Linear Models

Linear Model - 1.1 -> Random Effect

```
## Linear mixed-effects model fit by REML
##  Data: physiological_questionnaire_df
##        AIC      BIC      logLik
##   14.93496 24.74334 -0.4674811
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:  0.08682519 0.1656069
##
## Fixed effects: PP ~ Day + NASA_summative
##                     Value  Std.Error DF    t-value p-value
## (Intercept)     0.21880165 0.10338344 22  2.1164091  0.0459
## DayDay1        -0.05893195 0.08199001 22 -0.7187699  0.4798
## DayDay2         0.02435050 0.08854942 22  0.2749934  0.7859
## DayDay3        -0.04747035 0.07837657 22 -0.6056702  0.5509
## NASA_summative -0.00111486 0.00164597 22 -0.6773240  0.5053
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.116
## DayDay2        -0.007  0.545
## DayDay3        -0.447  0.447  0.403
## NASA_summative -0.798 -0.306 -0.408  0.089
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -1.88477144 -0.63327315 -0.05803697  0.42465468  1.95266155
##
## Number of Observations: 35
## Number of Groups: 9


##                numDF denDF   F-value p-value
## (Intercept)        1    22 10.772243  0.0034
## Day                3    22  0.431792  0.7323
## NASA_summative     1    22  0.458768  0.5053
```

Linear Model - 1.2 -> Random Effect

```
## Linear mixed-effects model fit by REML
##  Data: physiological_questionnaire_df
##         AIC       BIC    logLik
##   -43.25787 -33.6868 28.62894
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)    Residual
## StdDev:  0.03823071 0.05835454
##
## Fixed effects: E4_HR ~ Day + NASA_summative
##                     Value  Std.Error DF    t-value p-value
## (Intercept)     0.05327880 0.03956276 21  1.3466907  0.1924
## DayDay1         0.04377095 0.02917627 21  1.5002242  0.1484
## DayDay2        -0.03048498 0.03175848 21 -0.9599006  0.3480
## DayDay3         0.00008747 0.02897555 21  0.0030187  0.9976
## NASA_summative -0.00119792 0.00063872 21 -1.8754891  0.0747
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.058
## DayDay2         0.055  0.555
## DayDay3        -0.474  0.388  0.331
## NASA_summative -0.809 -0.333 -0.440  0.178
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.6816784 -0.4096595  0.0748222  0.4810538  1.9916923
##
## Number of Observations: 34
## Number of Groups: 9


##                numDF denDF  F-value p-value
## (Intercept)        1    21 0.449266  0.5100
## Day                3    21 3.056692  0.0508
## NASA_summative     1    21 3.517459  0.0747
```

Linear Model - 1.3 -> Random Effect

```
## Linear mixed-effects model fit by REML
##  Data: physiological_questionnaire_df
##        AIC      BIC    logLik
##   93.70574 103.2768 -39.85287
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:   0.2850852 0.6535096
##
## Fixed effects: E4_EDA ~ Day + NASA_summative
##                     Value Std.Error DF    t-value p-value
## (Intercept)     0.04289281 0.4023095 21  0.1066165  0.9161
## DayDay1        -0.16193347 0.3234635 21 -0.5006237  0.6218
## DayDay2         0.29389524 0.3494999 21  0.8409023  0.4099
## DayDay3         0.08070899 0.3223402 21  0.2503845  0.8047
## NASA_summative -0.00211107 0.0064777 21 -0.3258954  0.7477
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.119
## DayDay2        -0.006  0.545
## DayDay3        -0.487  0.409  0.359
## NASA_summative -0.807 -0.305 -0.411  0.150
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -3.1007084 -0.3470698  0.2555366  0.4338179  1.3279901
##
## Number of Observations: 34
## Number of Groups: 9


##                 numDF denDF   F-value p-value
## (Intercept)         1    21 0.0539577  0.8186
## Day                 3    21 0.6769847  0.5758
## NASA_summative      1    21 0.1062078  0.7477
```

Linear Model - 1.4 -> Random Effect

```
## Linear mixed-effects model fit by REML
##   Data: physiological_questionnaire_df
##         AIC       BIC    logLik
##   -27.46111 -18.92898 20.73056
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)   Residual
## StdDev:  0.05679249 0.06183254
##
## Fixed effects: iWatch_HR ~ Day + NASA_summative
##                      Value  Std.Error DF    t-value p-value
## (Intercept)     0.03716317 0.05155605 18  0.7208305  0.4803
## DayDay1         0.03972275 0.03422782 18  1.1605399  0.2610
## DayDay2        -0.00347187 0.03767175 18 -0.0921610  0.9276
## DayDay3         0.02767142 0.03245595 18  0.8525838  0.4051
## NASA_summative -0.00129186 0.00075661 18 -1.7074228  0.1049
##  Correlation:
##                (Intr) DayDy1 DayDy2 DayDy3
## DayDay1        -0.052
## DayDay2         0.068  0.589
## DayDay3        -0.424  0.469  0.413
## NASA_summative -0.798 -0.334 -0.451  0.111
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.9118898 -0.3476800  0.0275027  0.4743025  1.9337990
##
## Number of Observations: 30
## Number of Groups: 8


##                numDF denDF  F-value p-value
## (Intercept)        1    18 1.269698  0.2746
## Day                3    18 1.575308  0.2301
## NASA_summative     1    18 2.915293  0.1049
```

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: transformed_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_Log ~ 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
## -1.691344176 -0.473027580 -0.002778675  0.359745441  2.054884241
##
## 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: transformed_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_Log ~ 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: transformed_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_Log ~ 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
## -1.50599090 -0.66043291 -0.08693279  0.51833206  2.90658267
##
## 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: transformed_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_Log ~ 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
```