Linear Models

Linear Model - 1.1 -> Random Effect

```
## Linear mixed-effects model fit by REML
##  Data: physiological_questionnaire_df
##        AIC      BIC   logLik
##   -58.31358 -48.5052 36.15679
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)   Residual
## StdDev:  0.02269256 0.04967875
##
## Fixed effects: PP ~ Day + NASA_summative
##                    Value   Std.Error DF    t-value p-value
## (Intercept)    -4.352620 0.030198445 22 -144.13393  0.0000
## DayDay1        -0.023210 0.024535823 22   -0.94596  0.3544
## DayDay2         0.006003 0.026452585 22    0.22692  0.8226
## DayDay3        -0.015243 0.023506612 22   -0.64846  0.5234
## NASA_summative -0.000308 0.000480807 22   -0.64023  0.5286
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.132
## DayDay2        -0.023  0.542
## DayDay3        -0.455  0.450  0.406
## NASA_summative -0.798 -0.298 -0.401  0.086
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -2.1876591 -0.5160909 -0.0451628  0.4964136  1.8175238
##
## Number of Observations: 35
## Number of Groups: 9


##                numDF denDF   F-value p-value
## (Intercept)        1    22 149860.26  <.0001
## Day                3    22      0.62  0.6122
## NASA_summative     1    22      0.41  0.5286
```

Linear Model - 1.2 -> Random Effect

```
## Linear mixed-effects model fit by REML
##   Data: physiological_questionnaire_df
##         AIC      BIC    logLik
##    4.868297 14.43937 4.565852
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:  0.08679923 0.1340434
##
## Fixed effects: E4_HR ~ Day + NASA_summative
##                     Value  Std.Error DF  t-value p-value
## (Intercept)      3.731664 0.09058913 21 41.19329  0.0000
## DayDay1          0.094234 0.06699697 21  1.40655  0.1742
## DayDay2         -0.092558 0.07290947 21 -1.26949  0.2182
## DayDay3          0.009559 0.06654384 21  0.14365  0.8871
## NASA_summative  -0.002097 0.00146275 21 -1.43373  0.1664
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.060
## DayDay2         0.053  0.555
## DayDay3        -0.475  0.389  0.332
## NASA_summative -0.809 -0.332 -0.440  0.177
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.6731979 -0.4189153  0.1115813  0.4660118  1.8285736
##
## Number of Observations: 34
## Number of Groups: 9


##                numDF denDF  F-value p-value
## (Intercept)        1    21 9550.352  <.0001
## Day                3    21    3.480  0.0341
## NASA_summative     1    21    2.056  0.1664
```

Linear Model - 1.3 -> Random Effect

```
## Linear mixed-effects model fit by REML
##  Data: physiological_questionnaire_df
##        AIC      BIC    logLik
##   54.23308 63.80415 -20.11654
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:  0.05842995 0.3499689
##
## Fixed effects: E4_EDA ~ Day + NASA_summative
##                    Value Std.Error DF    t-value p-value
## (Intercept)     0.5322751 0.1935055 21  2.7506970  0.0120
## DayDay1        -0.1328865 0.1714113 21 -0.7752495  0.4468
## DayDay2         0.1145473 0.1835891 21  0.6239328  0.5394
## DayDay3         0.0035865 0.1713740 21  0.0209277  0.9835
## NASA_summative -0.0022356 0.0030563 21 -0.7314784  0.4726
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.195
## DayDay2        -0.086  0.534
## DayDay3        -0.504  0.431  0.388
## NASA_summative -0.791 -0.271 -0.375  0.118
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -4.53062323 -0.01546878  0.14197328  0.34538751  0.92793404
##
## Number of Observations: 34
## Number of Groups: 9


##                numDF denDF  F-value p-value
## (Intercept)        1    21 39.22373  <.0001
## Day                3    21  0.72211  0.5500
## NASA_summative     1    21  0.53506  0.4726
```

