 15.892    n = 2845
```

## 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)      1.108103    1.010173   1.097 0.272767
## PDS_score         0.327885    0.088132   3.720 0.000203 ***
## race.ethnicity.5levelBlack -0.296592    0.397328  -0.746 0.455452
## race.ethnicity.5levelMixed  0.756457    0.398018   1.901 0.057470 .
## race.ethnicity.5levelOther  0.204912    0.459613   0.446 0.655753
## race.ethnicity.5levelWhite  0.584367    0.368865   1.584 0.113262
## interview_age      0.003237    0.008208   0.394 0.693331
## demo_race_hispanic1    0.074772    0.177107   0.422 0.672924
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0128
## lmer.REML = 13136 Scale est. = 6.6266    n = 2620
```

### 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)      2.599640    1.022995   2.541 0.01110 *
## PDS_score         0.285806    0.110323   2.591 0.00963 **
## race.ethnicity.5levelBlack -0.321560    0.433851  -0.741 0.45865
## race.ethnicity.5levelMixed  0.392497    0.432187   0.908 0.36387
## race.ethnicity.5levelOther -0.183938    0.488335  -0.377 0.70645
## race.ethnicity.5levelWhite  0.287702    0.404120   0.712 0.47657
## interview_age     -0.005896    0.007862  -0.750 0.45336
## demo_race_hispanic1    0.258338    0.177288   1.457 0.14518
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00484
## lmer.REML = 14479 Scale est. = 6.5927    n = 2845
```

## 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)      0.264236   0.542461   0.487   0.626
## PDS_score         0.222482   0.047112   4.722 2.45e-06 ***
## race.ethnicity.5levelBlack -0.192139  0.212400  -0.905   0.366
## race.ethnicity.5levelMixed -0.016699  0.212612  -0.079   0.937
## race.ethnicity.5levelOther -0.052069  0.245382  -0.212   0.832
## race.ethnicity.5levelWhite -0.104268  0.197265  -0.529   0.597
## interview_age      0.003147   0.004407   0.714   0.475
## demo_race_hispanic1  0.155883   0.094464   1.650   0.099 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.01
## lmer.REML = 9892.2 Scale est. = 2.4029 n = 2620
```

#### 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)     -0.116765   0.604252  -0.193  0.84679
## PDS_score         0.186099   0.065327   2.849  0.00442 **
## race.ethnicity.5levelBlack -0.163704  0.258403  -0.634  0.52644
## race.ethnicity.5levelMixed  0.003069  0.257628   0.012  0.99050
## race.ethnicity.5levelOther -0.193555  0.290579  -0.666  0.50540
## race.ethnicity.5levelWhite -0.219280  0.240916  -0.910  0.36280
## interview_age      0.009619   0.004640   2.073  0.03826 *
## demo_race_hispanic1  0.131680   0.104057   1.265  0.20581
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0035
## lmer.REML = 11496 Scale est. = 1.9084 n = 2845
```

### 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)      0.877508   0.632006   1.388  0.16512
## PDS_score         0.192397   0.055287   3.480  0.00051 ***
## race.ethnicity.5levelBlack -0.076952  0.249336  -0.309  0.75763
## race.ethnicity.5levelMixed  0.219642  0.249929   0.879  0.37958
## race.ethnicity.5levelOther  0.024488  0.288648   0.085  0.93240
## race.ethnicity.5levelWhite  0.128716  0.231475   0.556  0.57821
## interview_age     -0.001469  0.005136  -0.286  0.77490
## demo_race_hispanic1  0.126429  0.111105   1.138  0.25525
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0042
## lmer.REML = 10689 Scale est. = 2.2893    n = 2620
```

## 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)      0.233652   0.701046   0.333  0.7389
## PDS_score         0.155703   0.075749   2.056  0.0399 *
## race.ethnicity.5levelBlack -0.032645  0.300786  -0.109  0.9136
## race.ethnicity.5levelMixed  0.201438  0.299714   0.672  0.5016
## race.ethnicity.5levelOther -0.250785  0.337693  -0.743  0.4578
## race.ethnicity.5levelWhite -0.022856  0.280336  -0.082  0.9350
## interview_age      0.007708  0.005377   1.433  0.1519
## demo_race_hispanic1  0.145907  0.121775   1.198  0.2310
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00214
## lmer.REML = 12335 Scale est. = 2.3675    n = 2845
```

## 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)      1.29818    1.86143   0.697 0.485610
## pds_p_ss_categoryEarly  0.30134    0.28987   1.040 0.298645
## pds_p_ss_categoryLate   0.78997    0.69372   1.139 0.254914
## pds_p_ss_categoryMid    0.99238    0.26806   3.702 0.000218 ***
## race.ethnicity.5levelBlack -0.12030    0.71934  -0.167 0.867198
## race.ethnicity.5levelMixed  1.25918    0.72006   1.749 0.080456 .
## race.ethnicity.5levelOther  0.42346    0.83096   0.510 0.610371
## race.ethnicity.5levelWhite  1.00589    0.66757   1.507 0.131986
## interview_age          0.01957    0.01499   1.305 0.191958
## demo_race_hispanic1      0.19558    0.32298   0.606 0.544867
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0091
## lmer.REML = 16196  Scale est. = 17.558    n = 2620
```

## 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)      3.17467    1.84243   1.723  0.0850 .
## pds_p_ss_categoryEarly  0.54530    0.25715   2.121  0.0340 *
## pds_p_ss_categoryLate   0.13229    1.51040   0.088  0.9302
## pds_p_ss_categoryMid    1.15880    0.47474   2.441  0.0147 *
## race.ethnicity.5levelBlack -0.67208    0.78857  -0.852  0.3941
## race.ethnicity.5levelMixed  0.54813    0.78620   0.697  0.4857
## race.ethnicity.5levelOther -0.80966    0.88486  -0.915  0.3603
## race.ethnicity.5levelWhite  0.08372    0.73582   0.114  0.9094
## interview_age          0.01334    0.01401   0.952  0.3410
## demo_race_hispanic1      0.59163    0.32336   1.830  0.0674 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00371
## lmer.REML = 17790  Scale est. = 15.869    n = 2845
```

## 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)      1.119072    1.035379   1.081  0.27987
## pds_p_ss_categoryEarly  0.197344    0.161806   1.220  0.22272
## pds_p_ss_categoryLate   0.160095    0.387250   0.413  0.67934
## pds_p_ss_categoryMid    0.389693    0.149135   2.613  0.00903 **
## race.ethnicity.5levelBlack -0.212867    0.397768  -0.535  0.59259
## race.ethnicity.5levelMixed  0.774922    0.398616   1.944  0.05200 .
## race.ethnicity.5levelOther  0.218712    0.460309   0.475  0.63473
## race.ethnicity.5levelWhite  0.592456    0.369390   1.604  0.10886
## interview_age          0.005779    0.008357   0.692  0.48925
## demo_race_hispanic1      0.054532    0.177675   0.307  0.75893
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0101
## lmer.REML = 13144 Scale est. = 6.6835    n = 2620
```

### 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)      2.687409    1.026074   2.619  0.00886 **
## pds_p_ss_categoryEarly  0.194061    0.143214   1.355  0.17551
## pds_p_ss_categoryLate  -0.138855    0.837828  -0.166  0.86838
## pds_p_ss_categoryMid    0.443593    0.264477   1.677  0.09361 .
## race.ethnicity.5levelBlack -0.263727    0.433894  -0.608  0.54336
## race.ethnicity.5levelMixed  0.421136    0.432782   0.973  0.33059
## race.ethnicity.5levelOther -0.170960    0.488787  -0.350  0.72654
## race.ethnicity.5levelWhite  0.322229    0.404845   0.796  0.42614
## interview_age        -0.004282    0.007828  -0.547  0.58446
## demo_race_hispanic1      0.252704    0.177898   1.420  0.15557
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.00332
## lmer.REML = 14480 Scale est. = 6.5953 n = 2845
```

## 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)      0.418975   0.555757   0.754 0.450988
## pds_p_ss_categoryEarly  0.032612   0.086804   0.376 0.707168
## pds_p_ss_categoryLate   0.459686   0.207547   2.215 0.026856 *
## pds_p_ss_categoryMid    0.273222   0.079746   3.426 0.000622 ***
## race.ethnicity.5levelBlack -0.169202  0.212645  -0.796 0.426277
## race.ethnicity.5levelMixed -0.008629  0.212914  -0.041 0.967677
## race.ethnicity.5levelOther -0.045437  0.245728  -0.185 0.853315
## race.ethnicity.5levelWhite -0.098009  0.197526  -0.496 0.619808
## interview_age         0.003771   0.004484   0.841 0.400526
## demo_race_hispanic1    0.136455   0.094750   1.440 0.149941
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0074
## lmer.REML = 9902.1 Scale est. = 2.4201 n = 2620
```

### 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)     -0.049942   0.605632  -0.082 0.9343
## pds_p_ss_categoryEarly  0.133326   0.084727   1.574 0.1157
## pds_p_ss_categoryLate  -0.239646   0.496766  -0.482 0.6296
## pds_p_ss_categoryMid    0.423045   0.156482   2.703 0.0069 **
## race.ethnicity.5levelBlack -0.135176  0.258114  -0.524 0.6005
## race.ethnicity.5levelMixed  0.030948  0.257723   0.120 0.9044
## race.ethnicity.5levelOther -0.182826  0.290590  -0.629 0.5293
```

```
## race.ethnicity.5levelWhite -0.186501    0.241083   -0.774    0.4392
## interview_age              0.010469    0.004617    2.267    0.0234 *
## demo_race_hispanic1        0.122082    0.104223    1.171    0.2416
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00376
## lmer.REML = 11496  Scale est. = 1.9188    n = 2845
```

## 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)      0.9682718  0.6476525   1.495   0.1350
## pds_p_ss_categoryEarly  0.0097474  0.1012280   0.096   0.9233
## pds_p_ss_categoryLate  0.3158399  0.2422368   1.304   0.1924
## pds_p_ss_categoryMid   0.2210179  0.0934547   2.365   0.0181 *
## race.ethnicity.5levelBlack -0.0494567  0.2494354  -0.198   0.8428
## race.ethnicity.5levelMixed  0.2280100  0.2501254   0.912   0.3621
## race.ethnicity.5levelOther  0.0302076  0.2888797   0.105   0.9167
## race.ethnicity.5levelWhite  0.1336232  0.2316532   0.577   0.5641
## interview_age        -0.0004703  0.0052282  -0.090   0.9283
## demo_race_hispanic1    0.1124883  0.1114040   1.010   0.3127
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00221
## lmer.REML = 10696  Scale est. = 2.3302    n = 2620
```

### 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)      0.321584   0.702747   0.458   0.6473
## pds_p_ss_categoryEarly  0.204077   0.098249   2.077   0.0379 *
```

```
## pds_p_ss_categoryLate      0.092273    0.576904    0.160    0.8729
## pds_p_ss_categoryMid       0.224454    0.181432    1.237    0.2161
## race.ethnicity.5levelBlack -0.015673    0.300551   -0.052    0.9584
## race.ethnicity.5levelMixed  0.212696    0.299914    0.709    0.4783
## race.ethnicity.5levelOther -0.245720    0.337777   -0.727    0.4670
## race.ethnicity.5levelWhite -0.001727    0.280616   -0.006    0.9951
## interview_age              0.008072    0.005351    1.508    0.1316
## demo_race_hispanic1        0.140084    0.122081    1.147    0.2513
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00154
## lmer.REML = 12334 Scale est. = 2.3659    n = 2845
```

## 1.9 Model: CBCL internalizing factor ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + race.ethnicity.5level +
##   interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.855385    1.866170   -0.458  0.64673
## hormone_scr_ert_mean  0.006203    0.007005    0.886  0.37597
## race.ethnicity.5levelBlack  0.064913    0.725607    0.089  0.92872
## race.ethnicity.5levelMixed  1.367192    0.731022    1.870  0.06157 .
## race.ethnicity.5levelOther  0.392609    0.848930    0.462  0.64378
## race.ethnicity.5levelWhite  1.077302    0.675310    1.595  0.11078
## interview_age     0.039194    0.015051    2.604  0.00927 **
## demo_race_hispanic1  0.175791    0.333089    0.528  0.59771
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0054
## lmer.REML = 14907 Scale est. = 17.56    n = 2409
```

### Males

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

```
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.497010   1.870733   1.869   0.0617 .
## hormone_scr_ert_mean    0.011693   0.007561   1.546   0.1221
## race.ethnicity.5levelBlack -0.566671   0.807140  -0.702   0.4827
## race.ethnicity.5levelMixed  0.336170   0.806112   0.417   0.6767
## race.ethnicity.5levelOther -0.691495   0.905567  -0.764   0.4452
## race.ethnicity.5levelWhite  0.031784   0.753966   0.042   0.9664
## interview_age        0.009765   0.014342   0.681   0.4960
## demo_race_hispanic1    0.489737   0.331109   1.479   0.1392
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000425
## lmer.REML = 16473 Scale est. = 14.451    n = 2641
```

## 1.10 Model: CBCL Anxious-Depressed ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + race.ethnicity.5level +
##   interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.174384   1.042465   0.167   0.8672
## hormone_scr_ert_mean    0.001262   0.003915   0.322   0.7473
## race.ethnicity.5levelBlack -0.114074   0.402044  -0.284   0.7766
## race.ethnicity.5levelMixed  0.830810   0.405722   2.048   0.0407 *
## race.ethnicity.5levelOther  0.225983   0.471554   0.479   0.6318
## race.ethnicity.5levelWhite  0.606919   0.374555   1.620   0.1053
## interview_age     0.014736   0.008431   1.748   0.0806 .
## demo_race_hispanic1    0.043874   0.183674   0.239   0.8112
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00894
## lmer.REML = 12117 Scale est. = 6.9666    n = 2409
```

### Males

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

```
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.938380   1.041999   2.820  0.00484 **
## hormone_scr_ert_mean 0.005993   0.004206   1.425  0.15428
## race.ethnicity.5levelBlack -0.251594  0.444704  -0.566  0.57161
## race.ethnicity.5levelMixed  0.301570  0.444474   0.678  0.49752
## race.ethnicity.5levelOther -0.102131  0.500944  -0.204  0.83846
## race.ethnicity.5levelWhite  0.322479  0.415462   0.776  0.43770
## interview_age      -0.007270   0.008017  -0.907  0.36457
## demo_race_hispanic1    0.195852   0.182007   1.076  0.28200
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00303
## lmer.REML = 13394  Scale est. = 5.9318    n = 2641
```

## 1.11 Model: CBCL Withdrawn-Depressed ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + race.ethnicity.5level +
##   interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      -0.049692   0.560922  -0.089  0.9294
## hormone_scr_ert_mean  0.004957   0.002102   2.358  0.0184 *
## race.ethnicity.5levelBlack -0.124909  0.215595  -0.579  0.5624
## race.ethnicity.5levelMixed  0.034579  0.217293   0.159  0.8736
## race.ethnicity.5levelOther -0.058102  0.252429  -0.230  0.8180
## race.ethnicity.5levelWhite -0.055997  0.200812  -0.279  0.7804
## interview_age        0.007040   0.004534   1.553  0.1207
## demo_race_hispanic1    0.159992   0.098448   1.625  0.1043
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00293
## lmer.REML = 9138.4  Scale est. = 2.3918    n = 2409
```

### Males

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



```
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.123559   0.621293  -0.199   0.8424
## hormone_scr_ert_mean    0.005209   0.002507   2.078   0.0378 *
## race.ethnicity.5levelBlack -0.119226   0.266151  -0.448   0.6542
## race.ethnicity.5levelMixed -0.005024   0.266320  -0.019   0.9850
## race.ethnicity.5levelOther -0.127196   0.299928  -0.424   0.6715
## race.ethnicity.5levelWhite -0.197090   0.248907  -0.792   0.4285
## interview_age     0.010391   0.004781   2.173   0.0298 *
## demo_race_hispanic1    0.071573   0.107510   0.666   0.5056
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00152
## lmer.REML = 10679  Scale est. = 1.9215    n = 2641
```

