Supplementary Material

We repeated our analyses with alternative parameter constraints for SLAM, called SLAM-2, investigating whether our improved fits relied too much on the lexical-motor route. The new parameters were constrained such that SL and LA max = .04, LM max = .02[1], AM max = .5, and they were free to vary below those values (min = .0001). We compared a SLAM-2 map with 2,321 points against the SP map (Figure S1). The results were qualitatively similar to our initial SLAM model results, with good fits in general, and notable improvements specifically for the Conduction group (Figure S2), accompanied by high LA weights and low AM weights. Removing the LM route (i.e., fixing LM = .0001) created a 3-parameter model with a 745-point map, which still failed to outperform the 2-parameter SP model (Figure S3). Thus, the critical component for the observed fit improvements is the separate phonological feedback to the lexical layer from auditory units.
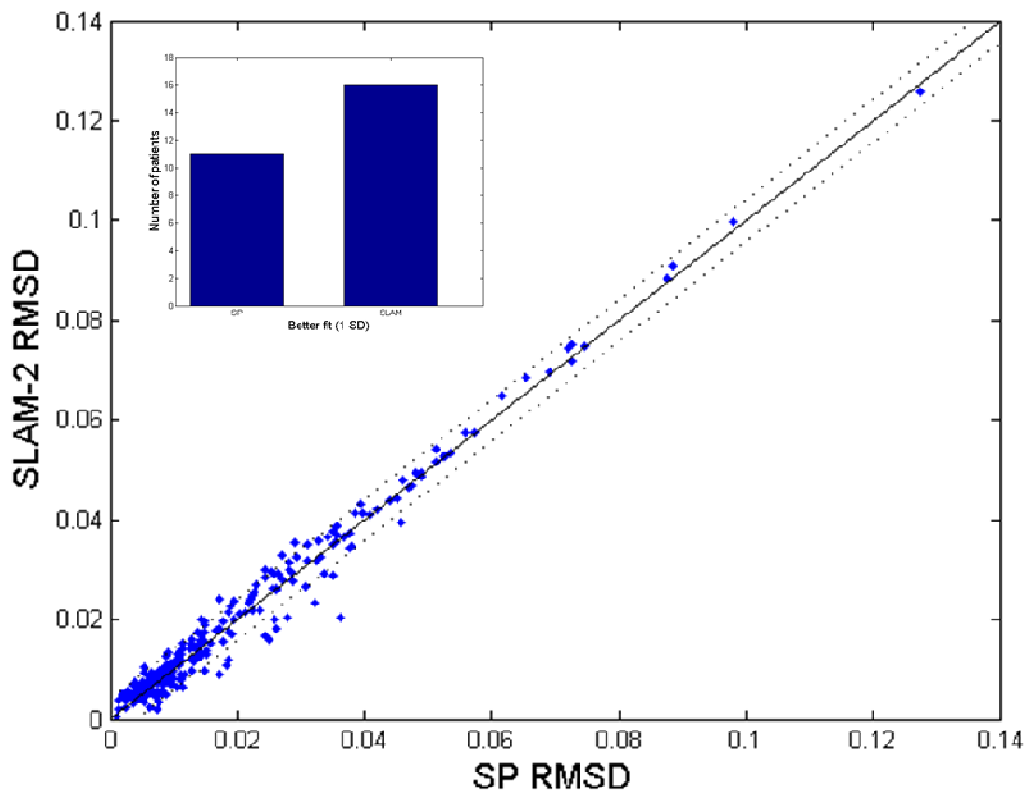

Figure S1. Scatterplot comparing model fits for SP and SLAM-2, testing whether our improved fits relied too much on LM weights. Diagonal lines are the same as in Figure 5. Once again, results show good fits overall, and SLAM outperforms SP for a subgroup of patients.