Linear Model - 1.4 -> Random Effect

```
## Linear mixed-effects model fit by REML
##  Data: physiological_questionnaire_df
##        AIC      BIC    logLik
##   17.56876 26.10089 -1.784378
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:   0.1267035 0.1559499
##
## Fixed effects: iWatch_HR ~ Day + NASA_summative
##                    Value  Std.Error DF   t-value p-value
## (Intercept)     3.654514 0.12626879 18 28.942340  0.0000
## DayDay1         0.104205 0.08622757 18  1.208490  0.2425
## DayDay2        -0.022618 0.09484593 18 -0.238469  0.8142
## DayDay3         0.065977 0.08176418 18  0.806917  0.4302
## NASA_summative -0.002997 0.00187799 18 -1.596015  0.1279
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.060
## DayDay2         0.063  0.588
## DayDay3        -0.431  0.471  0.415
## NASA_summative -0.806 -0.333 -0.450  0.105
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -1.86618714 -0.39151222  0.09050824  0.51898404  1.74615396
##
## Number of Observations: 30
## Number of Groups: 8


##                numDF denDF  F-value p-value
## (Intercept)        1    18 4355.414  <.0001
## Day                3    18    1.731  0.1966
## NASA_summative     1    18    2.547  0.1279
```

Linear Model - 1.5 -> Random Effect

```
## Linear mixed-effects model fit by REML
##   Data: physiological_questionnaire_df
##         AIC      BIC     logLik
##    369.2323 379.0407 -177.6162
##
## Random effects:
##  Formula: ~1 | Participant_ID
##          (Intercept) Residual
## StdDev:     87.99181 47.18932
##
## Fixed effects: RR ~ Day + NASA_summative
##                    Value Std.Error DF   t-value p-value
## (Intercept)     827.0537  43.92582 22 18.828417  0.0000
## DayDay1           1.6644  23.88893 22  0.069673  0.9451
## DayDay2          19.0357  26.14564 22  0.728064  0.4743
## DayDay3         -20.7378  22.37600 22 -0.926787  0.3641
## NASA_summative   -0.2774   0.57206 22 -0.484964  0.6325
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1         0.002
## DayDay2         0.089  0.566
## DayDay3        -0.322  0.424  0.373
## NASA_summative -0.653 -0.365 -0.466  0.108
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -1.47592735 -0.52875728  0.02920536  0.57399103  1.89147003
##
## Number of Observations: 35
## Number of Groups: 9


##                numDF denDF  F-value p-value
## (Intercept)        1    22 710.3701  <.0001
## Day                3    22   0.6832  0.5718
## NASA_summative     1    22   0.2352  0.6325
```

Linear Model - 2.1 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##   Data: raw_rb_mean_df
##        AIC      BIC    logLik
##   8.207476 17.36564 1.896262
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:   0.1486837 0.1671509
##
## Fixed effects: PP_Raw ~ Day
##                 Value  Std.Error DF   t-value p-value
## (Intercept) -5.668519 0.07355390 25 -77.06620  0.0000
## DayDay1      0.105668 0.07741727 25   1.36492  0.1844
## DayDay2      0.016338 0.07741727 25   0.21104  0.8346
## DayDay3      0.043772 0.07879567 25   0.55552  0.5835
##  Correlation:
##         (Intr) DayDy1 DayDy2
## DayDay1 -0.562
## DayDay2 -0.562  0.534
## DayDay3 -0.536  0.509  0.509
##
## Standardized Within-Group Residuals:
##          Min           Q1          Med           Q3          Max
## -1.691344169 -0.473027583 -0.002778678  0.359745432  2.054884224
##
## Number of Observations: 38
## Number of Groups: 10


