



# Construct – Long-Term Memory & Reinforcement Learning

**Item Encoding and Retrieval:** The processes involved in memory for individual stimuli or elements irrespective of contemporaneously presented context or elements.

**Relational Encoding and Retrieval:** The processes involved in memory for stimuli/elements and how they were associated with coincident context, stimuli or events.

**Reinforcement Learning:** Acquired behavior as a function of both positive and negative reinforcers, including the ability to (a) associate previously neutral stimuli with value, as in Pavlovian conditioning; (b) rapidly modify behavior as a function of changing reinforcement contingencies and (c) slowly integrate over multiple reinforcement experiences to determine probabilistically optimal behaviors in the long run.

Task	Construct Validity	Clarity of link to neural circuit	Clarity of link to cognitive mechanisms	Availability of animal model	Link to neural systems through neuropsychopharmacology	Amenable for use in human neuroimaging studies	Evidence of Impairment in schizophrenia	Linked to functional outcome in schizophrenia	Good Psychometric Characteristics	Rank Order
<b>ITEM ENCODE/RETRIEVE</b>										
Rel Encoding & Retrieval (REaR)	5	5	4	2	3	5	4	4	NA	1
Inhibition of Currently Irrelevant Memories Task	Not Rated (unknown construct)									
<b>REL ENCODE/RETRIEVE</b>										1 (7)
Rel Encoding & Retrieval (REaR)	5	5	5	1	3	5	4	4	NA	2 (1)
Transitive Inference	3	5	3	5	4	5	4	NA	2	3
Associative Inference	4	5	4	5	5	5	NA	NA	3	1 (1) 2 (7)
<b>REINFORCEMENT LEARN</b>										
Probabilistic Reversal Learning	5	5	5	5	5	5	5	NA	3	1
Pizzagalli Reward Task	5	4	5	5	3	4	4	NA	4	2, 3 (5) 2 (3) 3 (1)
Probabilistic Selection Task	5	5	5	3	4	5	5	NA	3	2,3 (5) 3 (3) 2 (1)
Weather Prediction Task	Not Rated (unclear construct)									

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# ReAR

- **REaR: needed work on psychometric development and task refinement**
  - **Stimulus Modality – meaningful objects, nonsense objects, words**
  - **LOP Instruction – pleasant/unpleasant, likeable/unlikeable, concrete/abstract**
  - **Retrieval task – item recognition & associative recognition, familiarity vs recollection**

# AI and TI

**AI & TI: needed work to translate from animal to human model**

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# Reinforcement Learning

- **Reinforcement Learning: needed work to separate hedonic response to from learning of the reinforcement**
  - **In animal studies hedonic aspects of goal are less relevant**
  - **Post-test questionnaire of hedonic value**
  - **Post-test questionnaire of rule awareness (although, can have implicit without explicit awareness)**
  - **Medication issues in striatum – importance of FE, NN and unaffected family member studies**