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Using LBA to model RTs collected in the GRT paradigm

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Abstract: General recognition theory (GRT) provides a powerful framework for modeling interactions between perceptual dimensions in identification-confusion data. The linear ballistic accumulator (LBA) model provides powerful methods for analyzing multi-choice (2+) response time (RT) data as a function of evidence accumulation and response thresholds. We extend (static) GRT to the domain of RTs by fitting LBA models to RTs collected in two auditory GRT experiments. Although the mapping between the constructs of GRT (e.g., perceptual separability, perceptual independence) and the components of the LBA (e.g., drift rates, response thresholds) is complex, the dimensional interactions defined in GRT can be indirectly addressed in the LBA framework by testing for invariance of LBA parameters across appropriate subsets of the data. The present work focuses on correspondences between (invariance of) parameters in LBA and perceptual separability and independence in GRT.