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
##   -369.0309 -359.8728 190.5155
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)     Residual
## StdDev: 0.000597435 0.0006463988
##
## Fixed effects: PP_Raw ~ Day
##                     Value    Std.Error DF   t-value p-value
## (Intercept)  0.004010871 0.0002783451 25 14.409706  0.0000
## DayDay2     -0.000330285 0.0002890783 25 -1.142545  0.2641
## DayDay3     -0.000298709 0.0002994547 25 -0.997511  0.3281
## DayDay4     -0.000476035 0.0002994547 25 -1.589672  0.1245
##  Correlation:
##         (Intr) DayDy2 DayDy3
## DayDay2 -0.519
## DayDay3 -0.501  0.483
## DayDay4 -0.501  0.483  0.482
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -1.40784533 -0.50249013 -0.08419411  0.33714916  2.21169112
##
## Number of Observations: 38
## Number of Groups: 10


##              numDF denDF    F-value p-value
## (Intercept)      1    25 298.18002  <.0001
## Day              3    25   0.90928  0.4506
```

Linear Model - 2.2 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##   Data: raw_rb_mean_df
##        AIC      BIC    logLik
##   234.5029 243.2973 -111.2515
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept) Residual
## StdDev:    7.816469 4.962375
##
## Fixed effects: E4_HR_Raw ~ Day
##                Value Std.Error DF   t-value p-value
## (Intercept) 74.37656  2.927838 23 25.403236  0.0000
## DayDay2      3.93321  2.297955 23  1.711614  0.1004
## DayDay3      2.60739  2.399525 23  1.086626  0.2885
## DayDay4      2.52628  2.305052 23  1.095974  0.2844
##  Correlation:
##         (Intr) DayDy2 DayDy3
## DayDay2 -0.366
## DayDay3 -0.351  0.441
## DayDay4 -0.365  0.462  0.466
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.3637060 -0.5580683 -0.1525584  0.5701228  1.8958440
##
## Number of Observations: 36
## Number of Groups: 10


##             numDF denDF  F-value p-value
## (Intercept)     1    23 858.8382  <.0001
## Day             3    23   1.0406  0.3933
```

Linear Model - 2.3 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##   Data: raw_rb_mean_df
##        AIC      BIC    logLik
##   51.44266 60.23707 -19.72133
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept)  Residual
## StdDev:   0.2973181 0.3216493
##
## Fixed effects: E4_EDA_Raw ~ Day
##                  Value Std.Error DF   t-value p-value
## (Intercept)  0.4491980 0.1385122 23  3.243021  0.0036
## DayDay2     -0.2007228 0.1487305 23 -1.349574  0.1903
## DayDay3     -0.0062325 0.1548933 23 -0.040237  0.9683
## DayDay4     -0.1282369 0.1490152 23 -0.860562  0.3984
##  Correlation:
##        (Intr) DayDy2 DayDy3
## DayDay2 -0.502
## DayDay3 -0.482  0.445
## DayDay4 -0.501  0.465  0.464
##
## Standardized Within-Group Residuals:
##         Min          Q1         Med          Q3         Max
## -1.35211732 -0.45279591 -0.09430066  0.20949304  2.96637603
##
## Number of Observations: 36
## Number of Groups: 10


##             numDF denDF  F-value p-value
## (Intercept)     1    23 11.297105  0.0027
## Day             3    23  0.818692  0.4968
```

Linear Model - 2.4 -> Resting Baseline

```
## Linear mixed-effects model fit by REML
##  Data: raw_rb_mean_df
##        AIC      BIC    logLik
##   216.8586 225.0624 -102.4293
##
## Random effects:
##  Formula: ~1 | Participant_ID
##         (Intercept) Residual
## StdDev:    7.110863 5.471009
##
## Fixed effects: iWatch_HR_Raw ~ Day
##                Value Std.Error DF   t-value p-value
## (Intercept) 73.69167  2.990658 21 24.640622  0.0000
## DayDay2      4.10074  2.579058 21  1.590014  0.1268
## DayDay3      1.51060  2.688429 21  0.561888  0.5801
## DayDay4      1.52941  2.812642 21  0.543761  0.5923
##  Correlation:
##         (Intr) DayDy2 DayDy3
## DayDay2 -0.431
## DayDay3 -0.414  0.480
## DayDay4 -0.395  0.458  0.461
##
## Standardized Within-Group Residuals:
##        Min         Q1        Med         Q3        Max
## -1.3474649 -0.5809207 -0.1335975  0.5925223  1.7796433
##
## Number of Observations: 33
## Number of Groups: 9


##              numDF denDF  F-value p-value
## (Intercept)     1    21 868.8318  <.0001
## Day             3    21   0.8672  0.4736
```

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) 813.3578  32.62600 23 24.929744  0.0000
## DayDay2     -26.9481  21.71900 23 -1.240759  0.2272
## DayDay3     -11.0620  22.69451 23 -0.487431  0.6306
## DayDay4     -30.9632  21.79342 23 -1.420757  0.1688
##  Correlation:
##         (Intr) DayDy2 DayDy3
## DayDay2 -0.310
## DayDay3 -0.297  0.440
## DayDay4 -0.309  0.461  0.467
##
## 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
```