

## **Abstract**

**RESEARCH PAPER:** Distinguishing Misconceptions from Myths Using Traditional and Classification Analysis to Explore Response Time as a Discriminator

**STUDENT:** Nathaniel S. Ring

**DEGREE:** Master of Arts

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Previous research on misconceptions and myths has generally been done within the educational system as a way to understand how to abate their effects on understanding in sciences. However, the vast majority of this research has not employed cognitive theory and as a consequence does not have sufficient measures to detect misconceptions as distinct from myths. This manuscript defines a myth as a specific, known, belief that is inconsistent with widely supported research whereas a misconception is a belief that is false but inferred from other information. This manuscript describes a way to distinguish myths from misconceptions by use of response-times and non-traditional survey analyses: data mining using classification and regression trees (CART). Results from the analyses suggest CART provides highly predictable models compared to traditional ANOVA and Logistic Regression alternatives. Furthermore, analyses provide additional support that two memory systems are in use during conceptual recognition tasks.

