Supplementary Materials

[B] Intercorrelations between dependent variables

Recall that one of the several advantages of multivariate statistical modelling in comparison with a sequence of univariate models is that the former explicitly accounts for correlations among dependent variables. This then allows for statistically informed restrictions on the coefficients and, more generally, for efficient estimates in the statistical sense. Further insights about the relationships between the set of chosen dependent variables can be made, for example, by comparing correlations between raw, residual and predicted (fitted) values. Here, Table B1 summarizes raw and partial correlations among the dependent variables, while Table B2 represents correlations between the fitted values and residual values.

Table B1. Correlation coefficients between the four dependent variables, raw (above main diagonal) and partial (below main diagonal).

	LandPosition	FirstFixDuration	TotalFixDuration	AvgPupilSize
LandPosition	–	0.09	0.22	–0.01
FirstFixDuration	–0.02	–	0.50	–0.03
TotalFixDuration	0.20	0.50	–	0.00
AvgPupilSize	–0.01	–0.03	0.01	–

Table B2. Correlation coefficients between the four dependent variables, using fitted (above main diagonal) and residual (below main diagonal) values of the final model.

	LandPosition	FirstFixDuration	TotalFixDuration	AvgPupilSize
LandPosition	–	0.31	0.50	0.00
FirstFixDuration	0.02	–	0.75	–0.06
TotalFixDuration	0.08	0.43	–	–0.02
AvgPupilSize	-0.05	-0.02	0.02	–

Table B1 shows a moderate correlationbetween FirstFixDuration and TotalFixDuration, which is expected. Interestingly, Table B2 shows that the correlation between the respective fitted values for these two variables is even higher (i.e., 0.75 vs. 0.50), and drops for the residuals (0.43). Similarly, the fitted value correlation between LandPosition and TotalFixDuration also increases to some degree (0.50 for fitted vs. 0.22 for raw and 0.20 for partial correlation). These increased correlations are most likely since TotalFixDuration shares predictors with both LandPosition (e.g., LaunchSite, NumOfWords, TargetLength, TrigraphCompetition) and FirstFixDuration (e.g., LaunchSite, NumOfWords, PrimeWordFreq, TargetLength, CosineSimilarity, SimilarityToContext, TypicalityToContext). In this case, common predictors will determine the common (or shared) variance of fitted values.

The increase in correlation strength of fitted (predicted) values in comparison with raw (and partial) values illustrates the advantage of using a multivariate approach, as such relationships would go unnoticed if we used a series of univariate models which assume independence of the dependent variables.