## 1.12 Model: CBCL Depressed DSM-5 ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + race.ethnicity.5level +
##   interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.365180   0.652083   0.560   0.576
## hormone_scr_ert_mean    0.001599   0.002453   0.652   0.514
## race.ethnicity.5levelBlack 0.049492   0.252355   0.196   0.845
## race.ethnicity.5levelMixed 0.266956   0.254911   1.047   0.295
## race.ethnicity.5levelOther 0.068762   0.296312   0.232   0.817
## race.ethnicity.5levelWhite 0.187339   0.235156   0.797   0.426
## interview_age     0.004566   0.005274   0.866   0.387
## demo_race_hispanic1    0.105591   0.115240   0.916   0.360
##
##
## R-sq.(adj) = -0.000791
## lmer.REML = 9868.9  Scale est. = 2.3706    n = 2409
```

### Males

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

```
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.523536   0.713803   0.733   0.463
## hormone_scr_ert_mean 0.003956   0.002884   1.372   0.170
## race.ethnicity.5levelBlack 0.001248   0.307496   0.004   0.997
## race.ethnicity.5levelMixed 0.137961   0.307427   0.449   0.654
## race.ethnicity.5levelOther -0.193303   0.345621  -0.559   0.576
## race.ethnicity.5levelWhite -0.029246   0.287443  -0.102   0.919
## interview_age      0.006097   0.005482   1.112   0.266
## demo_race_hispanic1 0.097970   0.124996   0.784   0.433
##
##
## R-sq.(adj) =  -0.000291
## lmer.REML = 11406  Scale est. = 2.2006    n = 2641
```

### 1.13 Model: CBCL internalizing factor ~ Testosterone + PDS

#### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + PDS_score +
##    race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.342413   1.871973   0.183   0.855
## hormone_scr_ert_mean -0.001808   0.007142  -0.253   0.800
## PDS_score          0.858415   0.169573   5.062 4.46e-07 ***
## race.ethnicity.5levelBlack -0.448141   0.728585  -0.615   0.539
## race.ethnicity.5levelMixed 1.191085   0.727651   1.637   0.102
## race.ethnicity.5levelOther 0.282552   0.844386   0.335   0.738
## race.ethnicity.5levelWhite 0.995086   0.671704   1.481   0.139
## interview_age      0.020778   0.015411   1.348   0.178
## demo_race_hispanic1 0.163060   0.331259   0.492   0.623
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0147
## lmer.REML = 14884  Scale est. = 17.835    n = 2409
```

#### Males

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

```
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.451178   1.866662   1.849 0.064592 .
## hormone_scr_ert_mean 0.008712   0.007594   1.147 0.251378
## PDS_score         0.720533   0.207643   3.470 0.000529 ***
## race.ethnicity.5levelBlack -0.870505  0.810331  -1.074 0.282806
## race.ethnicity.5levelMixed  0.309933  0.804542   0.385 0.700099
## race.ethnicity.5levelOther -0.725556  0.903798  -0.803 0.422171
## race.ethnicity.5levelWhite  0.036561  0.752452   0.049 0.961250
## interview_age      0.003236  0.014435   0.224 0.822623
## demo_race_hispanic1  0.450071  0.330475   1.362 0.173349
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00371
## lmer.REML = 16462 Scale est. = 14.337    n = 2641
```

## 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 + pds_p_ss_category +
##   race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.8557681  1.9228693   0.445  0.6563
## hormone_scr_ert_mean 0.0003425  0.0071332   0.048  0.9617
## pds_p_ss_categoryEarly 0.3933989  0.3005232   1.309  0.1906
## pds_p_ss_categoryLate  0.8687929  0.7326478   1.186  0.2358
## pds_p_ss_categoryMid   1.1166251  0.2832008   3.943 8.28e-05 ***
## race.ethnicity.5levelBlack -0.3133195  0.7296392  -0.429  0.6677
## race.ethnicity.5levelMixed  1.2366700  0.7289531   1.697  0.0899 .
## race.ethnicity.5levelOther  0.3206729  0.8459695   0.379  0.7047
## race.ethnicity.5levelWhite  1.0239192  0.6728981   1.522  0.1282
## interview_age      0.0225179  0.0157527   1.429  0.1530
## demo_race_hispanic1  0.1015637  0.3326217   0.305  0.7601
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0109
## lmer.REML = 14892 Scale est. = 18.205    n = 2409
```

### Males

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

```
##
## Formula:
## cbcl_scr_syn_internal_r ~ hormone_scr_ert_mean + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3.795727   1.871851   2.028  0.0427 *
## hormone_scr_ert_mean  0.009975   0.007577   1.316  0.1882
## pds_p_ss_categoryEarly  0.583489   0.266090   2.193  0.0284 *
## pds_p_ss_categoryLate  1.747408   1.765071   0.990  0.3223
## pds_p_ss_categoryMid   1.089616   0.487741   2.234  0.0256 *
## race.ethnicity.5levelBlack -0.795951   0.810672  -0.982  0.3263
## race.ethnicity.5levelMixed  0.375724   0.805812   0.466  0.6411
## race.ethnicity.5levelOther -0.702173   0.904864  -0.776  0.4378
## race.ethnicity.5levelWhite  0.122598   0.754067   0.163  0.8709
## interview_age        0.005787   0.014398   0.402  0.6878
## demo_race_hispanic1    0.429175   0.331409   1.295  0.1954
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00197
## lmer.REML = 16461  Scale est. = 14.342    n = 2641
```

## 1.15 Model: CBCL Anxious-Depressed ~ Testosterone + PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + PDS_score + race.ethnicity.5level +
##     interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.676640   1.047992   0.646  0.518566
## hormone_scr_ert_mean -0.002159   0.004003  -0.539  0.589733
## PDS_score          0.362799   0.094795   3.827  0.000133 ***
## race.ethnicity.5levelBlack -0.330779   0.404838  -0.817  0.413973
## race.ethnicity.5levelMixed  0.756457   0.404897   1.868  0.061846 .
## race.ethnicity.5levelOther  0.179155   0.470212   0.381  0.703230
## race.ethnicity.5levelWhite  0.571167   0.373553   1.529  0.126393
## interview_age        0.007008   0.008648   0.810  0.417827
## demo_race_hispanic1    0.037785   0.183185   0.206  0.836600
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0135
## lmer.REML = 12105  Scale est. = 7.04      n = 2409
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + PDS_score + race.ethnicity.5level +
##   interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.914526   1.040651   2.801  0.00514 **
## hormone_scr_ert_mean  0.004687   0.004227   1.109  0.26764
## PDS_score       0.318151   0.115770   2.748  0.00603 **
## race.ethnicity.5levelBlack -0.382221  0.446820  -0.855  0.39239
## race.ethnicity.5levelMixed  0.293315  0.444019   0.661  0.50893
## race.ethnicity.5levelOther -0.114117  0.500420  -0.228  0.81963
## race.ethnicity.5levelWhite  0.327767  0.415026   0.790  0.42974
## interview_age    -0.010149  0.008075  -1.257  0.20892
## demo_race_hispanic1  0.178208  0.181776   0.980  0.32699
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00501
## lmer.REML = 13389 Scale est. = 5.8896    n = 2641
```

## 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 + pds_p_ss_category +
##   race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.7791112  1.0755659   0.724  0.4689
## hormone_scr_ert_mean -0.0008758  0.0039961  -0.219  0.8266
## pds_p_ss_categoryEarly  0.2297358  0.1685985   1.363  0.1731
## pds_p_ss_categoryLate   0.1807508  0.4105624   0.440  0.6598
## pds_p_ss_categoryMid    0.4386130  0.1584967   2.767  0.0057 **
## race.ethnicity.5levelBlack -0.2448288  0.4053385  -0.604  0.5459
## race.ethnicity.5levelMixed  0.7824490  0.4055146   1.930  0.0538 .
## race.ethnicity.5levelOther  0.1977192  0.4709500   0.420  0.6746
## race.ethnicity.5levelWhite  0.5875329  0.3741000   1.571  0.1164
## interview_age     0.0085612  0.0088298   0.970  0.3324
## demo_race_hispanic1  0.0180341  0.1839019   0.098  0.9219
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.0106
## lmer.REML = 12113 Scale est. = 7.0992 n = 2409

Males

##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_anxdep_r ~ hormone_scr_ert_mean + pds_p_ss_category +
## race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.048043   1.043566   2.921 0.00352 **
## hormone_scr_ert_mean 0.005348   0.004219   1.268 0.20509
## pds_p_ss_categoryEarly 0.220646   0.148370   1.487 0.13710
## pds_p_ss_categoryLate 0.531286   0.979546   0.542 0.58760
## pds_p_ss_categoryMid 0.422634   0.272101   1.553 0.12049
## race.ethnicity.5levelBlack -0.335280   0.447098  -0.750 0.45338
## race.ethnicity.5levelMixed 0.318909   0.444745   0.717 0.47340
## race.ethnicity.5levelOther -0.103180   0.501040  -0.206 0.83686
## race.ethnicity.5levelWhite 0.359172   0.415972   0.863 0.38797
## interview_age    -0.008767   0.008055  -1.088 0.27653
## demo_race_hispanic1 0.172386   0.182368   0.945 0.34461
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00305
## lmer.REML = 13391 Scale est. = 5.8989 n = 2641
```

## 1.17 Model: CBCL Withdrawn-Depressed ~ Testosterone + PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + PDS_score + race.ethnicity.5level +
## interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.264555   0.563083   0.470 0.639
## hormone_scr_ert_mean 0.002833   0.002147   1.320 0.187
## PDS_score       0.224695   0.050753   4.427 9.97e-06 ***
## race.ethnicity.5levelBlack -0.256632   0.216690  -1.184 0.236
## race.ethnicity.5levelMixed -0.008861   0.216562  -0.041 0.967
## race.ethnicity.5levelOther -0.085080   0.251403  -0.338 0.735
```

```
## race.ethnicity.5levelWhite -0.076689 0.199982 -0.383 0.701
## interview_age 0.002215 0.004646 0.477 0.634
## demo_race_hispanic1 0.157482 0.097957 1.608 0.108
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0106
## lmer.REML = 9123 Scale est. = 2.4126 n = 2409
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + PDS_score + race.ethnicity.5level +
## interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.137632  0.620641  -0.222  0.8245
## hormone_scr_ert_mean 0.004497  0.002520   1.785  0.0744 .
## PDS_score      0.172618  0.069203   2.494  0.0127 *
## race.ethnicity.5levelBlack -0.191478  0.267557  -0.716  0.4743
## race.ethnicity.5levelMixed -0.010882  0.266133  -0.041  0.9674
## race.ethnicity.5levelOther -0.134493  0.299702  -0.449  0.6536
## race.ethnicity.5levelWhite -0.195478  0.248720  -0.786  0.4320
## interview_age  0.008849  0.004816   1.837  0.0663 .
## demo_race_hispanic1 0.061630  0.107403   0.574  0.5661
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00284
## lmer.REML = 10676 Scale est. = 1.9035 n = 2641
```

## 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 + pds_p_ss_category +
## race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.435598  0.577770   0.754  0.45097
## hormone_scr_ert_mean 0.003353  0.002144   1.564  0.11788
## pds_p_ss_categoryEarly 0.047294  0.090456   0.523  0.60113
```

```
## pds_p_ss_categoryLate      0.402736    0.219935    1.831  0.06720 .
## pds_p_ss_categoryMid      0.275000    0.084897    3.239  0.00122 **
## race.ethnicity.5levelBlack -0.231080    0.216989   -1.065  0.28701
## race.ethnicity.5levelMixed  0.003088    0.216906    0.014  0.98864
## race.ethnicity.5levelOther -0.073623    0.251809   -0.292  0.77002
## race.ethnicity.5levelWhite -0.067910    0.200279   -0.339  0.73458
## interview_age              0.002517    0.004742    0.531  0.59564
## demo_race_hispanic1        0.138990    0.098341    1.413  0.15768
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00763
## lmer.REML =  9133  Scale est. = 2.4228    n = 2409
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_withdep_r ~ hormone_scr_ert_mean + pds_p_ss_category +
##   race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.055526   0.621889  -0.089   0.9289
## hormone_scr_ert_mean  0.004801   0.002513   1.910   0.0562 .
## pds_p_ss_categoryEarly  0.127347   0.088604   1.437   0.1508
## pds_p_ss_categoryLate  0.116890   0.585942   0.199   0.8419
## pds_p_ss_categoryMid   0.370977   0.162537   2.282   0.0225 *
## race.ethnicity.5levelBlack -0.177132   0.267450  -0.662   0.5078
## race.ethnicity.5levelMixed  0.012386   0.266325   0.047   0.9629
## race.ethnicity.5levelOther -0.124521   0.299825  -0.415   0.6779
## race.ethnicity.5levelWhite -0.167256   0.249048  -0.672   0.5019
## interview_age      0.009404   0.004801   1.959   0.0503 .
## demo_race_hispanic1  0.052396   0.107585   0.487   0.6263
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00264
## lmer.REML = 10677  Scale est. = 1.9113    n = 2641
```

## 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 + PDS_score +
```



```
##      race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.6460355  0.6558347   0.985 0.324695
## hormone_scr_ert_mean -0.0002827  0.0025083  -0.113 0.910280
## PDS_score         0.2031579  0.0595351   3.412 0.000655 ***
## race.ethnicity.5levelBlack -0.0729058  0.2543140  -0.287 0.774385
## race.ethnicity.5levelMixed  0.2254904  0.2546070   0.886 0.375900
## race.ethnicity.5levelOther  0.0420331  0.2957283   0.142 0.886986
## race.ethnicity.5levelWhite  0.1675795  0.2346831   0.714 0.475255
## interview_age       0.0002325  0.0054138   0.043 0.965748
## demo_race_hispanic1    0.1023451  0.1149749   0.890 0.373474
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00332
## lmer.REML = 9861.1  Scale est. = 2.3708    n = 2409
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + PDS_score +
##      race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.510692  0.713187   0.716  0.4740
## hormone_scr_ert_mean  0.003236  0.002900   1.116  0.2645
## PDS_score         0.174851  0.079476   2.200  0.0279 *
## race.ethnicity.5levelBlack -0.071884  0.309169  -0.233  0.8162
## race.ethnicity.5levelMixed  0.131821  0.307265   0.429  0.6679
## race.ethnicity.5levelOther -0.201359  0.345431  -0.583  0.5600
## race.ethnicity.5levelWhite -0.027948  0.287272  -0.097  0.9225
## interview_age       0.004526  0.005524   0.819  0.4127
## demo_race_hispanic1    0.088193  0.124879   0.706  0.4801
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000741
## lmer.REML = 11404  Scale est. = 2.1834    n = 2641
```

