

## Introduction

• We examined dissociations between event-related potential (ERP) components in two recognition memory tasks with judgments of source memory.

#### **Previous findings**

- Dual-process framework of recognition memory:
- Familiarity: recognition without the retrieval of details. Earlier (300–500 ms) frontal **FN400** ERP component.
- Recollection: retrieval of specific information from the study episode. Later (500-800 ms) Parietal Old/New effect (Rugg & Curran, 2007).
- Source information is the context in which an item is encountered. It has been debated whether source information is only accessible through recollection, or whether familiarity can contribute to successful source recognition (Diana et al., 2008; Ratcliff et al., 1995; Yonelinas, 1999).

#### Hypotheses

- The Parietal Old/New effect will demonstrate recollection's role in retrieving source information.
- Familiarity's contribution to source retrieval depends on the **type** of source information available.
- Familiarity is more likely to contribute when source attributes are perceptually defined.
- FN400 components will differ between perceptual (Exp 1) and study-task (Exp 2) source information.

### Experiments

• In Experiment 1, source information was defined **perceptually** at study: remember screen side and border color. At test, participants made an old/new judgment followed by study-source retrieval



• In Experiment 2, source information was defined by the semantic knowledge judgment made at encoding (living/nonliving or bigger/smaller than a shoebox; based on Gruber et al., 2008). At test, participants made an old/new judgment followed by retrieval of the type of judgment made at study (*size or animacy*).





Old/New? Size/Animacy?

# Scalp EEG

• 128-channel 500-Hz EGI scalp EEG system; 200 M $\Omega$  high-impedance amplifier; EEG preprocessed.

# **Source Information Retrieval in a Recognition Memory Task** M. V. Mollison and T. Curran

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### Summary of Results

- Experiment 1: CR < HSI < HSC- Experiment 2: CR < HSI = HSC- Experiment 1: CR = HSI < HSC- Experiment 2: CR = HSI < HSC

• The Parietal Old/New effects in Experiments 1 and 2 were as expected if this is indicative of a recollection process: Hits with correct source retrieval were more positive than both hits with incorrect source retrieval and correct rejections.

• The FN400 in Experiment 1 differed for correct vs. incorrect source, but not in Experiment 2. This is inconsistent with only recollection supporting retrieval of correct source information and suggests that familiarity contributes to perceptual source judg-

• Diana et al. (2008) provide evidence for familiarity contributing to source memory retrieval if the item and its context are unitized, whereas recollection is required if source information is an arbitrary association. This division may correspond to Experiments 1

• Run an experiment including a within-subjects manipulation of perceptual and non-perceptual source information. • Time-frequency analyses of EEG data.

Diana, R. A., Yonelinas, A. P., & Ranganath, C. (2008). The effects of unitization on familiarity-based source memory: testing a behavioral prediction derived from neuroimaging data. J Exp Psychol Learn Mem Cogn, 34(4), 730-40. Gruber, T., Tsivilis, D., Giabbiconi, C.-M., & Müller, M. M. (2008). Induced electroencephalogram oscillations during source memory: Familiarity is reflected in the gamma band, recollection in the theta band. Journal of Cognitive

Ratcliff, R., Van Zandt, T., & McKoon, G. (1995). Process dissociation, single-process theories, and recognition memory. J Exp Psychol Gen, 124(4), 352–374. Rugg, M. D., & Curran, T. (2007). Event-related potentials and recognition memory. Trends in Cognitive Sciences,

Yonelinas, A. P. (1999). The contribution of recollection and familiarity to recognition and source-memory judgments: A formal dual-process model and an analysis of receiver operating characteristics. J Exp Psychol Learn Mem

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