Despite numerous treatment methods and advancements, researchers and therapists remain unable to reliably predict outcomes. To this end, we ask:

- Why do some patients with aphasia learn novel non-linguistic information?
- Does instruction method differentially lead to success with learning?
- If differences arise, is there a relationship between effective learning method and patient profile?

**Background**

Studies reviewing populations with brain damage have demonstrated that features of learning such as feedback and non-feedback based category learning tasks are important. Research has shown that patients with amnesia, for example, who have shown impairments in declarative memory, exhibit successful learning of gradual, probabilistic tasks hypothesized to engage non-declarative memory (Knowlton et al., 1992, 1993, 1994). Categorization of discrete stimuli involves automatic recognition, while continuous or complex stimuli require pattern abstraction, rule-use, feature mapping and/or hypothesis testing (Davis et al., 2009; Love & Markman, 2000; Maddox et al., 2008). Skills that engage distinct neural resources and have been probed in patients with schizophrenia (Weikert et al., 2009; Gold et al., 2000; Keri et al., 2005) and Parkinson's disease (Ashby et al., 2003; Filoteo et al., 2005; Maddox et al., 2005). Similarly, feedback is thought to involve various regions of the striatum (Cincotta & Seiger, 2007) and has been shown to differentially affect learning in patient populations (Maddox et al., 2008; Nuebler & Squier, 1999; Shohamy et al., 2004; Waltz et al., 2007). While aphasia is not characterized by learning deficits, cognitive skills have been shown to be affected in aphasia (Ramseberger, 2005).

We posit that learning is non-negligible in rehabilitation and is the key towards developing individualized, predictable treatments for aphasia.

**Methods**

Participants learn to categorize two sets of cartoon animals that vary on 10 binary dimensions (Zelikova et al., 2008). Two animals are selected as prototypes A and B. The number of features by which an animal differs from prototype A is its distance from the prototype. Data are calculated based on the percentage of B responses (Tdiff) made at each distance from prototype A.

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**Learning is compared between groups and between tasks**

- **Non-feedback instruction (PA):**
  - Prototype A: 1
  - Prototype B: 2
  - Distance from prototype A: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

- **Feedback instruction (FB):**
  - Prototype A: 1
  - Prototype B: 2
  - Distance from prototype A: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

**Two types of instruction: Non-feedback (PA) and Feedback (FB)**

- **Non-feedback instruction (PA):**
  - Trained on 60 animals that differ from prototypes by 1-4 features. Features of each prototype associated 20 – 25 times with their category. Prototypes never trained.

- **Feedback instruction (FB):**
  - Trained phase following both PA and FB instruction
  - Tested on 16 animals seen in training, 45 novel members of categories and both prototypes

**Results**

- **Ten patients (Pa) and ten age-matched control (Ch) participants.**
  - **Significant main effect of instruction:** PA and FB
  - **PA vs. FB slope:**
    - Intercept:
      - PA slope: M = 1.41, SD = 6.0
      - FB slope: M = 4.47, SD = 6.1
  - **Pa vs. FB intercept:**
    - M = 39.35, SD = 9.64
  - **No significant interaction of Distance x Task:** PA = 0.06, p = .79
  - **No significant interaction of Distance x Task:** FB = 0.03, p = .67

**Selected References**