## 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 + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.8106598  0.6728012   1.205  0.22836
## hormone_scr_ert_mean 0.0001381  0.0025021   0.055  0.95599
## pds_p_ss_categoryEarly 0.0492938  0.1055779   0.467  0.64062
## pds_p_ss_categoryLate 0.3461948  0.2572564   1.346  0.17852
## pds_p_ss_categoryMid 0.2601191  0.0993877   2.617  0.00892 **
## race.ethnicity.5levelBlack -0.0509616  0.2543593  -0.200  0.84122
## race.ethnicity.5levelMixed 0.2358067  0.2547330   0.926  0.35469
## race.ethnicity.5levelOther 0.0506706  0.2958991   0.171  0.86405
## race.ethnicity.5levelWhite 0.1747582  0.2347990   0.744  0.45677
## interview_age      0.0003926  0.0055252   0.071  0.94335
## demo_race_hispanic1 0.0859678  0.1153212   0.745  0.45606
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00162
## lmer.REML = 9867.4  Scale est. = 2.4144    n = 2409
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_dsm5_depress_r ~ hormone_scr_ert_mean + pds_p_ss_category +
##     race.ethnicity.5level + interview_age + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.628650  0.714496   0.880  0.3790
## hormone_scr_ert_mean 0.003371  0.002891   1.166  0.2437
## pds_p_ss_categoryEarly 0.238266  0.101734   2.342  0.0193 *
## pds_p_ss_categoryLate 0.712302  0.674447   1.056  0.2910
## pds_p_ss_categoryMid 0.167840  0.186544   0.900  0.3683
## race.ethnicity.5levelBlack -0.060758  0.309027  -0.197  0.8441
## race.ethnicity.5levelMixed 0.138569  0.307469   0.451  0.6523
## race.ethnicity.5levelOther -0.200015  0.345522  -0.579  0.5627
## race.ethnicity.5levelWhite -0.009879  0.287631  -0.034  0.9726
## interview_age      0.004783  0.005505   0.869  0.3850
## demo_race_hispanic1 0.084709  0.125147   0.677  0.4985
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000197
## lmer.REML = 11403  Scale est. = 2.1784    n = 2641
```

## 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)   0.424214   0.314340   1.350  0.17728
## PDS_score      0.075218   0.028002   2.686  0.00727 **
## interview_age -0.005045   0.002713  -1.859  0.06310 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00417
## lmer.REML = 7604.2  Scale est. = 0.75362    n = 2683
```

#### 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)   0.115506   0.286732   0.403  0.6871
## PDS_score      0.069481   0.032804   2.118  0.0343 *
## interview_age -0.001230   0.002423  -0.508  0.6118
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00131
## lmer.REML = 8047.3  Scale est. = 0.7764     n = 2906
```

### 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) -0.698797   0.318038  -2.197   0.0281 *
## PDS_score    0.019366   0.028585   0.678   0.4982
## interview_age 0.005860   0.002754   2.128   0.0335 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00183
## lmer.REML = 6057.3  Scale est. = 0.75998    n = 2242
##
## 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) -0.5555040  0.3317065  -1.675   0.0941 .
## PDS_score    0.0009986  0.0298834   0.033   0.9733
## interview_age 0.0047315  0.0028702   1.648   0.0994 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000456
## lmer.REML = 6221.6  Scale est. = 0.83787    n = 2242
```

## 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) -0.581559   0.302387  -1.923   0.0546 .
## PDS_score    -0.057182   0.035722  -1.601   0.1096
## interview_age 0.005337   0.002557   2.087   0.0370 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00226
## lmer.REML = 6209.9  Scale est. = 0.75935    n = 2318
##
## 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)  0.0319121  0.2986180   0.107   0.915
## PDS_score    -0.0126889  0.0351299  -0.361   0.718
## interview_age -0.0002895  0.0025251  -0.115   0.909
##
##
## R-sq.(adj) = -0.000795
## lmer.REML = 6161.9  Scale est. = 0.8291    n = 2318
```

## 2.3 Model: Caudate Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsnt_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.354322  0.315627  -1.123   0.262
## PDS_score    -0.027115  0.028254  -0.960   0.337
## interview_age  0.003233  0.002729   1.185   0.236
##
##
## R-sq.(adj) =  0.000154
## lmer.REML = 5413.7  Scale est. = 0.73298    n = 2071
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsnt_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.51255   0.32285  -1.588   0.113
## PDS_score     0.03469   0.03908   0.887   0.375
## interview_age  0.00392   0.00272   1.441   0.150
##
##
## R-sq.(adj) =  0.00028
## lmer.REML = 5534.9  Scale est. = 0.81709    n = 2059
```

## 2.4 Model B: Putamen Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsnt_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.492088   0.313014  -1.572   0.116
## PDS_score    -0.010024   0.027981  -0.358   0.720
## interview_age  0.004141   0.002706   1.531   0.126
##
##
## R-sq.(adj) =  0.000294
## lmer.REML = 5384.4  Scale est. = 0.70432  n = 2071
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsnt_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.359661   0.313801  -1.146   0.252
## PDS_score    -0.004214   0.038041  -0.111   0.912
## interview_age  0.003216   0.002644   1.217   0.224
##
##
## R-sq.(adj) = -0.000355
## lmer.REML =  5430  Scale est. = 0.65183  n = 2064
```

## 2.5 Model: Accumbens Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvsnt_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.1374282  0.2480263   0.554   0.580
## PDS_score     -0.0319156  0.0221177  -1.443   0.149
## interview_age -0.0006455  0.0021450  -0.301   0.763
```

```
##
##
## R-sq.(adj) = 0.000265
## lmer.REML = 4425.7 Scale est. = 0.48435 n = 2066
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvs_n_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   0.164387  0.253649   0.648   0.517
## PDS_score      0.021930  0.030516   0.719   0.472
## interview_age -0.001572  0.002137  -0.736   0.462
##
##
## R-sq.(adj) = -0.000251
## lmer.REML = 4549.1 Scale est. = 0.43644 n = 2060
```

## 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)  -0.010955  0.309581  -0.035   0.972
## PDS_score      0.037116  0.027726   1.339   0.181
## interview_age -0.000575  0.002675  -0.215   0.830
##
##
## R-sq.(adj) = -0.000269
## lmer.REML = 5311.2 Scale est. = 0.61773 n = 2067
```

### 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)   -0.0084907  0.3152619  -0.027   0.979
## PDS_score     -0.0055288  0.0379833  -0.146   0.884
## interview_age  0.0002172  0.0026587   0.082   0.935
##
##
## R-sq.(adj) =  -0.00096
## lmer.REML = 5454.9  Scale est. = 0.82148   n = 2058
```

## 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)   0.126483  0.305477   0.414   0.679
## PDS_score     0.035447  0.027397   1.294   0.196
## interview_age -0.001628  0.002635  -0.618   0.537
##
##
## R-sq.(adj) =  -0.000225
## lmer.REML = 5245.6  Scale est. = 0.6817   n = 2067
```

### 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)   0.280091  0.313510   0.893   0.372
## PDS_score     0.023857  0.037698   0.633   0.527
## interview_age -0.002342  0.002639  -0.888   0.375
##
##
## R-sq.(adj) =  -0.00054
## lmer.REML = 5415.4  Scale est. = 0.75208   n = 2063
```

## 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) -0.370594  0.241795  -1.533   0.126
## PDS_score    0.011952  0.021694   0.551   0.582
## interview_age 0.002769  0.002090   1.325   0.185
##
##
## R-sq.(adj) = 0.000574
## lmer.REML = 4288.8  Scale est. = 0.43394  n = 2066
```

## 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)  0.0020213  0.2569941   0.008   0.994
## PDS_score    -0.0309742  0.0310057  -0.999   0.318
## interview_age 0.0004582  0.0021641   0.212   0.832
##
##
## R-sq.(adj) = -0.000175
## lmer.REML = 4590.2  Scale est. = 0.39554  n = 2063
```

## 2.9 Model: OFC Anticipation ~ PDS

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_rvsnt_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.0801892  0.2006050   0.400   0.689
## PDS_score    -0.0171588  0.0180734  -0.949   0.343
## interview_age -0.0004233  0.0017341  -0.244   0.807
##
##
## R-sq.(adj) = -0.000415
## lmer.REML = 3499.7  Scale est. = 0.31577  n = 2058
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.203967  0.231252   0.882   0.3779
## PDS_score    -0.052075  0.020727  -2.512   0.0121 *
## interview_age -0.001062  0.001998  -0.531   0.5952
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00257
## lmer.REML = 4086.2  Scale est. = 0.41983    n = 2059
```

## 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) -0.430299  0.218848  -1.966   0.0494 *
## PDS_score     0.028632  0.026701   1.072   0.2837
## interview_age  0.003009  0.001844   1.632   0.1028
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0015
## lmer.REML = 3904.8  Scale est. = 0.3435    n = 2050

##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_rvsn_ant_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.182563  0.248071  -0.736   0.462
## PDS_score     0.061647  0.030155   2.044   0.041 *
## interview_age  0.000624  0.002093   0.298   0.766
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) = 0.00218
## lmer.REML = 4452.2 Scale est. = 0.44504 n = 2056
```

## 2.10 Model: OFC Feedback ~ 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)   0.0625161  0.1799161   0.347   0.728
## PDS_score     0.0085022  0.0161609   0.526   0.599
## interview_age -0.0009009  0.0015555  -0.579   0.563
##
##
## R-sq.(adj) = -0.000829
## lmer.REML = 3071.4 Scale est. = 0.25421 n = 2067
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.0059040  0.2119441  -0.028   0.978
## PDS_score     0.0043212  0.0190101   0.227   0.820
## interview_age -0.0002242  0.0018349  -0.122   0.903
##
##
## R-sq.(adj) = -0.000935
## lmer.REML = 3789.9 Scale est. = 0.33159 n = 2071
```

### 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)  -0.143264  0.190247  -0.753   0.452
## PDS_score    -0.018364  0.023129  -0.794   0.427
```

```
## interview_age 0.001470 0.001604 0.917 0.359
##
##
## R-sq.(adj) = -0.000382
## lmer.REML = 3342.5 Scale est. = 0.22175 n = 2049
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ PDS_score + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.0474262 0.2248786 -0.211 0.833
## PDS_score   -0.0212195 0.0274023 -0.774 0.439
## interview_age 0.0008927 0.0018959 0.471 0.638
##
##
## R-sq.(adj) = -0.000619
## lmer.REML = 4058.1 Scale est. = 0.32892 n = 2058
```

## 2.11 Model: Caudate Anticipation ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_rvsnt_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.331449 0.327022 -1.014 0.311
## hormone_scr_ert_mean -0.001533 0.001263 -1.213 0.225
## interview_age    0.003171 0.002795 1.135 0.257
##
##
## R-sq.(adj) = 0.000349
## lmer.REML = 4991.7 Scale est. = 0.75377 n = 1907
```

### Males

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

```
## (Intercept)          -0.265880    0.329964   -0.806    0.420
## hormone_scr_ert_mean -0.001295    0.001466   -0.883    0.377
## interview_age         0.002638    0.002788    0.946    0.344
##
##
## R-sq.(adj) =  -0.000405
## lmer.REML = 5139.7  Scale est. = 0.7996    n = 1917
```

## 2.12 Model B: Putamen Anticipation ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsnt_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.381268   0.321834  -1.185    0.236
## hormone_scr_ert_mean -0.000192   0.001245  -0.154    0.877
## interview_age    0.003094   0.002751    1.125    0.261
##
##
## R-sq.(adj) =  -0.000274
## lmer.REML = 4931.4  Scale est. = 0.67821    n = 1905
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_rvsnt_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.328190   0.324440  -1.012    0.312
## hormone_scr_ert_mean -0.002314   0.001445  -1.601    0.110
## interview_age    0.003511   0.002741    1.281    0.200
##
##
## R-sq.(adj) =  0.000406
## lmer.REML = 5069.1  Scale est. = 0.59871    n = 1917
```

## 2.13 Model: Accumbens Anticipation ~ Testosterone

### Females

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

```
##
## Formula:
## accumbens_rvs_n_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0999811  0.2558527   0.391   0.696
## hormone_scr_ert_mean -0.0004158  0.0009888  -0.421   0.674
## interview_age    -0.0006720  0.0021883  -0.307   0.759
##
##
## R-sq.(adj) =  -0.000894
## lmer.REML = 4060.6  Scale est. = 0.4233    n = 1901
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_rvs_n_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.2111383  0.2607896   0.810   0.418
## hormone_scr_ert_mean -0.0004254  0.0011640  -0.365   0.715
## interview_age    -0.0015779  0.0022026  -0.716   0.474
##
##
## R-sq.(adj) =  -0.000889
## lmer.REML = 4223.1  Scale est. = 0.43027    n = 1911
```

## 2.14 Model: Caudate Feedback ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.0884340  0.3173849  -0.279   0.781
## hormone_scr_ert_mean  0.0003856  0.0012260   0.315   0.753
## interview_age    0.0004997  0.0027122   0.184   0.854
##
##
## R-sq.(adj) =  -0.000963
## lmer.REML =   4849  Scale est. = 0.59772    n = 1901
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## caudate_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.057344  0.325006  -0.176   0.860
## hormone_scr_ert_mean -0.002196  0.001429  -1.537   0.124
## interview_age    0.001097  0.002750   0.399   0.690
##
##
## R-sq.(adj) =  0.000205
## lmer.REML = 5077.2  Scale est. = 0.82507   n = 1910
```

## 2.15 Model: Putamen Feedback ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.186877  0.312380   0.598   0.550
## hormone_scr_ert_mean 0.000457  0.001207   0.379   0.705
## interview_age   -0.001756  0.002664  -0.659   0.510
##
##
## R-sq.(adj) = -0.00103
## lmer.REML = 4789.3  Scale est. = 0.65976   n = 1904
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## putamen_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.261878  0.322810   0.811   0.4173
## hormone_scr_ert_mean -0.002733  0.001434  -1.906   0.0568 .
## interview_age   -0.001233  0.002719  -0.454   0.6502
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000965
## lmer.REML = 5030.8  Scale est. = 0.76058    n = 1915
```

## 2.16 Model: Accumbens Feedback ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -3.609e-01  2.501e-01  -1.443   0.149
## hormone_scr_ert_mean  8.766e-06  9.658e-04   0.009   0.993
## interview_age    2.914e-03  2.136e-03   1.365   0.173
##
##
## R-sq.(adj) =  0.000316
## lmer.REML = 3943.2  Scale est. = 0.42807    n = 1900
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## accumbens_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0113639  0.2639875   0.043   0.966
## hormone_scr_ert_mean -0.0014010  0.0011774  -1.190   0.234
## interview_age     0.0003557  0.0022244   0.160   0.873
##
##
## R-sq.(adj) =  0.000143
## lmer.REML = 4259.2  Scale est. = 0.44133    n = 1917
```

## 2.17 Model: OFC Anticipation ~ Testosterone

### Females

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



```
## l0FC_rvs_n_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.1368392  0.2063384   0.663   0.5073
## hormone_scr_ert_mean 0.0015863  0.0007966   1.991   0.0466 *
## interview_age     -0.0015929  0.0017624  -0.904   0.3662
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00096
## lmer.REML = 3200.9  Scale est. = 0.31099   n = 1894
##
## Family: gaussian
## Link function: identity
##
## Formula:
## m0FC_rvs_n_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.3449714  0.2392035   1.442   0.149
## hormone_scr_ert_mean 0.0012793  0.0009213   1.389   0.165
## interview_age     -0.0033111  0.0020421  -1.621   0.105
##
##
## R-sq.(adj) =  0.000847
## lmer.REML = 3751.8  Scale est. = 0.41513   n = 1895
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## l0FC_rvs_n_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)     -0.3826899  0.2248618  -1.702   0.0889 .
## hormone_scr_ert_mean -0.0015432  0.0009996  -1.544   0.1228
## interview_age       0.0033213  0.0018982   1.750   0.0803 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.000365
## lmer.REML = 3627.8  Scale est. = 0.33829   n = 1904
##
## Family: gaussian
## Link function: identity
```

```
##
## Formula:
## mOFC_rvsn_ant_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.0728577  0.2544480  -0.286   0.775
## hormone_scr_ert_mean -0.0001526  0.0011250  -0.136   0.892
## interview_age     0.0004157  0.0021526   0.193   0.847
##
##
## R-sq.(adj) =  -0.00112
## lmer.REML = 4121.9  Scale est. = 0.43941   n = 1908
```

## 2.18 Model: OFC Feedback ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## lOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0322220  0.1817395   0.177   0.8593
## hormone_scr_ert_mean 0.0015346  0.0007027   2.184   0.0291 *
## interview_age    -0.0009299  0.0015530  -0.599   0.5494
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0016
## lmer.REML = 2743.8  Scale est. = 0.24369   n = 1900
##
## Family: gaussian
## Link function: identity
##
## Formula:
## mOFC_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.0399194  0.2172604  -0.184   0.854
## hormone_scr_ert_mean 0.0013479  0.0008409   1.603   0.109
## interview_age    -0.0002294  0.0018584  -0.123   0.902
##
##
## R-sq.(adj) =  0.000333
## lmer.REML = 3456  Scale est. = 0.34165   n = 1905
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## l0FC_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.1116692  0.1963288  -0.569   0.570
## hormone_scr_ert_mean -0.0002585  0.0008706  -0.297   0.767
## interview_age     0.0010542  0.0016611   0.635   0.526
##
##
## R-sq.(adj) =  -0.000795
## lmer.REML = 3122.1  Scale est. = 0.22577   n = 1902
##
## Family: gaussian
## Link function: identity
##
## Formula:
## m0FC_posvsneg_feedback_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.0222175  0.2304648  -0.096   0.923
## hormone_scr_ert_mean -0.0006656  0.0010204  -0.652   0.514
## interview_age     0.0005767  0.0019502   0.296   0.767
##
##
## R-sq.(adj) =  -0.000841
## lmer.REML = 3753.5  Scale est. = 0.34369   n = 1908
```

