# Supplementary Material

## Parameter Estimates of Models across Presentation Conditions

In addition to finding no significant difference in the mean absolute response error between the sequential and simultaneous presentations conditions Experiment 1, we also compared the fitted parameter values for each model across the conditions. For the simplest model (Pure Guess) there was no significant difference between the presentation conditions for either the precision of memory, *t*(34) = 0.68, *p* = .502, or the proportion of guesses, *t*(34) = 0.75, *p* = .459. Adding intrusions to the model (Intrusion + Guessing), there was no significant difference between the conditions in terms of precision *t*(34) = 0.134, *p* = .894, proportion of guesses *t*(34) = 0.07, *p* = .946, and proportion of intrusions *t*(34) = 1.81, *p* = .08. Mean and standard deviation values for each parameter estimate and experimental condition are shown in Table 1.

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| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Simultaneous** | | **Sequential** | |
| M | SD | M | SD |
| Pure Guess | κ1 | 17.15 | 15.63 | 22.20 | 27.93 |
| β | 0.58 | 0.23 | 0.63 | 0.23 |
| Intrusion + Guessing | κ1 | 15.02 | 11.75 | 15.43 | 5.50 |
| β | 0.45 | 0.21 | 0.45 | 0.20 |
| γ | 0.12 | 0.88 | 0.19 | 0.13 |

## Experiment 1 Participant-level Model Fits

In Experiment 1, the response error models were fit to data from each of the 36 participants individually. In the main text, we compared the models’ summed AIC across participants. Table 2 shows the AIC values on an individual level, as well as the transformed AIC weights. As with the summed AICs, this analysis reveals a quantitative preference for the Intrusion + Guess model, which is preferred for 16 of the 36 participants, however there is a substantial degree of individual variability both in terms of which model is preferred and the margin by which it is preferred.

