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The Semantic Stroop Effect: An Ex-Gaussian Analysis

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Abstract: The standard Stroop effect (which typically uses color words that form part of the response set) is robust and well documented in mean RT. Ex-Gaussian analyses reveal that this effect is seen in the mean of the normal distribution (mu), in the standard deviation of the normal distribution (sigma), and (c) in the tail (tau) of the ex-Gaussian distribution. The present experiments investigate whether the semantically based Stroop effect (which contrasts incongruent color-associated words with neutral controls) is seen in the three ex-Gaussian parameters. This analysis yielded a semantic Stroop effect in the arithmetic mean and mu, but no semantic Stroop effect was observed in tau. These data are consistent with the conclusion that interference associated with response competition on incongruent trials is absent in the semantic Stroop effect (at least in the tail of the distribution).