## 2.19 Model: MID Reaction Time ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.745679  0.330741  -2.255   0.0243 *
## hormone_scr_ert_mean -0.001240  0.001287  -0.963   0.3356
## interview_age     0.006871  0.002830   2.428   0.0153 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) = 0.00207
## lmer.REML = 5624.2 Scale est. = 0.7694 n = 2069

##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.537210   0.343953  -1.562   0.1185
## hormone_scr_ert_mean -0.001082   0.001339  -0.808   0.4190
## interview_age    0.004932   0.002942   1.677   0.0938 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.000468
## lmer.REML = 5768.8 Scale est. = 0.86809 n = 2069
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_neutral_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.531773   0.311599  -1.707   0.0880 .
## hormone_scr_ert_mean -0.001336   0.001371  -0.974   0.3301
## interview_age    0.004643   0.002638   1.760   0.0785 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00114
## lmer.REML = 5800.8 Scale est. = 0.74475 n = 2162

##
## Family: gaussian
## Link function: identity
##
## Formula:
## rt_diff_large_small_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.0460410   0.3083255  -0.149   0.881
## hormone_scr_ert_mean -0.0013774   0.0013440  -1.025   0.306
```

```
## interview_age          0.0005507  0.0026125   0.211   0.833
##
##
## R-sq.(adj) =  -0.000438
## lmer.REML = 5771.3  Scale est. = 0.83547   n = 2162
```

## 2.20 Model: BIS-BAS-RR ~ Testosterone

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.3730767  0.3251233   1.147   0.251
## hormone_scr_ert_mean 0.0006881  0.0012723   0.541   0.589
## interview_age   -0.0037271  0.0027748  -1.343   0.179
##
##
## R-sq.(adj) =  0.000906
## lmer.REML = 6993.2  Scale est. = 0.78969   n = 2467
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## bisbas_ss_basm_rr_z ~ hormone_scr_ert_mean + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.017894  0.296012   0.060   0.9518
## hormone_scr_ert_mean -0.002440  0.001296  -1.883   0.0598 .
## interview_age     0.001111  0.002498   0.445   0.6564
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  -0.000323
## lmer.REML = 7480.4  Scale est. = 0.78536   n = 2699
```

### 3—Int~Reward—

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

##### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_rvsnt_ant_z + interview_age +
##   race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.63582    2.02287  -0.314   0.7533
## accumbens_rvsnt_ant_z -0.27173    0.16789  -1.619   0.1057
## interview_age     0.03819    0.01589   2.404   0.0163 *
## race.ethnicity.5levelBlack 0.29624    0.78881   0.376   0.7073
## race.ethnicity.5levelMixed 1.17149    0.78961   1.484   0.1381
## race.ethnicity.5levelOther 0.39909    0.93625   0.426   0.6700
## race.ethnicity.5levelWhite 1.19862    0.72913   1.644   0.1004
## demo_race_hispanic1    0.10198    0.35925   0.284   0.7765
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0053
## lmer.REML = 12407 Scale est. = 15.495    n = 2010
```

##### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ accumbens_rvsnt_ant_z + interview_age +
##   race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)     2.50616    2.16923   1.155   0.2481
## accumbens_rvsnt_ant_z 0.02060    0.16556   0.124   0.9010
## interview_age     0.01707    0.01616   1.056   0.2909
## race.ethnicity.5levelBlack 0.04518    0.99500   0.045   0.9638
## race.ethnicity.5levelMixed 0.64773    0.99180   0.653   0.5138
## race.ethnicity.5levelOther -0.70547    1.10712  -0.637   0.5241
## race.ethnicity.5levelWhite 0.26109    0.93234   0.280   0.7795
## demo_race_hispanic1    0.93574    0.37843   2.473   0.0135 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) = 0.00207
## lmer.REML = 12573 Scale est. = 13.638 n = 2014
```

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

#### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_rvsnt_ant_z + interview_age +
##   race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.397963   2.025610  -0.196   0.8443
## caudate_rvsnt_ant_z -0.006064   0.132425  -0.046   0.9635
## interview_age     0.035825   0.015916   2.251   0.0245 *
## race.ethnicity.5levelBlack 0.331027   0.790602   0.419   0.6755
## race.ethnicity.5levelMixed 1.219810   0.790694   1.543   0.1231
## race.ethnicity.5levelOther 0.460034   0.939225   0.490   0.6243
## race.ethnicity.5levelWhite 1.259727   0.730689   1.724   0.0849 .
## demo_race_hispanic1    0.096638   0.359320   0.269   0.7880
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) = 0.00367
## lmer.REML = 12446 Scale est. = 15.793 n = 2014
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ caudate_rvsnt_ant_z + interview_age +
##   race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)     2.44496   2.16996   1.127   0.25999
## caudate_rvsnt_ant_z 0.15635   0.13096   1.194   0.23265
## interview_age     0.01737   0.01615   1.075   0.28232
## race.ethnicity.5levelBlack 0.12790   0.99785   0.128   0.89802
## race.ethnicity.5levelMixed 0.72781   0.99470   0.732   0.46444
## race.ethnicity.5levelOther -0.76966   1.10931  -0.694   0.48788
## race.ethnicity.5levelWhite 0.31568   0.93620   0.337   0.73601
## demo_race_hispanic1    1.01845   0.38205   2.666   0.00774 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.00325
## lmer.REML = 12604 Scale est. = 12.689 n = 2018
```

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

#### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ putamen_rvsn_ant_z + interview_age +
##   race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.57325    2.02419  -0.283  0.7771
## putamen_rvsn_ant_z -0.05862    0.13366  -0.439  0.6610
## interview_age    0.03731    0.01591   2.345  0.0191 *
## race.ethnicity.5levelBlack 0.32437    0.79065   0.410  0.6817
## race.ethnicity.5levelMixed 1.20223    0.79114   1.520  0.1288
## race.ethnicity.5levelOther 0.39471    0.93747   0.421  0.6738
## race.ethnicity.5levelWhite 1.26717    0.73072   1.734  0.0830 .
## demo_race_hispanic1    0.08629    0.35928   0.240  0.8102
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0041
## lmer.REML = 12445 Scale est. = 15.532 n = 2014
```

#### 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)    2.63538    2.17260   1.213  0.2253
## putamen_rvsn_ant_z -0.02636    0.13541  -0.195  0.8457
## interview_age    0.01590    0.01618   0.983  0.3259
## race.ethnicity.5levelBlack 0.05770    0.99758   0.058  0.9539
## race.ethnicity.5levelMixed 0.71410    0.99436   0.718  0.4727
## race.ethnicity.5levelOther -0.73964    1.11097  -0.666  0.5056
## race.ethnicity.5levelWhite 0.30112    0.93609   0.322  0.7477
## demo_race_hispanic1    0.97492    0.37889   2.573  0.0101 *
## ---
```



```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00268
## lmer.REML = 12597  Scale est. = 12.749    n = 2017
```

### 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)   -0.85021    2.02908  -0.419  0.6753
## accumbens_posvsneg_feedback_z  0.22662    0.17303   1.310  0.1904
## interview_age   0.03746    0.01592   2.353  0.0187 *
## race.ethnicity.5levelBlack  0.61263    0.79658   0.769  0.4419
## race.ethnicity.5levelMixed  1.50028    0.79596   1.885  0.0596 .
## race.ethnicity.5levelOther  0.73026    0.93935   0.777  0.4370
## race.ethnicity.5levelWhite  1.51483    0.73613   2.058  0.0397 *
## demo_race_hispanic1    0.07632    0.36124   0.211  0.8327
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00504
## lmer.REML = 12407  Scale est. = 15.533    n = 2009
```

#### 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)    3.06132    2.18328   1.402  0.1610
## accumbens_posvsneg_feedback_z -0.22098    0.16751  -1.319  0.1873
## interview_age   0.01306    0.01624   0.804  0.4213
## race.ethnicity.5levelBlack  -0.02227    1.00962  -0.022  0.9824
## race.ethnicity.5levelMixed   0.67937    1.00620   0.675  0.4996
## race.ethnicity.5levelOther  -0.85671    1.11969  -0.765  0.4443
## race.ethnicity.5levelWhite   0.24756    0.94823   0.261  0.7941
## demo_race_hispanic1    0.95982    0.37858   2.535  0.0113 *
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00352
## lmer.REML = 12605  Scale est. = 13.512    n = 2017
```

### 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)    -0.87180    2.02851  -0.430   0.6674
## caudate_posvsneg_feedback_z -0.02388    0.13579  -0.176   0.8604
## interview_age     0.03779    0.01591   2.374   0.0177 *
## race.ethnicity.5levelBlack  0.54766    0.79675   0.687   0.4919
## race.ethnicity.5levelMixed  1.44607    0.79595   1.817   0.0694 .
## race.ethnicity.5levelOther  0.66563    0.93920   0.709   0.4786
## race.ethnicity.5levelWhite  1.51365    0.73637   2.056   0.0400 *
## demo_race_hispanic1      0.13049    0.36011   0.362   0.7171
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00475
## lmer.REML = 12415  Scale est. = 15.565    n = 2010
```

#### 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)     3.12692    2.18176   1.433   0.1520
## caudate_posvsneg_feedback_z -0.10375    0.13642  -0.760   0.4471
## interview_age     0.01220    0.01626   0.750   0.4533
## race.ethnicity.5levelBlack  0.02769    0.99837   0.028   0.9779
## race.ethnicity.5levelMixed  0.69387    0.99419   0.698   0.4853
## race.ethnicity.5levelOther -0.83148    1.10900  -0.750   0.4535
## race.ethnicity.5levelWhite  0.25358    0.93637   0.271   0.7866
```

```
## demo_race_hispanic1          0.95500    0.37724    2.532    0.0114 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00258
## lmer.REML = 12571  Scale est. = 14.212    n = 2010
```

### 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)   -0.46133    2.02633  -0.228   0.8199
## putamen_posvsneg_feedback_z -0.05774    0.13711  -0.421   0.6737
## interview_age    0.03631    0.01592   2.280   0.0227 *
## race.ethnicity.5levelBlack  0.30667    0.79070   0.388   0.6982
## race.ethnicity.5levelMixed  1.22111    0.79101   1.544   0.1228
## race.ethnicity.5levelOther  0.38953    0.93671   0.416   0.6776
## race.ethnicity.5levelWhite  1.26081    0.73015   1.727   0.0844 .
## demo_race_hispanic1    0.11865    0.36148   0.328   0.7428
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00434
## lmer.REML = 12420  Scale est. = 15.822    n = 2010
```

#### 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)   3.027e+00  2.181e+00   1.388   0.1653
## putamen_posvsneg_feedback_z  3.449e-05  1.374e-01   0.000   0.9998
## interview_age  1.291e-02  1.624e-02   0.795   0.4269
## race.ethnicity.5levelBlack  6.761e-02  9.993e-01   0.068   0.9461
## race.ethnicity.5levelMixed  7.251e-01  9.950e-01   0.729   0.4663
## race.ethnicity.5levelOther -7.980e-01  1.110e+00  -0.719   0.4722
```

```
## race.ethnicity.5levelWhite 2.849e-01 9.367e-01 0.304 0.7610
## demo_race_hispanic1 9.101e-01 3.780e-01 2.408 0.0162 *
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00206
## lmer.REML = 12606 Scale est. = 14.499 n = 2015
```

### 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)    -0.86822    2.03412  -0.427  0.6696
## lOFC_rvsn_ant_z -0.01292    0.20912  -0.062  0.9508
## interview_age   0.03767    0.01596   2.360  0.0184 *
## race.ethnicity.5levelBlack 0.60576    0.79837   0.759  0.4481
## race.ethnicity.5levelMixed 1.47630    0.79783   1.850  0.0644 .
## race.ethnicity.5levelOther 0.76513    0.94344   0.811  0.4175
## race.ethnicity.5levelWhite 1.51674    0.73763   2.056  0.0399 *
## demo_race_hispanic1 0.09209    0.36101   0.255  0.7987
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00402
## lmer.REML = 12363 Scale est. = 15.301 n = 2001

##
## 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)    -1.03733    2.03567  -0.510  0.6104
## mOFC_rvsn_ant_z  0.18161    0.18035   1.007  0.3141
## interview_age   0.03893    0.01597   2.437  0.0149 *
## race.ethnicity.5levelBlack 0.61800    0.79748   0.775  0.4385
## race.ethnicity.5levelMixed 1.46932    0.79875   1.840  0.0660 .
## race.ethnicity.5levelOther 0.74866    0.94144   0.795  0.4266
## race.ethnicity.5levelWhite 1.54414    0.73776   2.093  0.0365 *
```

```
## demo_race_hispanic1      0.08501    0.36080    0.236    0.8138
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00489
## lmer.REML = 12368  Scale est. = 15.262    n = 2002
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ lOFC_rvs_n_ant_z + interview_age + race.ethnicity.5level +
##    demo_race_hispanic
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.29279    2.16369   1.060  0.2894
## lOFC_rvs_n_ant_z    -0.13550    0.19216  -0.705  0.4808
## interview_age       0.01904    0.01606   1.186  0.2360
## race.ethnicity.5levelBlack -0.10997    1.00241  -0.110  0.9127
## race.ethnicity.5levelMixed  0.69028    0.99775   0.692  0.4891
## race.ethnicity.5levelOther -0.82599    1.10749  -0.746  0.4559
## race.ethnicity.5levelWhite  0.23421    0.93934   0.249  0.8031
## demo_race_hispanic1    0.97588    0.37929   2.573  0.0102 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00314
## lmer.REML = 12469  Scale est. = 12.567    n = 2003
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ mOFC_rvs_n_ant_z + interview_age + race.ethnicity.5level +
##    demo_race_hispanic
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.18493    2.17314   1.005  0.315
## mOFC_rvs_n_ant_z   -0.15883    0.16765  -0.947  0.344
## interview_age       0.01988    0.01614   1.232  0.218
## race.ethnicity.5levelBlack  0.05775    1.00706   0.057  0.954
## race.ethnicity.5levelMixed  0.69071    1.00246   0.689  0.491
## race.ethnicity.5levelOther -0.79054    1.11409  -0.710  0.478
## race.ethnicity.5levelWhite  0.23193    0.94480   0.245  0.806
## demo_race_hispanic1    0.93454    0.38015   2.458  0.014 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.00269
## lmer.REML = 12534 Scale est. = 12.533 n = 2010
```

### 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)    -0.63984    2.02223  -0.316  0.7517
## lOFC_posvsneg_feedback_z  0.02285    0.23223   0.098  0.9216
## interview_age    0.03776    0.01590   2.375  0.0176 *
## race.ethnicity.5levelBlack 0.39308    0.78874   0.498  0.6183
## race.ethnicity.5levelMixed 1.17361    0.78846   1.488  0.1368
## race.ethnicity.5levelOther 0.38523    0.93389   0.413  0.6800
## race.ethnicity.5levelWhite 1.24893    0.72802   1.716  0.0864 .
## demo_race_hispanic1    0.12395    0.36012   0.344  0.7307
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00351
## lmer.REML = 12407 Scale est. = 15.788 n = 2010
##
## 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)    -0.96767    2.02412  -0.478  0.6327
## mOFC_posvsneg_feedback_z  0.28617    0.19681   1.454  0.1461
## interview_age    0.03816    0.01588   2.403  0.0163 *
## race.ethnicity.5levelBlack 0.68305    0.79645   0.858  0.3912
## race.ethnicity.5levelMixed 1.53987    0.79531   1.936  0.0530 .
## race.ethnicity.5levelOther 0.66745    0.93948   0.710  0.4775
## race.ethnicity.5levelWhite 1.54852    0.73601   2.104  0.0355 *
## demo_race_hispanic1    0.09935    0.36026   0.276  0.7827
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) = 0.00547
## lmer.REML = 12435 Scale est. = 15.59 n = 2014

