

## **Dissociating familiarity and conceptual priming with event-related potentials**

### **Abstract:**

#### **Background**

The mid-frontal ERP old/new effect has two accounts: it indexes *familiarity* – a graded memory strength signal supporting old/new judgments, or it indexes *conceptual priming* - a performance facilitation for events due to pre-exposure to semantically related events.

#### **Aim**

The aim was to contribute to understanding of the sensitivities of ERPs to memory processes. This is important, because understanding their sensitivity is critical if ERPs are to be used to investigate how and when different memory processes are used, and how they are compromised during ageing and in disease states. The specific aim here was to investigate whether the mid-frontal ERP old/new effect indexes familiarity or conceptual priming.

#### **Method**

Participants saw words one at a time. All were repeated twice. In Exp1 participants made a living/non-living judgment to words. In Exp2 they did this for half of them, making old/new judgments to the remainder. ERPs were acquired locked to word onset and analysed for first presentations and repetitions (both experiments) and for words attracting correct old/new judgments (Exp2 only).

#### **Results**

Priming - faster reaction times for repetitions than first presentations - was similar for both repetitions in both experiments. Old/new recognition was better for the second than the first repetition. The mid-frontal effect was similar for both repeats in Exp2 for words with correct old/new judgments. At the same sites the repetition effect for both repeats was also similar.

#### **Conclusion**

Mid-frontal activity from 300-500ms mirrored the priming data: there was little change between first and second repetitions. Because of this, and because this activity did not track old/new accuracy in Exp2, the data are consistent with a priming account of the mid-frontal effect. In subsequent work we will increase the difference in old/new recognition accuracies between first and second repeats to rule out a lack of sensitivity as an explanation for the lack of correspondence between the ERP and recognition memory data.

#### **Keywords**

Familiarity, Conceptual Priming, Event-Related Potentials (ERPs), FN400

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