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| --- | --- | --- | --- | --- | --- |
| Table 2  *Individual-level Response Error Model Comparison* | | | | | |
| Participant | Model AIC (Weight) | | | | |
| 1  Pure Guess | 2  Pure Intrusion | 3  Intrusion + Guessing | 4  Temporal | 5  Spatiotemporal |
| 1 | -135 (0.13) | -71 (0) | -**139 (0.86)** | -128 (0) | -124 (0) |
| 2 | **1291 (0.56)** | 1295 (0.1) | 1293 (0.27) | 1296 (0.05) | 1298 (0.01) |
| 3 | **1129 (0.56)** | 1192 (0) | 1130 (0.3) | 1132 (0.13) | 1136 (0.02) |
| 4 | 1110 (0.09) | 1125 (0) | **1105 (0.85)** | 1112 (0.04) | 1113 (0.02) |
| 5 | 1088 (0) | 1103 (0) | **1075 (0.96)** | 1082 (0.03) | 1085 (0.01) |
| 6 | 332 (0.01) | 395 (0) | 335 (0) | 323 (0.32) | **322 (0.67)** |
| 7 | 1197 (0.01) | 1209 (0) | **1188 (0.84)** | 1192 (0.13) | 1196 (0.02) |
| 8 | 876 (0) | 902 (0) | 865 (0.26) | 867 (0.09) | **863 (0.64)** |
| 9 | 999 (0.03) | 1037 (0) | **994 (0.44)** | 995 (0.32) | 996 (0.2) |
| 10 | 1193 (0) | 1186 (0) | **1167 (0.95)** | 1174 (0.02) | 1174 (0.03) |
| 11 | 945 (0.01) | 966 (0) | **937 (0.71)** | 940 (0.16) | 940 (0.12) |
| 12 | **1243 (0.5)** | 1261 (0) | 1244 (0.28) | 1244 (0.2) | 1249 (0.02) |
| 13 | **1241 (0.71)** | 1256 (0) | 1243 (0.22) | 1246 (0.06) | 1250 (0.01) |
| 14 | 1309 (0) | 1297 (0.01) | **1288 (0.99)** | 1310 (0) | 1300 (0) |
| 15 | 1258 (0.34) | 1271 (0) | 1260 (0.14) | **1258 (0.46)** | 1262 (0.06) |
| 16 | 1003 (0.01) | 1025 (0) | 998 (0.11) | **994 (0.73)** | 997 (0.15) |
| 17 | 1057 (0.05) | 1072 (0) | **1052 (0.75)** | 1055 (0.17) | 1058 (0.03) |
| 18 | **332 (0.79)** | 344 (0) | 335 (0.2) | 342 (0.01) | 344 (0) |
| 19 | 1039 (0) | 1054 (0) | 1011 (0.47) | 1017 (0.02) | **1011 (0.51)** |
| 20 | 1045 (0) | 1105 (0) | 1024 (0.09) | 1020 (0.46) | **1020 (0.45)** |
| 21 | 1274 (0) | 1267 (0) | **1253 (0.68)** | 1255 (0.29) | 1259 (0.03) |
| 22 | 1144 (0) | 1154 (0) | 1127 (0.42) | **1127 (0.45)** | 1129 (0.12) |
| 23 | 1212 (0) | 1216 (0) | **1193 (0.68)** | 1195 (0.29) | 1199 (0.03) |
| 24 | 1183 (0) | 1162 (0) | **1147 (0.65)** | 1148 (0.32) | 1153 (0.04) |
| 25 | 1137 (0.16) | 1208 (0) | 1136 (0.21) | **1134 (0.55)** | 1138 (0.08) |
| 26 | 735 (0.02) | 747 (0) | **728 (0.87)** | 733 (0.09) | 736 (0.01) |
| 27 | **1078 (0.72)** | 1134 (0) | 1080 (0.27) | 1087 (0.01) | 1090 (0) |
| 28 | 1240 (0.01) | 1267 (0) | **1231 (0.94)** | 1237 (0.03) | 1239 (0.01) |
| 29 | **1290 (0.48)** | 1299 (0.01) | 1290 (0.42) | 1294 (0.08) | 1298 (0.01) |
| 30 | 1294 (0) | 1291 (0.01) | **1281 (0.98)** | 1292 (0) | 1290 (0.01) |
| 31 | 605 (0) | 631 (0) | 599 (0.03) | 593 (0.45) | **593 (0.52)** |
| 32 | 1209 (0.07) | 1237 (0) | **1205 (0.68)** | 1207 (0.16) | 1209 (0.09) |
| 33 | **1141 (0.62)** | 1181 (0) | 1143 (0.2) | 1145 (0.11) | 1146 (0.06) |
| 34 | **952 (0.63)** | 1000 (0) | 953 (0.33) | 957 (0.04) | 962 (0.01) |
| 35 | 1173 (0.47) | 1188 (0) | **1173 (0.47)** | 1178 (0.03) | 1179 (0.02) |
| 36 | **1119 (0.59)** | 1172 (0) | 1120 (0.34) | 1124 (0.06) | 1128 (0.01) |

*Note*. The AIC weight, displayed in parentheses, can be interpreted as the relatively likelihood of a given model for each participant. Best fitting model for each participant is displayed in boldface.

## Additional Recentered Plots

In the main text, we presented distributions of response errors, recentered on nontarget angles, conditioned on the temporal distance (lag) of the target and nontarget items. The central tendency of the closer lags was greater than for distant lags, which indicated that temporally similar nontargets were more likely to intrude. In Figure 1, we show recentered distributions conditioned on levels of spatial, semantic, and orthographic similarity, which are interpretable in the same way. We compare the model which incorporates each form of similarity with the Intrusion + Guessing model, which assumes no relationship between similarity and intrusion probability. These recentered distributions are not diagnostic of differences between the models and were omitted from the main text.

Figure

*Distributions of Response Error Recentered on Levels of Similarity*

A picture containing diagram

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