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) 2.87055 2.17887 1.317 0.1878
## lOFC_posvsneg_feedback_z 0.17988 0.22534 0.798 0.4248
## interview_age 0.01451 0.01621 0.895 0.3707
## race.ethnicity.5levelBlack -0.03104 1.00762 -0.031 0.9754
## race.ethnicity.5levelMixed 0.66698 1.00338 0.665 0.5063
## race.ethnicity.5levelOther -0.86137 1.11476 -0.773 0.4398
## race.ethnicity.5levelWhite 0.25512 0.94393 0.270 0.7870
## demo_race_hispanic1 0.96068 0.38039 2.525 0.0116 *
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0027
## lmer.REML = 12499 Scale est. = 13.601 n = 2003

##
## 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) 2.80356 2.17159 1.291 0.197
## mOFC_posvsneg_feedback_z 0.06810 0.18813 0.362 0.717
## interview_age 0.01505 0.01615 0.932 0.351
## race.ethnicity.5levelBlack -0.05313 1.00545 -0.053 0.958
## race.ethnicity.5levelMixed 0.70071 1.00083 0.700 0.484
## race.ethnicity.5levelOther -0.83480 1.11175 -0.751 0.453
## race.ethnicity.5levelWhite 0.25642 0.94229 0.272 0.786
## demo_race_hispanic1 0.94940 0.37740 2.516 0.012 *
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00278
## lmer.REML = 12550 Scale est. = 13.64 n = 2012
```

### 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)    -0.28402    1.84169  -0.154   0.8774
## bisbas_ss_basm_rr -0.01772    0.04412  -0.402   0.6879
## interview_age     0.03766    0.01412   2.667   0.0077 **
## race.ethnicity.5levelBlack  0.25551    0.71510   0.357   0.7209
## race.ethnicity.5levelMixed  1.34417    0.72065   1.865   0.0623 .
## race.ethnicity.5levelOther  0.40110    0.83194   0.482   0.6298
## race.ethnicity.5levelWhite  1.03255    0.66784   1.546   0.1222
## demo_race_hispanic1    0.26718    0.32301   0.827   0.4082
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00385
## lmer.REML = 16155 Scale est. = 17.08      n = 2613
```

#### 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)     3.224382    1.881622   1.714   0.0867 .
## bisbas_ss_basm_rr -0.062272    0.044778  -1.391   0.1644
## interview_age     0.019325    0.013946   1.386   0.1659
## race.ethnicity.5levelBlack -0.516753    0.785041  -0.658   0.5104
## race.ethnicity.5levelMixed  0.500363    0.785415   0.637   0.5241
## race.ethnicity.5levelOther -0.777057    0.884180  -0.879   0.3796
## race.ethnicity.5levelWhite -0.001334    0.734923  -0.002   0.9986
## demo_race_hispanic1    0.627179    0.324501   1.933   0.0534 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00177
## lmer.REML = 17700 Scale est. = 15.925      n = 2830
```



### 3.10 Model: CBCL internalizing factor ~ MID Reaction Time

#### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ rt_diff_large_neutral_z + interview_age +
##   race.ethnicity.5level + demo_race_hispanic
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.76469    1.96215  -0.390  0.69678
## rt_diff_large_neutral_z    0.08900    0.12273   0.725  0.46845
## interview_age     0.04063    0.01548   2.625  0.00873 **
## race.ethnicity.5levelBlack  0.19161    0.76490   0.251  0.80222
## race.ethnicity.5levelMixed  1.00178    0.76537   1.309  0.19071
## race.ethnicity.5levelOther  0.39482    0.88392   0.447  0.65516
## race.ethnicity.5levelWhite  0.99430    0.70794   1.404  0.16032
## demo_race_hispanic1      0.25243    0.34970   0.722  0.47047
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00363
## lmer.REML = 13477 Scale est. = 16.697    n = 2179

##
## 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)    -0.77702    1.95961  -0.397  0.6918
## rt_diff_large_small_z    0.14688    0.11773   1.248  0.2123
## interview_age     0.04055    0.01547   2.622  0.0088 **
## race.ethnicity.5levelBlack  0.22132    0.76478   0.289  0.7723
## race.ethnicity.5levelMixed  1.03140    0.76538   1.348  0.1779
## race.ethnicity.5levelOther  0.42040    0.88362   0.476  0.6343
## race.ethnicity.5levelWhite  1.02009    0.70762   1.442  0.1496
## demo_race_hispanic1      0.24694    0.34946   0.707  0.4799
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0041
## lmer.REML = 13476 Scale est. = 16.677    n = 2179
```

## 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)      2.97192    2.06219   1.441   0.1497
## rt_diff_large_neutral_z -0.07996    0.12321  -0.649   0.5164
## interview_age      0.01937    0.01530   1.266   0.2056
## race.ethnicity.5levelBlack -0.71967    0.93831  -0.767   0.4432
## race.ethnicity.5levelMixed -0.09994    0.93920  -0.106   0.9153
## race.ethnicity.5levelOther -1.27883    1.03906  -1.231   0.2185
## race.ethnicity.5levelWhite -0.40678    0.88195  -0.461   0.6447
## demo_race_hispanic1      0.74914    0.35964   2.083   0.0374 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = -0.00064
## lmer.REML = 14119 Scale est. = 12.38      n = 2262
##
## 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)      2.99074    2.05972   1.452   0.1466
## rt_diff_large_small_z -0.16662    0.12411  -1.343   0.1795
## interview_age      0.01908    0.01528   1.249   0.2119
## race.ethnicity.5levelBlack -0.68411    0.93842  -0.729   0.4661
## race.ethnicity.5levelMixed -0.08892    0.93882  -0.095   0.9245
## race.ethnicity.5levelOther -1.27577    1.03877  -1.228   0.2195
## race.ethnicity.5levelWhite -0.39841    0.88173  -0.452   0.6514
## demo_race_hispanic1      0.76807    0.35969   2.135   0.0328 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.000124
## lmer.REML = 14118 Scale est. = 12.336      n = 2262
```

## 4—Int~Puberty x Reward—

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

#### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_rvsnt_ant_z +
##   race.ethnicity.5level + demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.77200    2.04095   0.378   0.705
## PDS_score         0.93801    0.17923   5.234 1.84e-07 ***
## accumbens_rvsnt_ant_z 0.13655    0.41196   0.331   0.740
## race.ethnicity.5levelBlack -0.31095    0.79209  -0.393   0.695
## race.ethnicity.5levelMixed  0.99979    0.78464   1.274   0.203
## race.ethnicity.5levelOther  0.31596    0.92933   0.340   0.734
## race.ethnicity.5levelWhite  1.14295    0.72391   1.579   0.115
## demo_race_hispanic1  0.10693    0.35665   0.300   0.764
## interview_age      0.01433    0.01658   0.864   0.388
## PDS_score:accumbens_rvsnt_ant_z -0.21652    0.22244  -0.973   0.330
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0181
## lmer.REML = 12381  Scale est. = 15.847    n = 2010
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * accumbens_rvsnt_ant_z +
##   race.ethnicity.5level + demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.455518    2.163755   1.135 0.256578
## PDS_score         0.889234    0.243100   3.658 0.000261 ***
## accumbens_rvsnt_ant_z 0.383249    0.411342   0.932 0.351601
## race.ethnicity.5levelBlack -0.384489    0.998857  -0.385 0.700331
## race.ethnicity.5levelMixed  0.598120    0.989122   0.605 0.545448
## race.ethnicity.5levelOther -0.775711    1.104137  -0.703 0.482418
## race.ethnicity.5levelWhite  0.225982    0.929938   0.243 0.808025
## demo_race_hispanic1  0.899102    0.377394   2.382 0.017293 *
## interview_age      0.008367    0.016274   0.514 0.607236
```

```
## PDS_score:accumbens_rvsnt_z -0.270590 0.271708 -0.996 0.319426
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00677
## lmer.REML = 12560 Scale est. = 13.505 n = 2014
```

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

### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_rvsnt_z + race.ethnicity.5level +
##   demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.95469   2.03804   0.468  0.6395
## PDS_score       0.91368   0.17921   5.098 3.75e-07 ***
## caudate_rvsnt_z 0.74877   0.33308   2.248  0.0247 *
## race.ethnicity.5levelBlack -0.24603 0.79297 -0.310 0.7564
## race.ethnicity.5levelMixed 1.03899 0.78470 1.324 0.1856
## race.ethnicity.5levelOther 0.36634 0.93107 0.393 0.6940
## race.ethnicity.5levelWhite 1.21556 0.72461 1.678 0.0936 .
## demo_race_hispanic1 0.10129 0.35622 0.284 0.7762
## interview_age   0.01267 0.01657 0.765 0.4444
## PDS_score:caudate_rvsnt_z -0.44212 0.18304 -2.415 0.0158 *
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0188
## lmer.REML = 12417 Scale est. = 16.384 n = 2014
```

### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * caudate_rvsnt_z + race.ethnicity.5level +
##   demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.329478 2.163969 1.076 0.281840
## PDS_score       0.893128 0.244906 3.647 0.000272 ***
## caudate_rvsnt_z -0.084803 0.356195 -0.238 0.811843
```

```
## race.ethnicity.5levelBlack -0.281789 1.001168 -0.281 0.778386
## race.ethnicity.5levelMixed 0.683120 0.991977 0.689 0.491126
## race.ethnicity.5levelOther -0.859636 1.106710 -0.777 0.437398
## race.ethnicity.5levelWhite 0.294290 0.933555 0.315 0.752616
## demo_race_hispanic1 0.986004 0.380766 2.590 0.009680 **
## interview_age 0.009087 0.016287 0.558 0.576943
## PDS_score:caudate_rvsnt_ant_z 0.173998 0.245695 0.708 0.478913
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00741
## lmer.REML = 12592 Scale est. = 12.577 n = 2018
```

### 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_rvsnt_ant_z + race.ethnicity.5level +
##   demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.85569    2.03719   0.420  0.6745
## PDS_score       0.92594    0.17910   5.170 2.57e-07 ***
## putamen_rvsnt_ant_z 0.51517    0.33779   1.525  0.1274
## race.ethnicity.5levelBlack -0.27463    0.79368  -0.346  0.7294
## race.ethnicity.5levelMixed  1.01544    0.78561   1.293  0.1963
## race.ethnicity.5levelOther  0.31711    0.93009   0.341  0.7332
## race.ethnicity.5levelWhite  1.21262    0.72506   1.672  0.0946 .
## demo_race_hispanic1    0.09662    0.35647   0.271  0.7864
## interview_age    0.01346    0.01656   0.813  0.4164
## PDS_score:putamen_rvsnt_ant_z -0.33513    0.18396  -1.822  0.0686 .
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.018
## lmer.REML = 12418 Scale est. = 16.013 n = 2014
```

#### Males

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

```
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.53921    2.16562   1.173 0.241133
## PDS_score         0.92368    0.24530   3.765 0.000171 ***
## putamen_rvsnt_z   0.28357    0.36927   0.768 0.442633
## race.ethnicity.5levelBlack -0.36352    1.00110  -0.363 0.716553
## race.ethnicity.5levelMixed  0.67823    0.99153   0.684 0.494037
## race.ethnicity.5levelOther -0.79158    1.10784  -0.715 0.474986
## race.ethnicity.5levelWhite  0.28345    0.93340   0.304 0.761410
## demo_race_hispanic1  0.92766    0.37746   2.458 0.014071 *
## interview_age      0.00711    0.01630   0.436 0.662637
## PDS_score:putamen_rvsnt_z -0.23069    0.25278  -0.913 0.361574
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0075
## lmer.REML = 12585 Scale est. = 12.574    n = 2017
```

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

##### Females

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * lOFC_rvsnt_z + race.ethnicity.5level +
##   demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.54072    2.05077   0.264  0.7921
## PDS_score         0.88175    0.18133   4.863 1.25e-06 ***
## lOFC_rvsnt_z      0.62047    0.49823   1.245  0.2132
## race.ethnicity.5levelBlack  0.03954    0.80302   0.049  0.9607
## race.ethnicity.5levelMixed  1.30077    0.79355   1.639  0.1013
## race.ethnicity.5levelOther  0.67842    0.93727   0.724  0.4693
## race.ethnicity.5levelWhite  1.46816    0.73318   2.002  0.0454 *
## demo_race_hispanic1  0.08453    0.35856   0.236  0.8136
## interview_age      0.01455    0.01665   0.874  0.3822
## PDS_score:lOFC_rvsnt_z -0.36763    0.27263  -1.348  0.1777
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0157
## lmer.REML = 12340 Scale est. = 15.727    n = 2001
```

##### 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)      2.19443    2.15958   1.016  0.30969
## PDS_score         0.78739    0.24505   3.213  0.00133 **
## lOFC_rvsn_ant_z   -0.06796    0.51328  -0.132  0.89468
## race.ethnicity.5levelBlack -0.45434    1.00652  -0.451  0.65175
## race.ethnicity.5levelMixed  0.67177    0.99634   0.674  0.50024
## race.ethnicity.5levelOther -0.87011    1.10587  -0.787  0.43149
## race.ethnicity.5levelWhite  0.22466    0.93808   0.239  0.81075
## demo_race_hispanic1    0.93966    0.37871   2.481  0.01318 *
## interview_age       0.01162    0.01619   0.718  0.47293
## PDS_score:lOFC_rvsn_ant_z -0.05944    0.35126  -0.169  0.86565
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00605
## lmer.REML = 12460 Scale est. = 12.451    n = 2003
```

## 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)      0.42146    2.04914   0.206  0.8371
## PDS_score         0.88874    0.18142   4.899 1.04e-06 ***
## mOFC_rvsn_ant_z   0.71722    0.43302   1.656  0.0978 .
## race.ethnicity.5levelBlack  0.04807    0.80239   0.060  0.9522
## race.ethnicity.5levelMixed  1.30840    0.79473   1.646  0.0999 .
## race.ethnicity.5levelOther  0.69313    0.93547   0.741  0.4588
## race.ethnicity.5levelWhite  1.52006    0.73372   2.072  0.0384 *
## demo_race_hispanic1    0.07873    0.35818   0.220  0.8260
## interview_age       0.01508    0.01662   0.907  0.3645
## PDS_score:mOFC_rvsn_ant_z -0.28976    0.23681  -1.224  0.2212
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) = 0.0171
## lmer.REML = 12345 Scale est. = 15.852 n = 2002
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score * mOFC_rvs_n_ant_z + race.ethnicity.5level +
## demo_race_hispanic + interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.17056    2.16561   1.002 0.316327
## PDS_score       0.88367    0.24506   3.606 0.000319 ***
## mOFC_rvs_n_ant_z 0.57277    0.42423   1.350 0.177124
## race.ethnicity.5levelBlack -0.35509    1.00926  -0.352 0.725000
## race.ethnicity.5levelMixed  0.60786    0.99944   0.608 0.543123
## race.ethnicity.5levelOther -0.85975    1.11024  -0.774 0.438800
## race.ethnicity.5levelWhite  0.18778    0.94161   0.199 0.841951
## demo_race_hispanic1  0.90296    0.37838   2.386 0.017109 *
## interview_age     0.01110    0.01625   0.683 0.494435
## PDS_score:mOFC_rvs_n_ant_z -0.56612    0.29454  -1.922 0.054742 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0097
## lmer.REML = 12520 Scale est. = 12.473 n = 2010
```