##             numDF denDF   F-value p-value
## (Intercept)     1    25 10667.368  <.0001
## Day             3    25     0.746  0.5346
```

Linear Model - 2.2 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##   Data: raw_rb_mean_df
##         AIC        BIC    logLik
##   -44.30006 -35.50564 28.15003
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)   Residual
## StdDev:   0.1012673 0.06343109
##
## Fixed effects: E4_HR_Raw ~ Day
##                 Value   Std.Error DF    t-value p-value
## (Intercept)  4.334676 0.03861833 23 112.24400  0.0000
## DayDay1     -0.032346 0.02946555 23  -1.09775  0.2837
## DayDay2      0.019632 0.03052471 23   0.64314  0.5265
## DayDay3     -0.000212 0.03108961 23  -0.00681  0.9946
##  Correlation:
##         (Intr) DayDy1 DayDy2
## DayDay1 -0.409
## DayDay2 -0.397  0.521
## DayDay3 -0.372  0.488  0.468
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med        Q3        Max
## -1.4511526 -0.5519462 -0.1399821  0.4686882  1.8872548
##
## Number of Observations: 36
## Number of Groups: 10


##             numDF denDF    F-value p-value
## (Intercept)     1    23 16418.984  <.0001
## Day             3    23     1.091  0.3728
```

Linear Model - 2.3 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##   Data: raw_rb_mean_df
##         AIC      BIC    logLik
##    99.00355 107.798 -43.50177
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:   0.6298319 0.6749252
##
## Fixed effects: E4_EDA_Raw ~ Day
##                  Value Std.Error DF   t-value p-value
## (Intercept) -1.5326157 0.3031470 23 -5.055685  0.0000
## DayDay1      0.0969698 0.3127006 23  0.310104  0.7593
## DayDay2     -0.1654830 0.3233038 23 -0.511850  0.6136
## DayDay3      0.3242422 0.3302824 23  0.981712  0.3365
##  Correlation:
##         (Intr) DayDy1 DayDy2
## DayDay1 -0.551
## DayDay2 -0.535  0.519
## DayDay3 -0.505  0.490  0.472
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -1.50599091 -0.66043288 -0.08693278  0.51833209  2.90658275
##
## Number of Observations: 36
## Number of Groups: 10


##              numDF denDF  F-value p-value
## (Intercept)      1    23 41.41102  <.0001
## Day              3    23  0.74746  0.5349
```

Linear Model - 2.4 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##   Data: raw_rb_mean_df
##          AIC        BIC    logLik
##    -35.75318 -27.54941 23.87659
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)    Residual
## StdDev:  0.09496066 0.06937745
##
## Fixed effects: iWatch_HR_Raw ~ Day
##                  Value  Std.Error DF   t-value p-value
## (Intercept)  4.314639 0.04171640 21 103.42788  0.0000
## DayDay1     -0.021575 0.03568073 21  -0.60468  0.5519
## DayDay2      0.031291 0.03568073 21   0.87697  0.3904
## DayDay3     -0.001601 0.03624336 21  -0.04417  0.9652
##  Correlation:
##         (Intr) DayDy1 DayDy2
## DayDay1 -0.496
## DayDay2 -0.496  0.580
## DayDay3 -0.471  0.551  0.551
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.4471429 -0.5496050 -0.1467693  0.6158468  1.7278043
##
## Number of Observations: 33
## Number of Groups: 9


##               numDF denDF   F-value p-value
## (Intercept)       1    21 16149.733 <.0001
## Day               3    21     0.889  0.4629
```

Linear Model - 2.5 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##  Data: rr_rb_df
##        AIC      BIC     logLik
##   381.8265 390.6209 -184.9132
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept) Residual
## StdDev:    91.90395 46.88521
##
## Fixed effects: RR ~ Day
##                 Value Std.Error DF   t-value p-value
## (Intercept) 782.3947  33.16269 23 23.592616  0.0000
## DayDay1      30.9632  21.79342 23  1.420757  0.1688
## DayDay2       4.0151  22.58709 23  0.177761  0.8605
## DayDay3      19.9012  22.98799 23  0.865719  0.3956
##  Correlation:
##         (Intr) DayDy1 DayDy2
## DayDay1 -0.353
## DayDay2 -0.343  0.521
## DayDay3 -0.320  0.487  0.468
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.7192780 -0.4915017  0.1269971  0.4879462  1.4949022
##
## Number of Observations: 36
## Number of Groups: 10


##             numDF denDF  F-value p-value
## (Intercept)     1    23 698.5064  <.0001
## Day             3    23   0.8726  0.4696
```