

## Abstract for the EMPG 1999 Meeting in Mannheim

### **On the Apparent Failure of the Strategy of Model Competition to Achieve “Final Theory” in Cognitive Psychology**

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This paper briefly reviews the evolution of mathematical models in the more cognitive areas of memory, classification, choice response time etc. That is to say, areas of cognition that try to model categorical responses and/or choice response times, possibly with confidence judgments as well, but with no ties to the natural sciences like biology or physics. In particular, I will argue that the efforts to achieve “final theory” in the cognitive areas by following a process of competition among models have not worked. The reason it has not worked is that, at least without principled restrictions, there are too many ways to fit data, not too few. Participating in model competition involving data fitting and model falsification can be interesting and can require great skill, but it has not generated many, if any long term successes. I will illustrate the point by starting with the simple Bradley-Terry-Luce model of paired comparisons, justify a series of statistical and modeling moves to turn it into a theory for choice response time, and use it to “fit” most of the known properties of choice reaction time. I will conclude with what I think does emerge constructively from the evolution of cognitive theory by model competition.