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[1] The initial mapping procedure set LM max at .04, and then points with LM greater than or equal to .02 were removed, yielding an actual max LM of .0188.
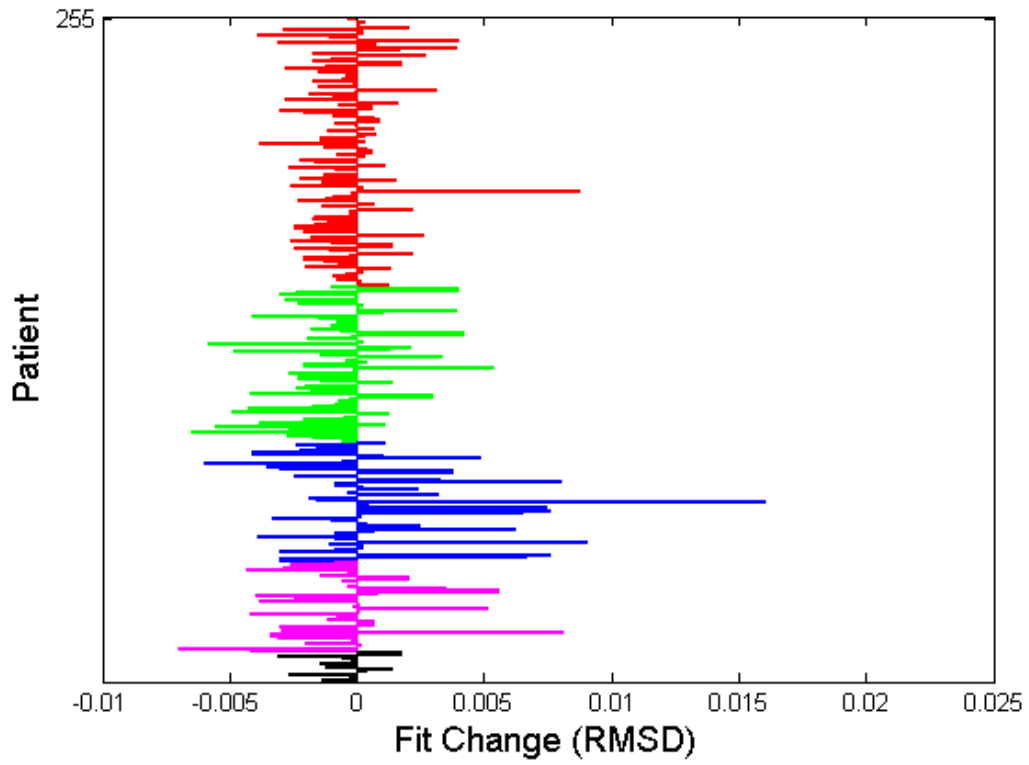
Figure S2. Individual fit changes between the SP and SLAM-2 models. Positive values indicate better SLAM-2 fits. Anomic = red, Broca's = green, Conduction = blue, Wernicke's = magenta, Other = black.
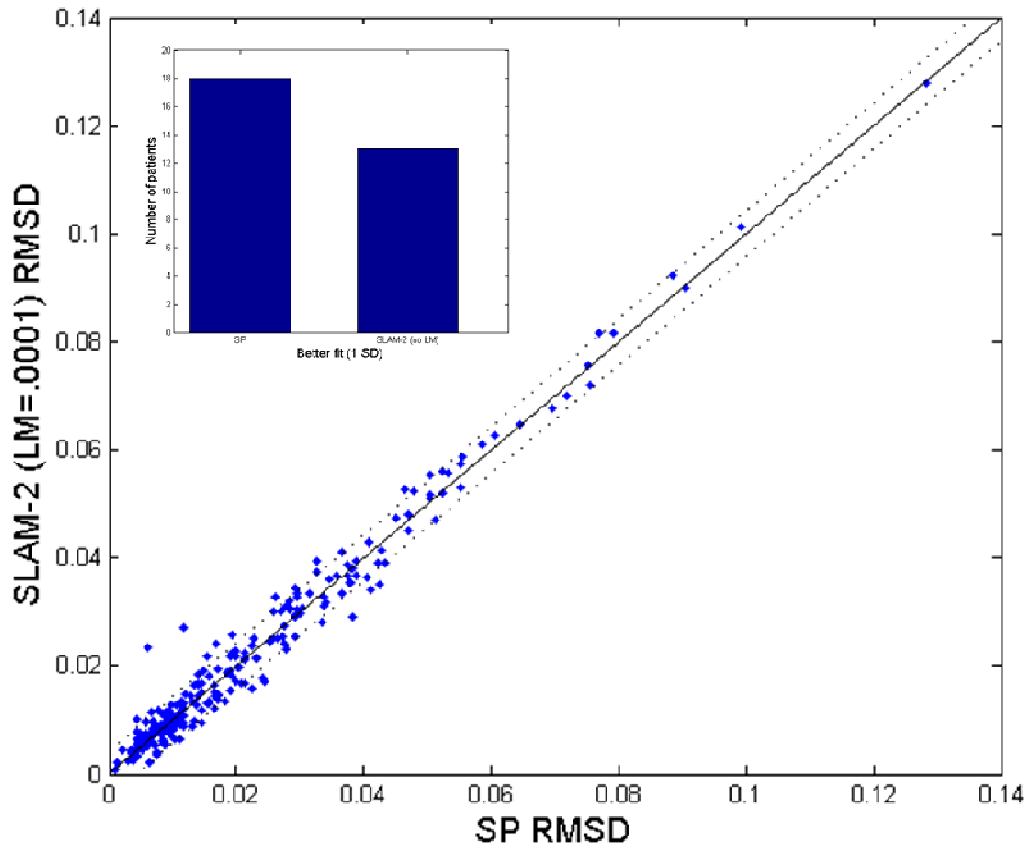
Figure S3. Scatterplot comparing model fits for SP and SLAM-2 with the LM route removed. Diagonal lines are the same as in Figure 5. This 3-parameter model does not perform as well as the 2-parameter SP model, and thus it does not yield the improvements seen with the 4-parameter model.