### 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)    0.732221    2.043733   0.358 0.7202
## PDS_score       0.897986    0.180161   4.984 6.75e-07
## accumbens_posvsneg_feedback_z 0.258370    0.434089   0.595 0.5518
## race.ethnicity.5levelBlack  -0.009524    0.801237  -0.012 0.9905
## race.ethnicity.5levelMixed  1.305136    0.792490   1.647 0.0997
## race.ethnicity.5levelOther  0.607052    0.933486   0.650 0.5156
## race.ethnicity.5levelWhite  1.434905    0.731666   1.961 0.0500
## demo_race_hispanic1  0.086535    0.358899   0.241 0.8095
```



```
## interview_age                0.012923    0.016589    0.779    0.4361
## PDS_score:accumbens_posvsneg_feedback_z -0.034845    0.235193   -0.148    0.8822
##
## (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) =  0.0162
## lmer.REML = 12385  Scale est. = 15.95    n = 2009
```

## 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)    2.878751   2.177441   1.322 0.186292
## PDS_score       0.911640   0.244066   3.735 0.000193
## accumbens_posvsneg_feedback_z 0.264996   0.468717   0.565 0.571888
## race.ethnicity.5levelBlack -0.437580   1.012377  -0.432 0.665621
## race.ethnicity.5levelMixed  0.677955   1.003409   0.676 0.499340
## race.ethnicity.5levelOther -0.851006   1.116987  -0.762 0.446224
## race.ethnicity.5levelWhite  0.273046   0.945801   0.289 0.772846
## demo_race_hispanic1    0.908780   0.377558   2.407 0.016174
## interview_age    0.004782   0.016360   0.292 0.770110
## PDS_score:accumbens_posvsneg_feedback_z -0.369607   0.335512  -1.102 0.270759
##
## (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) =  0.00807
## lmer.REML = 12592  Scale est. = 13.357    n = 2017
```

#### 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)      0.79441    2.04022   0.389  0.6970
## PDS_score         0.90585    0.17932   5.052 4.78e-07 ***
## caudate_posvsneg_feedback_z -0.56189    0.33878  -1.659  0.0974 .
## race.ethnicity.5levelBlack -0.08439    0.80103  -0.105  0.9161
## race.ethnicity.5levelMixed  1.21615    0.79183   1.536  0.1247
## race.ethnicity.5levelOther  0.51918    0.93338   0.556  0.5781
## race.ethnicity.5levelWhite  1.43132    0.73161   1.956  0.0506 .
## demo_race_hispanic1      0.15113    0.35791   0.422  0.6729
## interview_age          0.01242    0.01655   0.751  0.4529
## PDS_score:caudate_posvsneg_feedback_z 0.29937    0.18504   1.618  0.1059
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0173
## lmer.REML = 12390  Scale est. = 15.498    n = 2010
```

##### 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)      2.976186    2.175613   1.368 0.171473
## PDS_score         0.880627    0.244980   3.595 0.000333 ***
## caudate_posvsneg_feedback_z 0.228050    0.381493   0.598 0.550053
## race.ethnicity.5levelBlack -0.386586    1.002390  -0.386 0.699786
## race.ethnicity.5levelMixed  0.667064    0.991895   0.673 0.501334
## race.ethnicity.5levelOther -0.864330    1.106582  -0.781 0.434847
```

```
## race.ethnicity.5levelWhite          0.243423    0.934196    0.261 0.794451
## demo_race_hispanic1                 0.911520    0.376542    2.421 0.015576 *
## interview_age                       0.004248    0.016378    0.259 0.795363
## PDS_score:caudate_posvsneg_feedback_z -0.253038    0.269833   -0.938 0.348481
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00699
## lmer.REML = 12559  Scale est. = 13.907    n = 2010
```

#### 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)      1.16888    2.03565   0.574   0.566
## PDS_score         0.95437    0.17954   5.316 1.18e-07 ***
## putamen_posvsneg_feedback_z -0.56731    0.34726  -1.634   0.102
## race.ethnicity.5levelBlack -0.32326    0.79406  -0.407   0.684
## race.ethnicity.5levelMixed  1.04020    0.78627   1.323   0.186
## race.ethnicity.5levelOther  0.28592    0.93012   0.307   0.759
## race.ethnicity.5levelWhite  1.21883    0.72519   1.681   0.093 .
## demo_race_hispanic1      0.11739    0.35894   0.327   0.744
## interview_age        0.01033    0.01654   0.624   0.533
## PDS_score:putamen_posvsneg_feedback_z 0.28452    0.18772   1.516   0.130
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0176
## lmer.REML = 12393  Scale est. = 15.793    n = 2010
```

##### 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)      2.938805    2.176406   1.350 0.17707
```

```
## PDS_score 0.865453 0.245811 3.521 0.00044 ***
## putamen_posvsneg_feedback_z 0.118559 0.374689 0.316 0.75172
## race.ethnicity.5levelBlack -0.327828 1.003221 -0.327 0.74387
## race.ethnicity.5levelMixed 0.695975 0.992645 0.701 0.48330
## race.ethnicity.5levelOther -0.837104 1.107351 -0.756 0.44977
## race.ethnicity.5levelWhite 0.273448 0.934434 0.293 0.76983
## demo_race_hispanic1 0.857657 0.377115 2.274 0.02306 *
## interview_age 0.004621 0.016382 0.282 0.77794
## PDS_score:putamen_posvsneg_feedback_z -0.097198 0.261328 -0.372 0.70998
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00649
## lmer.REML = 12596 Scale est. = 14.374 n = 2015
```

#### 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) 0.92701 2.03846 0.455 0.649
## PDS_score 0.86852 0.18074 4.805 1.66e-06 ***
## lOFC_posvsneg_feedback_z -0.31213 0.56443 -0.553 0.580
## race.ethnicity.5levelBlack -0.19693 0.79360 -0.248 0.804
## race.ethnicity.5levelMixed 0.98903 0.78500 1.260 0.208
## race.ethnicity.5levelOther 0.28542 0.92850 0.307 0.759
## race.ethnicity.5levelWhite 1.18368 0.72395 1.635 0.102
## demo_race_hispanic1 0.12639 0.35805 0.353 0.724
## interview_age 0.01364 0.01659 0.822 0.411
## PDS_score:lOFC_posvsneg_feedback_z 0.17292 0.30096 0.575 0.566
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0137
## lmer.REML = 12386 Scale est. = 16.122 n = 2010
```

##### 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)      2.781066    2.173804   1.279 0.200921
## PDS_score         0.836270    0.245885   3.401 0.000684 ***
## lOFC_posvsneg_feedback_z -0.033326    0.566396  -0.059 0.953087
## race.ethnicity.5levelBlack -0.392572    1.011038  -0.388 0.697846
## race.ethnicity.5levelMixed  0.644283    1.000982   0.644 0.519876
## race.ethnicity.5levelOther -0.900011    1.112141  -0.809 0.418462
## race.ethnicity.5levelWhite  0.249360    0.941656   0.265 0.791184
## demo_race_hispanic1    0.913767    0.379284   2.409 0.016078 *
## interview_age         0.006473    0.016337   0.396 0.692002
## PDS_score:lOFC_posvsneg_feedback_z 0.168492    0.381253   0.442 0.658580
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00623
## lmer.REML = 12489  Scale est. = 13.559    n = 2003
```

#### 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)      0.74223    2.03903   0.364  0.7159
## PDS_score         0.89080    0.18011   4.946 8.21e-07 ***
## mOFC_posvsneg_feedback_z -0.49262    0.48540  -1.015  0.3103
## race.ethnicity.5levelBlack  0.05135    0.80109   0.064  0.9489
## race.ethnicity.5levelMixed  1.27777    0.79211   1.613  0.1069
## race.ethnicity.5levelOther  0.52956    0.93373   0.567  0.5707
## race.ethnicity.5levelWhite  1.44839    0.73158   1.980  0.0479 *
## demo_race_hispanic1    0.09621    0.35804   0.269  0.7882
## interview_age         0.01285    0.01655   0.776  0.4377
## PDS_score:mOFC_posvsneg_feedback_z 0.44003    0.25859   1.702  0.0890 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0172
## lmer.REML = 12411  Scale est. = 15.619    n = 2014
```

## 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)    2.720835   2.167351   1.255 0.209490
## PDS_score       0.840753   0.244719   3.436 0.000603 ***
## mOFC_posvsneg_feedback_z -0.073848   0.485874  -0.152 0.879210
## race.ethnicity.5levelBlack -0.413100   1.008785  -0.410 0.682214
## race.ethnicity.5levelMixed  0.683753   0.998355   0.685 0.493499
## race.ethnicity.5levelOther -0.865858   1.109137  -0.781 0.435095
## race.ethnicity.5levelWhite  0.257823   0.939937   0.274 0.783884
## demo_race_hispanic1    0.907199   0.376347   2.411 0.016019 *
## interview_age      0.006855   0.016289   0.421 0.673917
## PDS_score:mOFC_posvsneg_feedback_z 0.113739   0.334080   0.340 0.733549
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00642
## lmer.REML = 12540 Scale est. = 13.606    n = 2012
```

## 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)   -0.82007    2.00463  -0.409 0.68251
## PDS_score      2.07922    0.54268   3.831 0.00013 ***
## bisbas_ss_basm_rr  0.22482    0.10746   2.092 0.03653 *
## race.ethnicity.5levelBlack -0.20759    0.71808  -0.289 0.77253
## race.ethnicity.5levelMixed  1.23262    0.71707   1.719 0.08574 .
## race.ethnicity.5levelOther  0.33424    0.82728   0.404 0.68623
## race.ethnicity.5levelWhite  0.98373    0.66399   1.482 0.13858
## demo_race_hispanic1  0.25986    0.32109   0.809 0.41842
## interview_age    0.01402    0.01471   0.953 0.34071
## PDS_score:bisbas_ss_basm_rr -0.14543    0.05856  -2.484 0.01307 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.0143
## lmer.REML = 16130 Scale est. = 17.079 n = 2613

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)      2.48400    2.11797   1.173  0.2410
## PDS_score         1.32053    0.78208   1.688  0.0914 .
## bisbas_ss_basm_rr  0.02346    0.11928   0.197  0.8441
## race.ethnicity.5levelBlack -0.84910    0.78892  -1.076  0.2819
## race.ethnicity.5levelMixed  0.46370    0.78388   0.592  0.5542
## race.ethnicity.5levelOther -0.83182    0.88259  -0.942  0.3460
## race.ethnicity.5levelWhite -0.01519    0.73341  -0.021  0.9835
## demo_race_hispanic1  0.56831    0.32398   1.754  0.0795 .
## interview_age      0.01157    0.01408   0.822  0.4112
## PDS_score:bisbas_ss_basm_rr -0.06676    0.08247  -0.809  0.4183
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00511
## lmer.REML = 17691 Scale est. = 15.855 n = 2830
```

#### 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)      0.95157    1.97175   0.483  0.629
## PDS_score         0.99869    0.17495   5.709 1.3e-08 ***
## rt_diff_large_neutral_z  0.12193    0.31251   0.390  0.696
## race.ethnicity.5levelBlack -0.42743    0.76669  -0.557  0.577
## race.ethnicity.5levelMixed  0.79385    0.76032   1.044  0.297
## race.ethnicity.5levelOther  0.29260    0.87738   0.333  0.739
```

```
## race.ethnicity.5levelWhite      0.94302      0.70264      1.342      0.180
## demo_race_hispanic1            0.25469      0.34704      0.734      0.463
## interview_age                   0.01350      0.01609      0.839      0.402
## PDS_score:rt_diff_large_neutral_z -0.02866      0.17136     -0.167      0.867
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0171
## lmer.REML = 13448 Scale est. = 17.055    n = 2179
```

#### 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)      2.83647    2.05292   1.382 0.167209
## PDS_score         0.86126    0.22493   3.829 0.000132 ***
## rt_diff_large_neutral_z 0.76378    0.32201   2.372 0.017780 *
## race.ethnicity.5levelBlack -1.12357    0.94030  -1.195 0.232250
## race.ethnicity.5levelMixed -0.12755    0.93527  -0.136 0.891532
## race.ethnicity.5levelOther -1.39170    1.03455  -1.345 0.178690
## race.ethnicity.5levelWhite -0.40754    0.87819  -0.464 0.642644
## demo_race_hispanic1    0.70001    0.35802   1.955 0.050681 .
## interview_age        0.01138    0.01541   0.738 0.460374
## PDS_score:rt_diff_large_neutral_z -0.62851    0.22296  -2.819 0.004861 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00595
## lmer.REML = 14098 Scale est. = 12.135    n = 2262
```

### 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)                0.948396    1.969550    0.482    0.630
## PDS_score                   0.998096    0.174900    5.707 1.31e-08 ***
## rt_diff_large_small_z      0.131991    0.291413    0.453    0.651
## race.ethnicity.5levelBlack -0.398080    0.766670   -0.519    0.604
## race.ethnicity.5levelMixed  0.822991    0.760405    1.082    0.279
## race.ethnicity.5levelOther  0.318006    0.877059    0.363    0.717
## race.ethnicity.5levelWhite  0.967847    0.702348    1.378    0.168
## demo_race_hispanic1        0.251364    0.346794    0.725    0.469
## interview_age              0.013342    0.016080    0.830    0.407
## PDS_score:rt_diff_large_small_z 0.004203    0.159261    0.026    0.979
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0176
## lmer.REML = 13448 Scale est. = 17.019    n = 2179
```

#### 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)    3.046734   2.052414   1.484 0.137826
## PDS_score       0.863210   0.225290   3.832 0.000131 ***
## rt_diff_large_small_z 0.323943   0.327589   0.989 0.322832
## race.ethnicity.5levelBlack -1.088601   0.941799  -1.156 0.247855
## race.ethnicity.5levelMixed -0.155016   0.935945  -0.166 0.868467
## race.ethnicity.5levelOther -1.386062   1.035551  -1.338 0.180876
## race.ethnicity.5levelWhite -0.448114   0.878909  -0.510 0.610205
## demo_race_hispanic1    0.723235   0.358872   2.015 0.043992 *
## interview_age    0.009806   0.015408   0.636 0.524558
## PDS_score:rt_diff_large_small_z -0.361426   0.229120  -1.577 0.114832
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00522
## lmer.REML = 14102 Scale est. = 12.133    n = 2262
```

### 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_rvs_n_ant_z + race.ethnicity.5level + demo_race_hispanic +
##   interview_age
##
## Parametric coefficients:
##
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.181291   2.081064  -0.087  0.93059
## PDS_score       1.028257   0.190070   5.410 7.13e-08
## hormone_scr_ert_mean -0.002649   0.007808  -0.339  0.73446
## accumbens_rvs_n_ant_z  0.748352   0.395459   1.892  0.05860
## race.ethnicity.5levelBlack -0.489731   0.799326  -0.613  0.54016
## race.ethnicity.5levelMixed  0.901860   0.791070   1.140  0.25441
## race.ethnicity.5levelOther  0.025106   0.942731   0.027  0.97876
## race.ethnicity.5levelWhite  1.193196   0.725804   1.644  0.10035
## demo_race_hispanic1  0.059304   0.364861   0.163  0.87090
## interview_age     0.021642   0.017153   1.262  0.20721
## hormone_scr_ert_mean:accumbens_rvs_n_ant_z -0.025498   0.009632  -2.647  0.00818
##
## (Intercept)
## PDS_score          ***
## hormone_scr_ert_mean
## accumbens_rvs_n_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:accumbens_rvs_n_ant_z **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0241
## lmer.REML = 11374  Scale est. = 15.52    n = 1850
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##   accumbens_rvs_n_ant_z + race.ethnicity.5level + demo_race_hispanic +
##   interview_age
##
## Parametric coefficients:
##
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.731558   2.218974   1.231 0.218479
## PDS_score       0.941556   0.257207   3.661 0.000259
## hormone_scr_ert_mean  0.011798   0.009054   1.303 0.192752
## accumbens_rvs_n_ant_z  0.090278   0.411942   0.219 0.826555
```

```
## race.ethnicity.5levelBlack          -0.501684    1.041845   -0.482  0.630194
## race.ethnicity.5levelMixed           0.431402    1.029140    0.419  0.675128
## race.ethnicity.5levelOther          -0.752323    1.145798   -0.657  0.511524
## race.ethnicity.5levelWhite           0.279589    0.967968    0.289  0.772735
## demo_race_hispanic1                 0.745713    0.391612    1.904  0.057037
## interview_age                       0.003260    0.016842    0.194  0.846545
## hormone_scr_ert_mean:accumbens_rvsnt_z -0.006021    0.012170   -0.495  0.620844
##
## (Intercept)
## PDS_score                           ***
## hormone_scr_ert_mean
## accumbens_rvsnt_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:accumbens_rvsnt_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0058
## lmer.REML = 11641  Scale est. = 12.616    n = 1867
```

