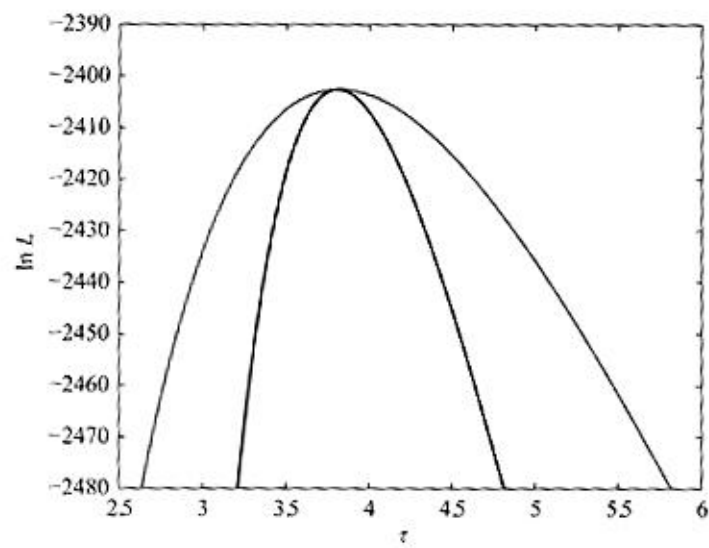




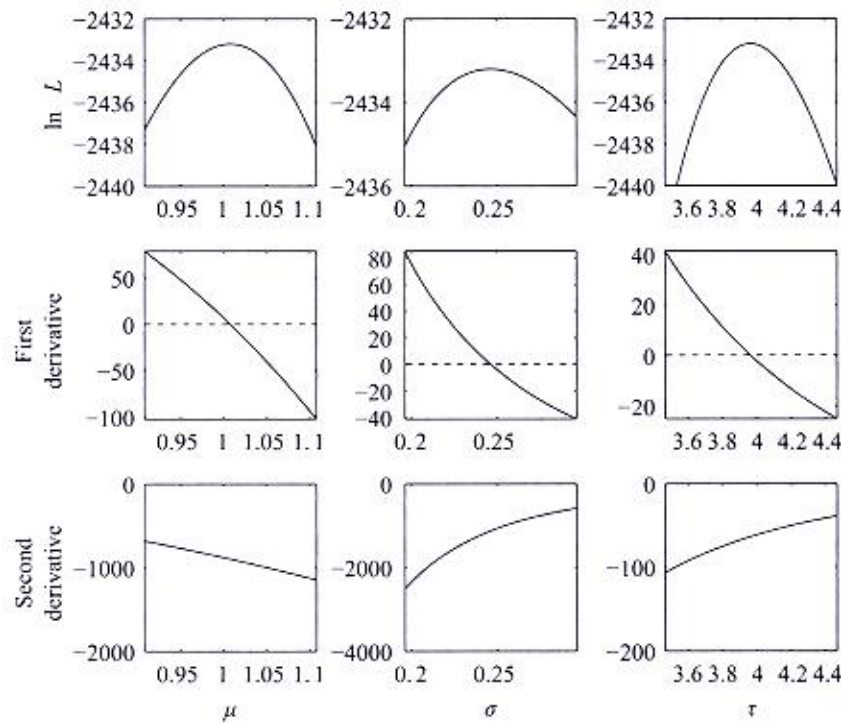


Figure 5.2 Log-likelihood (top row) surfaces for the μ (left column), σ (middle column), and τ (right column) parameters of the ex-Gaussian model. In the middle row, the first derivatives of the log-likelihood functions are plotted (also called score functions), and in the bottom panel, the second partial derivatives are plotted from the diagonal of the Hessian matrix (see text for details).

$$\frac{\partial^2 \ln L(\theta|\mathbf{y})}{\partial i \partial j} \approx \frac{C}{4\delta^2}, \quad (5.1)$$

where

$$C = \ln L(\theta + e_i + e_j|\mathbf{y}) - \ln L(\theta + e_i - e_j|\mathbf{y}) \\ - \ln L(\theta - e_i + e_j|\mathbf{y}) + \ln L(\theta - e_i - e_j|\mathbf{y}). \quad (5.2)$$

