

Sequential sampling models of choice response time assume that many independent and noisy samples of evidence are accumulated during the course of making a single decision. The relative proportions and rate of evidence accumulation determine the response made and its latency. We show that a very successful sequential sampling model, Usher and McClelland's (2001) leaky competitive integrator model, may function adequately even without the fundamental sequential sampling assumption of variable evidence accumulation. It seems that other sources of (between-trial) variability commonly included in such models are sufficient to model the data. This reduced model (the ballistic accumulation model, or BAM) is shown to pass many of the most stringent tests for choice response time models.