Advanced Multilevel Modelling

Results

Multilevel modelling was used to analyze these data, because electrode sites were nested in trials that are nested in people. FRN was modeled as a function of neuroticism and feedback valence. I modeled this effect both as a three-way multilevel model and as a cross-classified model because it is unclear whether electrode sites were nested within trials, because they were common across trials. The model was estimated with an unstructured covariance matrix using the lme function from the nlme package (Pinheiro, Bates, DebRoy, Sarkar, & R Core Team, 2015) in R 3.4.1 (R Core Team, 2015). To see which model fit the data better, I compared model AIC, the absolute difference was greater than 10, providing evidence that one model is indeed favored over the other. Therefore, the model with the lower AIC (the cross-classified model) was chosen.

As shown in Figure 2, feedback valence had a positive relationship on FRN, b = 2.62, SE = 0.42, t(260) =6.26, p < .001, r = .38. Participants’ levels of neuroticism was also related to FRN, b = -3.03, SE = 1.31, t(260) = -2.30, p = .03, r = .21. Participants’ levels of neuroticism did moderate the relationship between feedback valence and FRN, b =-1.58, SE = 0.60, t(260) = -2/67, p = .01, r = .10. ICC for the model suggested that FRN was sufficiently clustered within people, ICC = .87.



Figure 2. Cross-classified model