Supplemental Material S1. The full models with intercepts, coefficients, and error terms for accuracy and reaction time analyses in Experiments 1, 2, and 3.

The full models with intercepts, coefficients, and error terms for accuracy and reaction time analyses in Experiment 1 are represented as follows:

$$Accuracy_{ij} = \beta_0 + (\beta_1 \times gender) + (\beta_2 \times task) + (\beta_3 \times gender * task) + b_{0i} + b_{1j} + \varepsilon_{ij} \quad (1)$$

$$Reaction\ time_{ij} = \beta_0 + (\beta_1 \times gender) + (\beta_2 \times task) + (\beta_3 \times gender * task) + b_{0i} + b_{1j} + \varepsilon_{ij} \quad (2)$$

The full models with intercepts, coefficients, and error terms for accuracy and reaction time analyses in Experiments 2 and 3 are represented as follows:

$$Accuracy_{ij} = \beta_0 + (\beta_1 \times gender) + (\beta_2 \times task) + (\beta_3 \times congruence) + (\beta_4 \times gender * task) + (\beta_5 \times task * congruence) + (\beta_6 \times gender * congruence) + (\beta_7 \times gender * task * congruence) + b_{0i} + b_{1j} + \varepsilon_{ij} \quad (3)$$

$$Reaction\ time_{ij} = \beta_0 + (\beta_1 \times gender) + (\beta_2 \times task) + (\beta_3 \times congruence) + (\beta_4 \times gender * task) + (\beta_5 \times task * congruence) + (\beta_6 \times gender * congruence) + (\beta_7 \times gender * task * congruence) + b_{0i} + b_{1j} + \varepsilon_{ij} \quad (4)$$

In these models, β_0 represented the intercept, which was the predicted outcome when all other predictors were equal to 0. β_1, $\beta_2 \ldots \beta_7$ represented the coefficients for the three fixed factors and their interactions respectively. These coefficients reflected how much the outcome variable changed relative to a unit of change in the corresponding predictors. The random intercepts were represented as b_{0i} and b_{1j}, where i varied according to decoder participants and j varied according to test items. An error term (ε) was also included to account for the distance between the predicted value and the actual data point (i.e., residual).