#### 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_rvsnt_z + race.ethnicity.5level + demo_race_hispanic +
##   interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.165775   2.091116   0.079   0.9368
## PDS_score       0.995050   0.190494   5.224 1.95e-07
## hormone_scr_ert_mean -0.002227   0.007845  -0.284   0.7765
## caudate_rvsnt_z    0.378963   0.306118   1.238   0.2159
## race.ethnicity.5levelBlack -0.474215   0.802532  -0.591   0.5547
## race.ethnicity.5levelMixed  0.913794   0.793343   1.152   0.2495
## race.ethnicity.5levelOther  0.066373   0.947244   0.070   0.9441
## race.ethnicity.5levelWhite  1.221957   0.728462   1.677   0.0936
## demo_race_hispanic1  0.023850   0.365429   0.065   0.9480
## interview_age      0.019016   0.017253   1.102   0.2705
## hormone_scr_ert_mean:caudate_rvsnt_z -0.009497   0.007717  -1.231   0.2186
##
```

```
## (Intercept)
## PDS_score ***
## hormone_scr_ert_mean
## caudate_rvsnt_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite .
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:caudate_rvsnt_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0196
## lmer.REML = 11425  Scale est. = 16.042    n = 1855
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##   caudate_rvsnt_ant_z + race.ethnicity.5level + demo_race_hispanic +
##   interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.683096   2.223564   1.207 0.227715
## PDS_score       0.958701   0.259708   3.691 0.000229
## hormone_scr_ert_mean 0.011834   0.009062   1.306 0.191751
## caudate_rvsnt_ant_z 0.379173   0.318703   1.190 0.234302
## race.ethnicity.5levelBlack -0.435280   1.042708 -0.417 0.676396
## race.ethnicity.5levelMixed  0.504033   1.029705   0.489 0.624551
## race.ethnicity.5levelOther -0.807830   1.145976 -0.705 0.480944
## race.ethnicity.5levelWhite  0.342370   0.969902   0.353 0.724133
## demo_race_hispanic1  0.814593   0.394821   2.063 0.039233
## interview_age    0.003252   0.016889   0.193 0.847332
## hormone_scr_ert_mean:caudate_rvsnt_ant_z -0.008757   0.009119 -0.960 0.337000
##
## (Intercept)
## PDS_score ***
## hormone_scr_ert_mean
## caudate_rvsnt_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite
## demo_race_hispanic1 *
## interview_age
## hormone_scr_ert_mean:caudate_rvsnt_ant_z
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00634
## lmer.REML = 11682  Scale est. = 12.616    n = 1872
```

#### 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_rvsnt_ant_z + race.ethnicity.5level + demo_race_hispanic +
##      interview_age
##
## Parametric coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.138727    2.090567   0.066   0.9471
## PDS_score         1.010336    0.190694   5.298 1.31e-07
## hormone_scr_ert_mean -0.002053    0.007858  -0.261   0.7939
## putamen_rvsnt_ant_z  0.229449    0.311016   0.738   0.4608
## race.ethnicity.5levelBlack -0.520634    0.802461  -0.649   0.5166
## race.ethnicity.5levelMixed  0.899355    0.793768   1.133   0.2574
## race.ethnicity.5levelOther  0.009675    0.945429   0.010   0.9918
## race.ethnicity.5levelWhite  1.227171    0.728365   1.685   0.0922
## demo_race_hispanic1    0.017266    0.365130   0.047   0.9623
## interview_age        0.019075    0.017255   1.105   0.2691
## hormone_scr_ert_mean:putamen_rvsnt_ant_z -0.006497    0.007955  -0.817   0.4142
##
## (Intercept)
## PDS_score          ***
## hormone_scr_ert_mean
## putamen_rvsnt_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite      .
## demo_race_hispanic1
## interview_age
## hormone_scr_ert_mean:putamen_rvsnt_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0202
## lmer.REML = 11414  Scale est. = 16.009    n = 1853
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##      putamen_rvsnt_ant_z + race.ethnicity.5level + demo_race_hispanic +
##      interview_age
##
## Parametric coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.822472   2.224804   1.269 0.204729
## PDS_score       0.970709   0.260034   3.733 0.000195
## hormone_scr_ert_mean 0.010804   0.009047   1.194 0.232522
## putamen_rvsnt_ant_z 0.035317   0.332133   0.106 0.915330
## race.ethnicity.5levelBlack -0.518482   1.042955  -0.497 0.619158
## race.ethnicity.5levelMixed  0.479308   1.030214   0.465 0.641806
## race.ethnicity.5levelOther -0.786175   1.147678  -0.685 0.493421
## race.ethnicity.5levelWhite  0.318837   0.970303   0.329 0.742498
## demo_race_hispanic1    0.766117   0.391575   1.957 0.050555
## interview_age         0.002391   0.016902   0.141 0.887499
## hormone_scr_ert_mean:putamen_rvsnt_ant_z -0.004326   0.009672  -0.447 0.654679
##
## (Intercept)
## PDS_score          ***
## hormone_scr_ert_mean
## putamen_rvsnt_ant_z
## race.ethnicity.5levelBlack
## race.ethnicity.5levelMixed
## race.ethnicity.5levelOther
## race.ethnicity.5levelWhite
## demo_race_hispanic1      .
## interview_age
## hormone_scr_ert_mean:putamen_rvsnt_ant_z
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00626
## lmer.REML = 11681 Scale est. = 12.707    n = 1872
```

## 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)    -0.190478   2.096649  -0.091
## PDS_score       0.960917   0.191780   5.011
## hormone_scr_ert_mean -0.001236  0.007857  -0.157
## accumbens_posvsneg_feedback_z  0.168432  0.424783   0.397
## race.ethnicity.5levelBlack -0.222052  0.810009  -0.274
## race.ethnicity.5levelMixed  1.183490  0.799554   1.480
## race.ethnicity.5levelOther  0.317332  0.947940   0.335
## race.ethnicity.5levelWhite  1.453078  0.734562   1.978
## demo_race_hispanic1  0.014620  0.368046   0.040
## interview_age    0.020263  0.017274   1.173
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z  0.001104  0.010674   0.103
##
##              Pr(>|t|)
## (Intercept)      0.9276
## PDS_score        5.95e-07 ***
## hormone_scr_ert_mean  0.8750
## accumbens_posvsneg_feedback_z  0.6918
## race.ethnicity.5levelBlack  0.7840
## race.ethnicity.5levelMixed  0.1390
## race.ethnicity.5levelOther  0.7378
## race.ethnicity.5levelWhite  0.0481 *
## demo_race_hispanic1  0.9683
## interview_age    0.2409
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z  0.9177
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0194
## lmer.REML = 11378 Scale est. = 16.001    n = 1848
```

## 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
## (Intercept)    3.2093646  2.2321742
## PDS_score       0.9702666  0.2581040
## hormone_scr_ert_mean  0.0097531  0.0090674
## accumbens_posvsneg_feedback_z -0.3649853  0.4096384
## race.ethnicity.5levelBlack -0.5738801  1.0575576
## race.ethnicity.5levelMixed  0.4784749  1.0451087
## race.ethnicity.5levelOther -0.9241075  1.1587736
```

```
## race.ethnicity.5levelWhite          0.2600827  0.9856752
## demo_race_hispanic1                 0.7865190  0.3919504
## interview_age                       0.0000917  0.0169152
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z 0.0056884  0.0120614
##                                     t value Pr(>|t|)
## (Intercept)                        1.438 0.150666
## PDS_score                          3.759 0.000176 ***
## hormone_scr_ert_mean               1.076 0.282233
## accumbens_posvsneg_feedback_z      -0.891 0.373048
## race.ethnicity.5levelBlack          -0.543 0.587438
## race.ethnicity.5levelMixed          0.458 0.647133
## race.ethnicity.5levelOther         -0.797 0.425270
## race.ethnicity.5levelWhite          0.264 0.791915
## demo_race_hispanic1                2.007 0.044928 *
## interview_age                      0.005 0.995675
## hormone_scr_ert_mean:accumbens_posvsneg_feedback_z 0.472 0.637251
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00633
## lmer.REML = 11692  Scale est. = 12.536    n = 1873
```

#### 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)                    -0.2182413   2.0973786  -0.104
## PDS_score                       0.9674477   0.1909243   5.067
## hormone_scr_ert_mean            -0.0004754   0.0078346  -0.061
## caudate_posvsneg_feedback_z     -0.1399113   0.3318573  -0.422
## race.ethnicity.5levelBlack       -0.2926293   0.8113753  -0.361
## race.ethnicity.5levelMixed       1.1277284   0.8007884   1.408
## race.ethnicity.5levelOther       0.2609206   0.9475744   0.275
## race.ethnicity.5levelWhite       1.4575625   0.7357842   1.981
## demo_race_hispanic1              0.0668360   0.3667756   0.182
## interview_age                   0.0202858   0.0172731   1.174
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.0013410   0.0084975   0.158
##                                     Pr(>|t|)
## (Intercept)                      0.9171
## PDS_score                         4.44e-07 ***
## hormone_scr_ert_mean              0.9516
```



```
## caudate_posvsneg_feedback_z          0.6734
## race.ethnicity.5levelBlack           0.7184
## race.ethnicity.5levelMixed           0.1592
## race.ethnicity.5levelOther           0.7831
## race.ethnicity.5levelWhite           0.0477 *
## demo_race_hispanic1                  0.8554
## interview_age                         0.2404
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.8746
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0196
## lmer.REML = 11385  Scale est. = 16.086    n = 1849
```

## 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)      3.2734218  2.2345926   1.465
## PDS_score         0.9313613  0.2593189   3.592
## hormone_scr_ert_mean 0.0096474  0.0091153   1.058
## caudate_posvsneg_feedback_z -0.1904534  0.3266384  -0.583
## race.ethnicity.5levelBlack -0.5006432  1.0460636  -0.479
## race.ethnicity.5levelMixed  0.5112134  1.0319437   0.495
## race.ethnicity.5levelOther -0.8595012  1.1485001  -0.748
## race.ethnicity.5levelWhite  0.2885792  0.9725685   0.297
## demo_race_hispanic1      0.7714012  0.3912138   1.972
## interview_age      -0.0004641  0.0169756  -0.027
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.0045107  0.0094310   0.478
##
##               Pr(>|t|)
## (Intercept)      0.143122
## PDS_score         0.000337 ***
## hormone_scr_ert_mean 0.290024
## caudate_posvsneg_feedback_z 0.559916
## race.ethnicity.5levelBlack 0.632282
## race.ethnicity.5levelMixed 0.620384
## race.ethnicity.5levelOther 0.454333
## race.ethnicity.5levelWhite 0.766715
## demo_race_hispanic1      0.048779 *
## interview_age      0.978191
## hormone_scr_ert_mean:caudate_posvsneg_feedback_z 0.632502
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
##
## R-sq.(adj) = 0.00561
## lmer.REML = 11649 Scale est. = 13.19 n = 1864
```

#### 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)                      0.118158    2.089886   0.057
## PDS_score                        1.024707    0.191144   5.361
## hormone_scr_ert_mean             -0.002045    0.007853  -0.260
## putamen_posvsneg_feedback_z      0.083296    0.337089   0.247
## race.ethnicity.5levelBlack       -0.486371    0.803308  -0.605
## race.ethnicity.5levelMixed       0.913244    0.793817   1.150
## race.ethnicity.5levelOther       -0.045591    0.944110  -0.048
## race.ethnicity.5levelWhite       1.224540    0.728436   1.681
## demo_race_hispanic1              0.100062    0.366661   0.273
## interview_age                    0.018886    0.017236   1.096
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z -0.005448    0.008453  -0.645
##                                     Pr(>|t|)
## (Intercept)                      0.9549
## PDS_score                        9.32e-08 ***
## hormone_scr_ert_mean              0.7946
## putamen_posvsneg_feedback_z      0.8049
## race.ethnicity.5levelBlack       0.5449
## race.ethnicity.5levelMixed       0.2501
## race.ethnicity.5levelOther       0.9615
## race.ethnicity.5levelWhite       0.0929 .
## demo_race_hispanic1              0.7850
## interview_age                    0.2734
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z 0.5193
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) = 0.0207
## lmer.REML = 11406 Scale est. = 16.487 n = 1852
```

##### 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)      3.222e+00  2.233e+00   1.443
## PDS_score         9.077e-01  2.588e-01   3.507
## hormone_scr_ert_mean  9.898e-03  9.102e-03   1.087
## putamen_posvsneg_feedback_z  6.944e-02  3.307e-01   0.210
## race.ethnicity.5levelBlack -4.320e-01  1.047e+00  -0.413
## race.ethnicity.5levelMixed  5.610e-01  1.033e+00   0.543
## race.ethnicity.5levelOther -8.051e-01  1.149e+00  -0.700
## race.ethnicity.5levelWhite  3.285e-01  9.728e-01   0.338
## demo_race_hispanic1      7.186e-01  3.918e-01   1.834
## interview_age      -9.080e-05  1.697e-02  -0.005
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z -7.763e-05  9.786e-03  -0.008
##
##              Pr(>|t|)
## (Intercept)      0.149262
## PDS_score         0.000463 ***
## hormone_scr_ert_mean  0.276976
## putamen_posvsneg_feedback_z  0.833722
## race.ethnicity.5levelBlack  0.679916
## race.ethnicity.5levelMixed  0.587093
## race.ethnicity.5levelOther  0.483756
## race.ethnicity.5levelWhite  0.735609
## demo_race_hispanic1  0.066837 .
## interview_age      0.995732
## hormone_scr_ert_mean:putamen_posvsneg_feedback_z  0.993671
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00537
## lmer.REML = 11684  Scale est. = 13.524    n = 1869

```

#### 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) -0.268446 2.100526 -0.128 0.8983
## PDS_score 0.953244 0.192624 4.949 8.15e-07 ***
## hormone_scr_ert_mean -0.001902 0.007873 -0.242 0.8091
## lOFC_rvs_n_ant_z 0.501329 0.495476 1.012 0.3118
## race.ethnicity.5levelBlack -0.166435 0.811719 -0.205 0.8376
## race.ethnicity.5levelMixed 1.195701 0.801185 1.492 0.1358
## race.ethnicity.5levelOther 0.403243 0.951844 0.424 0.6719
## race.ethnicity.5levelWhite 1.486237 0.735959 2.019 0.0436 *
## demo_race_hispanic1 0.002524 0.367034 0.007 0.9945
## interview_age 0.021066 0.017312 1.217 0.2238
## hormone_scr_ert_mean:lOFC_rvs_n_ant_z -0.009990 0.012957 -0.771 0.4408
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0189
## lmer.REML = 11345 Scale est. = 15.991 n = 1842
```

#### Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
## lOFC_rvs_n_ant_z + race.ethnicity.5level + demo_race_hispanic +
## interview_age
##
## Parametric coefficients:
## Estimate Std. Error t value Pr(>|t|)
## (Intercept) 2.661574 2.215272 1.201 0.22972
## PDS_score 0.842574 0.259871 3.242 0.00121 **
## hormone_scr_ert_mean 0.010894 0.009006 1.210 0.22658
## lOFC_rvs_n_ant_z 0.313675 0.467634 0.671 0.50245
## race.ethnicity.5levelBlack -0.609689 1.048009 -0.582 0.56080
## race.ethnicity.5levelMixed 0.455567 1.034061 0.441 0.65958
## race.ethnicity.5levelOther -0.861293 1.144960 -0.752 0.45200
## race.ethnicity.5levelWhite 0.241569 0.974216 0.248 0.80419
## demo_race_hispanic1 0.755810 0.391691 1.930 0.05381 .
## interview_age 0.005425 0.016777 0.323 0.74645
## hormone_scr_ert_mean:lOFC_rvs_n_ant_z -0.014912 0.012811 -1.164 0.24459
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00604
## lmer.REML = 11561 Scale est. = 12.61 n = 1859
```

