

# Writing Quality

## Linear Modelling for Normalized Error (Word Count)

Our Linear Model:

$$\text{NormalizedError}_{\text{WordCount}} = 1 + \text{Group} + \text{Session} + 1|\text{Subject}$$

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```
## Linear mixed-effects model fit by REML
## Data: full_nlp_df
##      AIC      BIC    logLik
## -204.4609 -186.4379 109.2305
##
## Random effects:
## Formula: ~1 | Subject
##      (Intercept)  Residual
## StdDev:  0.04656811 0.05946953
##
## Fixed effects: NormalizedErrorWC ~ 1 + Group + Session
##              Value Std.Error DF   t-value p-value
## (Intercept)  0.10368127 0.01981345 50   5.232872  0.0000
## GroupIL      0.00780069 0.02528057 47   0.308565  0.7590
## GroupBH     -0.00803297 0.02619113 47  -0.306706  0.7604
## GroupIH      0.00722271 0.02528057 47   0.285702  0.7764
## SessionDT   -0.03285201 0.01177672 50  -2.789572  0.0074
## Correlation:
##      (Intr) GropIL GropBH GropIH
## GroupIL   -0.715
## GroupBH   -0.690  0.541
## GroupIH   -0.715  0.560  0.541
## SessionDT -0.297  0.000  0.000  0.000
##
## Standardized Within-Group Residuals:
##      Min      Q1      Med      Q3      Max
## -1.3911950 -0.4905351 -0.1493562  0.4184875  4.4826830
##
## Number of Observations: 102
## Number of Groups: 51
```

## Linear Modelling for Normalized Error (Sentence Count)

Our Linear Model:

$$WritingQuality_{SentenceCount} = 1 + Group + Session + 1|Subject$$

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```
## Linear mixed-effects model fit by REML
## Data: full_nlp_df
##      AIC      BIC    logLik
## 363.1919 381.2149 -174.596
##
## Random effects:
## Formula: ~1 | Subject
##      (Intercept) Residual
## StdDev:    0.6499044 1.205128
##
## Fixed effects: NormalizedErrorSC ~ 1 + Group + Session
##              Value Std.Error DF   t-value p-value
## (Intercept)  1.9065737 0.3444583 50   5.534992  0.0000
## GroupIL      0.0741455 0.4318005 47   0.171712  0.8644
## GroupBH     -0.1762288 0.4473531 47  -0.393937  0.6954
## GroupIH      0.3255051 0.4318005 47   0.753832  0.4547
## SessionDT   -0.5463733 0.2386509 50  -2.289425  0.0263
## Correlation:
##      (Intr) GropIL GropBH GropIH
## GroupIL  -0.702
## GroupBH  -0.678  0.541
## GroupIH  -0.702  0.560  0.541
## SessionDT -0.346  0.000  0.000  0.000
##
## Standardized Within-Group Residuals:
##      Min      Q1      Med      Q3      Max
## -1.4658448 -0.5228518 -0.1307065  0.2781408  5.2578980
##
## Number of Observations: 102
## Number of Groups: 51
```

## Plotting Trait Levels