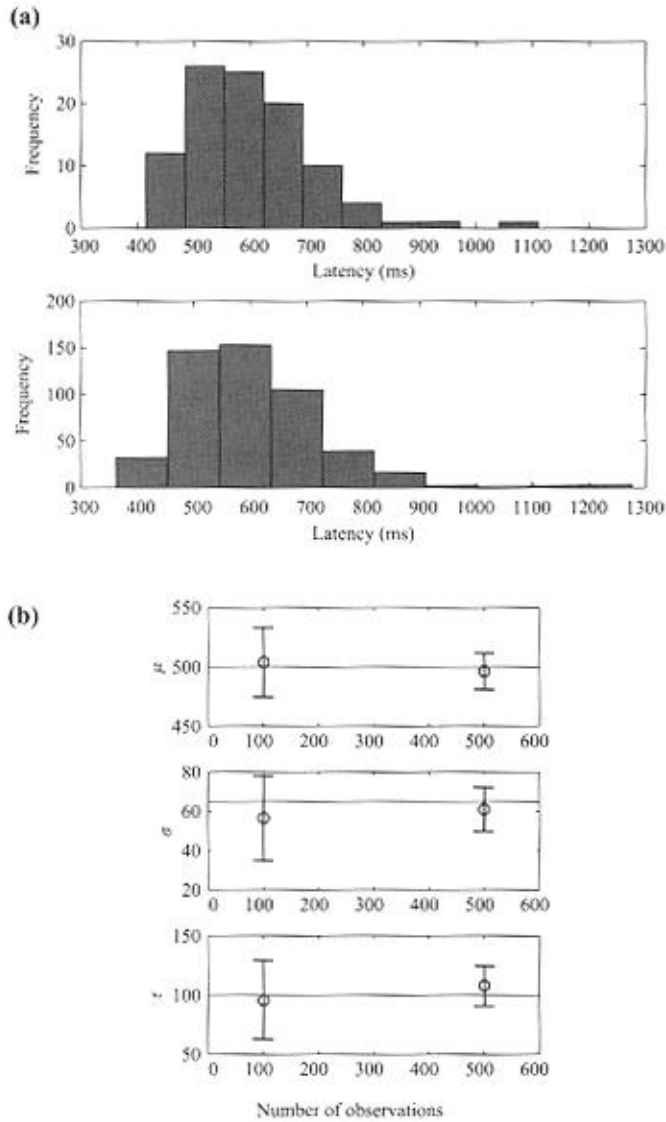


Figure 5.3 Top panel: Histograms for two samples from the ex-Gaussian function. The top histogram summarizes a smaller sample ($N = 100$), and the bottom histogram plots frequencies for a larger sample ($N = 500$). Bottom panel: ML parameter estimates for the ex-Gaussian parameters μ , σ , and τ for the two samples, along with their 95% confidence intervals calculated from the log-likelihood curvature. The solid line in each plot shows the true parameter value (i.e., the value used to generate the data).

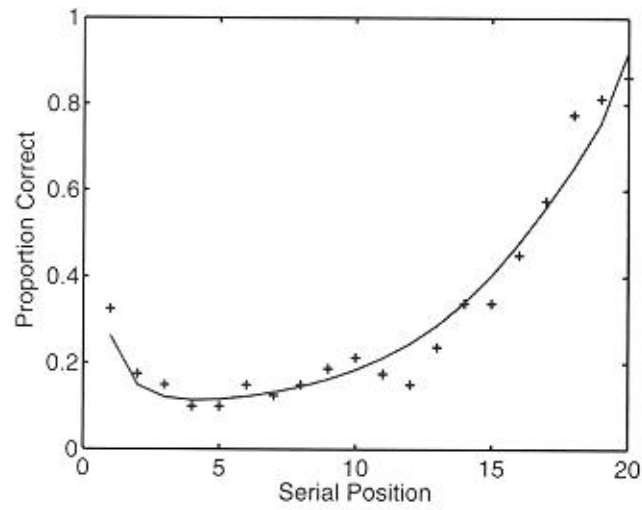


Figure 5.5 Proportion correct by serial position for a single participant from a free recall experiment of Murdock (1962). Crosses show the participant's data; the line shows the ML predictions of the SIMPLE model.