

Accompanying Materials for “A Diffusion Model Decomposition of the Practice Effect” B: Results for the Variability Parameters

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In Appendix B we describe the posterior distributions of the three diffusion model parameters that quantify trial-to-trial variability. Ratcliff and colleagues introduced these trial-to-trial variabilities in order to account for certain key aspects of RT data. That is, the presence of variability in drift (η) and variability in starting point (s_z) allows the model to account for errors that are slower and faster than correct responses, respectively, whereas variability in T_{er} (s_t) allows the model to account for a relatively gentle rise in the leading edge of an RT distribution.

Variability in Drift Rate (η)

Figures 1 and 2 show the posterior distributions of the variability in drift rate η , separately for each block and stimulus type. As expected, parameter η is generally higher for words than for nonwords. For the accuracy stressed participants, the variability in drift for word stimuli appears to decrease with practice. For the speeded participants, no structural effect on η is present. The spread of the posterior distributions is large, especially for variability in word drift rates for the speeded participants.

Variability in Starting Point (s_z)

Figure 3 shows the posterior distribution of variability in starting point for each block. The estimates are stable over blocks and about equal for all participants.

Variability in Non-decision Time (s_t)

Figure 4 shows the posterior distribution of variability in non-decision time for each block. For participants A1, A2 and S2, s_t declines within the first 10 blocks of practice,

while, for participant S1, s_t does not structurally change with practice.

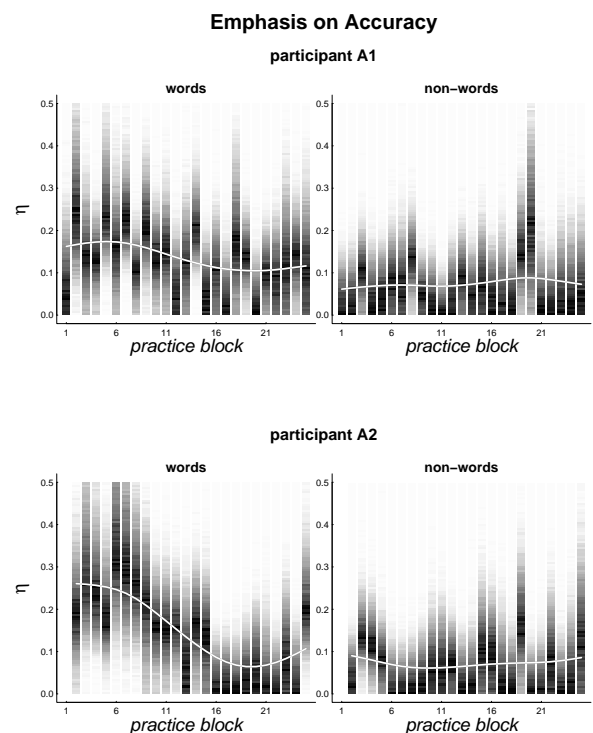


Figure 1. Posterior distributions of the variability in drift rate per stimulus type and across practice blocks (accuracy stressed participants). Dark colors represent high density. White lines are cubic smoothed splines through medians of posterior distributions.