#### 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_rvs_n_ant_z + race.ethnicity.5level + demo_race_hispanic +
##   interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.335356   2.103623  -0.159    0.873
## PDS_score       0.953065   0.192757   4.944 8.34e-07 ***
## hormone_scr_ert_mean -0.001117  0.007860  -0.142    0.887
## mOFC_rvs_n_ant_z  0.415906   0.424412   0.980    0.327
## race.ethnicity.5levelBlack -0.176200  0.811137  -0.217    0.828
## race.ethnicity.5levelMixed  1.170896  0.801983   1.460    0.144
## race.ethnicity.5levelOther  0.367373  0.949882   0.387    0.699
## race.ethnicity.5levelWhite  1.498526  0.736273   2.035    0.042 *
## demo_race_hispanic1 -0.004546  0.367034  -0.012    0.990
## interview_age     0.021341  0.017329   1.232    0.218
## hormone_scr_ert_mean:mOFC_rvs_n_ant_z -0.006879  0.010767  -0.639    0.523
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  0.019
## lmer.REML = 11351 Scale est. = 15.87      n = 1843
```

## Males

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## cbcl_scr_syn_internal_r ~ PDS_score + hormone_scr_ert_mean *
##   mOFC_rvs_n_ant_z + race.ethnicity.5level + demo_race_hispanic +
##   interview_age
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2.496560   2.227316   1.121 0.262483
## PDS_score       0.918440   0.260289   3.529 0.000428 ***
## hormone_scr_ert_mean  0.010672  0.009070   1.177 0.239497
## mOFC_rvs_n_ant_z -0.091310  0.403846  -0.226 0.821148
## race.ethnicity.5levelBlack -0.420739  1.053129  -0.400 0.689561
## race.ethnicity.5levelMixed  0.490566  1.039464   0.472 0.637024
## race.ethnicity.5levelOther -0.790655  1.152608  -0.686 0.492817
## race.ethnicity.5levelWhite  0.278907  0.980399   0.284 0.776072
## demo_race_hispanic1  0.712338  0.392943   1.813 0.070020 .
## interview_age     0.005702  0.016873   0.338 0.735450
## hormone_scr_ert_mean:mOFC_rvs_n_ant_z -0.002681  0.011440  -0.234 0.814748
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
##
## R-sq.(adj) = 0.00519
## lmer.REML = 11615 Scale est. = 12.518 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)    -0.044937   2.092752  -0.021
## PDS_score        0.925586   0.192200   4.816
## hormone_scr_ert_mean -0.001409   0.007855  -0.179
## lOFC_posvsneg_feedback_z 0.007051   0.551494   0.013
## race.ethnicity.5levelBlack -0.395454   0.802080  -0.493
## race.ethnicity.5levelMixed 0.886869   0.792606   1.119
## race.ethnicity.5levelOther -0.015041   0.943164  -0.016
## race.ethnicity.5levelWhite 1.204774   0.726589   1.658
## demo_race_hispanic1 0.062441   0.366832   0.170
## interview_age 0.021466   0.017291   1.241
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z -0.002902   0.014645  -0.198
##
##               Pr(>|t|)
## (Intercept)      0.9829
## PDS_score      1.59e-06 ***
## hormone_scr_ert_mean 0.8576
## lOFC_posvsneg_feedback_z 0.9898
## race.ethnicity.5levelBlack 0.6220
## race.ethnicity.5levelMixed 0.2633
## race.ethnicity.5levelOther 0.9873
## race.ethnicity.5levelWhite 0.0975 .
## demo_race_hispanic1 0.8649
## interview_age 0.2146
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z 0.8430
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.0166
## lmer.REML = 11373 Scale est. = 16.334 n = 1848
```

### 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)      3.132598   2.228475   1.406
## PDS_score         0.902886   0.260047   3.472
## hormone_scr_ert_mean 0.010987   0.009038   1.216
## lOFC_posvsneg_feedback_z 0.075070   0.526484   0.143
## race.ethnicity.5levelBlack -0.575538   1.057172  -0.544
## race.ethnicity.5levelMixed  0.469622   1.042176   0.451
## race.ethnicity.5levelOther -0.895749   1.154674  -0.776
## race.ethnicity.5levelWhite  0.271549   0.981503   0.277
## demo_race_hispanic1  0.763738   0.393804   1.939
## interview_age      0.001034   0.016891   0.061
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z 0.005022   0.014863   0.338
##
##               Pr(>|t|)
## (Intercept)      0.159977
## PDS_score         0.000528 ***
## hormone_scr_ert_mean 0.224303
## lOFC_posvsneg_feedback_z 0.886631
## race.ethnicity.5levelBlack 0.586223
## race.ethnicity.5levelMixed 0.652318
## race.ethnicity.5levelOther 0.437990
## race.ethnicity.5levelWhite 0.782067
## demo_race_hispanic1  0.052606 .
## interview_age      0.951180
## hormone_scr_ert_mean:lOFC_posvsneg_feedback_z 0.735490
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00464
## lmer.REML = 11580  Scale est. = 12.527    n = 1858

```

#### 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)                   -0.314760   2.093249  -0.150
## PDS_score                     0.954451   0.191597   4.982
## hormone_scr_ert_mean          -0.001444   0.007850  -0.184
## mOFC_posvsneg_feedback_z      0.425476   0.479556   0.887
## race.ethnicity.5levelBlack    -0.145210   0.809952  -0.179
## race.ethnicity.5levelMixed     1.225959   0.799258   1.534
## race.ethnicity.5levelOther     0.225314   0.948784   0.237
## race.ethnicity.5levelWhite     1.475471   0.734587   2.009
## demo_race_hispanic1           0.036169   0.366841   0.099
## interview_age                 0.021263   0.017250   1.233
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z -0.006730   0.012439  -0.541
##                                Pr(>|t|)
## (Intercept)                   0.8805
## PDS_score                     6.9e-07 ***
## hormone_scr_ert_mean          0.8540
## mOFC_posvsneg_feedback_z      0.3751
## race.ethnicity.5levelBlack    0.8577
## race.ethnicity.5levelMixed     0.1252
## race.ethnicity.5levelOther     0.8123
## race.ethnicity.5levelWhite     0.0447 *
## demo_race_hispanic1           0.9215
## interview_age                 0.2179
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 0.5886
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.019
## lmer.REML = 11407 Scale est. = 16.118    n = 1853

```

## 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)                 2.999888   2.221616   1.350
## PDS_score                   0.911077   0.259259   3.514
## hormone_scr_ert_mean         0.012363   0.009020   1.371
## mOFC_posvsneg_feedback_z    -0.464001   0.437954  -1.059
## race.ethnicity.5levelBlack  -0.655102   1.053972  -0.622
## race.ethnicity.5levelMixed   0.480853   1.039058   0.463
## race.ethnicity.5levelOther  -0.893475   1.151337  -0.776
## race.ethnicity.5levelWhite   0.254733   0.979137   0.260
## demo_race_hispanic1         0.766724   0.390613   1.963
## interview_age               0.001901   0.016837   0.113

```



```
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 0.018415 0.012444 1.480
## Pr(>|t|)
## (Intercept) 0.177079
## PDS_score 0.000452 ***
## hormone_scr_ert_mean 0.170648
## mOFC_posvsneg_feedback_z 0.289522
## race.ethnicity.5levelBlack 0.534311
## race.ethnicity.5levelMixed 0.643578
## race.ethnicity.5levelOther 0.437829
## race.ethnicity.5levelWhite 0.794769
## demo_race_hispanic1 0.049810 *
## interview_age 0.910138
## hormone_scr_ert_mean:mOFC_posvsneg_feedback_z 0.139086
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00579
## lmer.REML = 11612 Scale est. = 12.558 n = 1864
```

#### 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) -0.530598 2.090056 -0.254 0.800
## PDS_score 0.864135 0.169223 5.106 3.54e-07
## hormone_scr_ert_mean 0.026192 0.025996 1.008 0.314
## bisbas_ss_basm_rr 0.091454 0.107910 0.848 0.397
## race.ethnicity.5levelBlack -0.424060 0.728587 -0.582 0.561
## race.ethnicity.5levelMixed 1.164004 0.726406 1.602 0.109
## race.ethnicity.5levelOther 0.225036 0.843315 0.267 0.790
## race.ethnicity.5levelWhite 0.991807 0.669711 1.481 0.139
## demo_race_hispanic1 0.175401 0.330640 0.530 0.596
## interview_age 0.021104 0.015400 1.370 0.171
## hormone_scr_ert_mean:bisbas_ss_basm_rr -0.003168 0.002824 -1.122 0.262
##
## (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) =  0.0149
## lmer.REML = 14837  Scale est. = 17.701    n = 2402
```

## 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)    3.348717   2.120258   1.579  0.11437
## PDS_score       0.768346   0.207688   3.700  0.00022
## hormone_scr_ert_mean 0.020069   0.028073   0.715  0.47473
## bisbas_ss_basm_rr -0.023059   0.107484  -0.215  0.83014
## race.ethnicity.5levelBlack -0.948772   0.811286  -1.169  0.24232
## race.ethnicity.5levelMixed  0.307208   0.803385   0.382  0.70220
## race.ethnicity.5levelOther -0.683594   0.902876  -0.757  0.44904
## race.ethnicity.5levelWhite  0.041298   0.751295   0.055  0.95617
## demo_race_hispanic1  0.404732   0.332297   1.218  0.22334
## interview_age     0.005281   0.014439   0.366  0.71460
## hormone_scr_ert_mean:bisbas_ss_basm_rr -0.001311   0.003061  -0.428  0.66839
##
## (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) =  0.00346
## lmer.REML = 16373  Scale est. = 14.305    n = 2627
```

## 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)      0.039314   2.026226   0.019
## PDS_score         1.063347   0.186331   5.707
## hormone_scr_ert_mean -0.002558   0.007693  -0.333
## rt_diff_large_neutral_z -0.282272   0.292040  -0.967
## race.ethnicity.5levelBlack -0.664826   0.776886  -0.856
## race.ethnicity.5levelMixed  0.645403   0.769617   0.839
## race.ethnicity.5levelOther  0.057359   0.891157   0.064
## race.ethnicity.5levelWhite  0.922120   0.707218   1.304
## demo_race_hispanic1    0.202435   0.355969   0.569
## interview_age        0.021392   0.016782   1.275
## hormone_scr_ert_mean:rt_diff_large_neutral_z  0.012999   0.007525   1.728
##               Pr(>|t|)
## (Intercept)           0.9845
## PDS_score             1.32e-08 ***
## hormone_scr_ert_mean    0.7395
## rt_diff_large_neutral_z  0.3339
## race.ethnicity.5levelBlack  0.3922
## race.ethnicity.5levelMixed  0.4018
## race.ethnicity.5levelOther  0.9487
## race.ethnicity.5levelWhite  0.1924
## demo_race_hispanic1      0.5696
## interview_age           0.2026
## hormone_scr_ert_mean:rt_diff_large_neutral_z  0.0842 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  0.0215
## lmer.REML = 12403  Scale est. = 16.792    n = 2011
```

### 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)      3.198511    2.092217   1.529
## PDS_score         0.930405    0.236663   3.931
## hormone_scr_ert_mean 0.014041    0.008397   1.672
## rt_diff_large_neutral_z -0.005543    0.296296  -0.019
## race.ethnicity.5levelBlack -1.162362    0.979840  -1.186
## race.ethnicity.5levelMixed -0.178371    0.972383  -0.183
## race.ethnicity.5levelOther -1.268748    1.071979  -1.184
## race.ethnicity.5levelWhite -0.379270    0.915079  -0.414
## demo_race_hispanic1      0.538766    0.367909   1.464
## interview_age         0.004539    0.015822   0.287
## hormone_scr_ert_mean:rt_diff_large_neutral_z -0.001282    0.008319  -0.154
##
##              Pr(>|t|)
## (Intercept)         0.1265
## PDS_score            8.72e-05 ***
## hormone_scr_ert_mean 0.0947 .
## rt_diff_large_neutral_z 0.9851
## race.ethnicity.5levelBlack 0.2356
## race.ethnicity.5levelMixed 0.8545
## race.ethnicity.5levelOther 0.2367
## race.ethnicity.5levelWhite 0.6786
## demo_race_hispanic1      0.1432
## interview_age         0.7742
## hormone_scr_ert_mean:rt_diff_large_neutral_z 0.8775
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) = 0.00301
## lmer.REML = 13114 Scale est. = 11.135    n = 2108
```

#### 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)    -0.070043    2.023009  -0.035
## PDS_score       1.065072    0.186270   5.718
## hormone_scr_ert_mean -0.001710    0.007682  -0.223
## rt_diff_large_small_z -0.014365    0.276745  -0.052
```

```

## race.ethnicity.5levelBlack      -0.615144    0.776967   -0.792
## race.ethnicity.5levelMixed      0.687679    0.770018    0.893
## race.ethnicity.5levelOther      0.088308    0.891011    0.099
## race.ethnicity.5levelWhite      0.958944    0.707178    1.356
## demo_race_hispanic1             0.178810    0.355703    0.503
## interview_age                   0.021788    0.016768    1.299
## hormone_scr_ert_mean:rt_diff_large_small_z 0.008134    0.007337    1.109
##                                Pr(>|t|)
## (Intercept)                     0.972
## PDS_score                       1.24e-08 ***
## hormone_scr_ert_mean            0.824
## rt_diff_large_small_z           0.959
## race.ethnicity.5levelBlack      0.429
## race.ethnicity.5levelMixed      0.372
## race.ethnicity.5levelOther      0.921
## race.ethnicity.5levelWhite      0.175
## demo_race_hispanic1             0.615
## interview_age                   0.194
## hormone_scr_ert_mean:rt_diff_large_small_z 0.268
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.0226
## lmer.REML = 12402  Scale est. = 16.838    n = 2011

```

## 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)                  3.165433    2.090264    1.514
## PDS_score                     0.939039    0.236898    3.964
## hormone_scr_ert_mean          0.013675    0.008398    1.628
## rt_diff_large_small_z         0.154436    0.302065    0.511
## race.ethnicity.5levelBlack    -1.147194    0.979330   -1.171
## race.ethnicity.5levelMixed    -0.192253    0.971665   -0.198
## race.ethnicity.5levelOther    -1.265398    1.070963   -1.182
## race.ethnicity.5levelWhite    -0.384432    0.914220   -0.421
## demo_race_hispanic1           0.543519    0.368173    1.476
## interview_age                 0.004821    0.015803    0.305
## hormone_scr_ert_mean:rt_diff_large_small_z -0.007747    0.008768   -0.884
##                                Pr(>|t|)
## (Intercept)                   0.130
## PDS_score                     7.62e-05 ***
## hormone_scr_ert_mean          0.104

```

```

## rt_diff_large_small_z          0.609
## race.ethnicity.5levelBlack      0.242
## race.ethnicity.5levelMixed      0.843
## race.ethnicity.5levelOther      0.238
## race.ethnicity.5levelWhite      0.674
## demo_race_hispanic1            0.140
## interview_age                   0.760
## hormone_scr_ert_mean:rt_diff_large_small_z 0.377
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.00349
## lmer.REML = 13113  Scale est. = 11.048    n = 2108

```