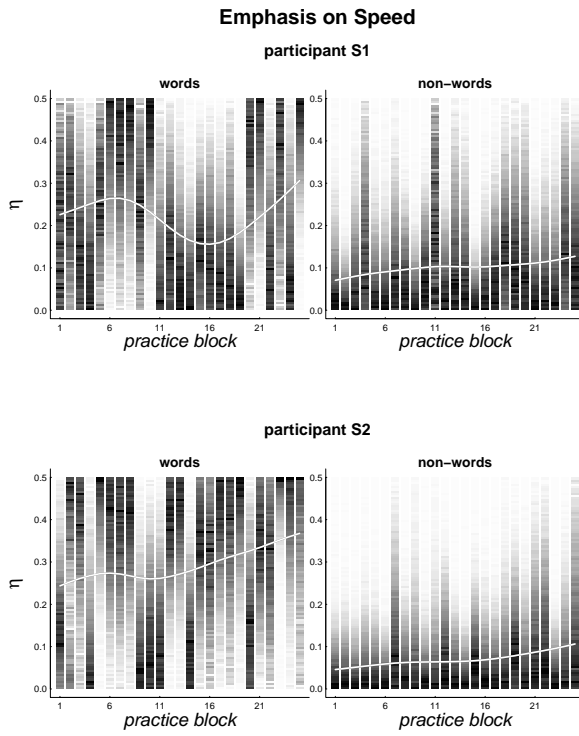


Figure 2. Posterior distributions of the variability in drift rate per stimulus type and across practice blocks (speed stressed participants). Dark colors represent high density. White lines are cubic smoothed splines through medians of posterior distributions.

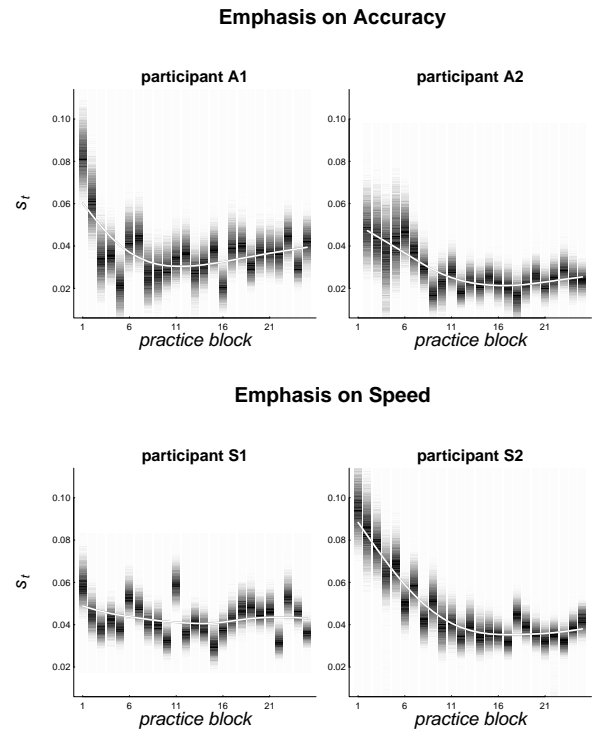


Figure 4. Posterior distributions of the variability of non-decision time across practice blocks. Dark colors represent high density. White lines are cubic smoothed splines through medians of posterior distributions.

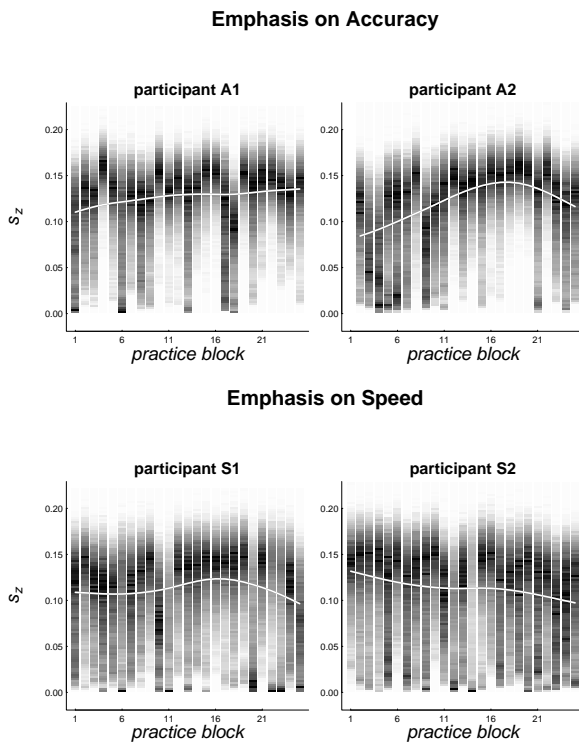


Figure 3. Posterior distributions of the variability of bias across practice blocks. Dark colors represent high density. White lines are cubic smoothed splines through medians of posterior distributions.