In our daily life, we monitor our actions to distinguish those that we have completed from those that we need to fulfill (e.g., turning off the stove). Discriminating between different actions is a form of source memory [1, 2].

**Source memory** - Memory for the origin of information.

**Past Study**
- Interrupted actions (i.e., those that were initiated but not completed) lead to more false memories (misattributions to performed actions) than performed actions [1].

**Current Research question**
- How will varying amount of interruption affect the false memory rate?

1. **Levels of Processing theory:** Source monitoring will be more accurate when more of the action was completed before interruption because these actions are more deeply encoded.

2. **Source Monitoring theory:** there will be more source confusions when more of the action is completed prior to interruption because memories for these actions will contain more detailed information, making them more similar to actions that were performed.

**The Influence of Task Interruption on Event Related Potentials and Action Memory**

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**Abstract**

The present research study investigated how varying amounts of action interruption affect source memory accuracy. Participants engaged in word copying, with some words partially copied (i.e., interrupted) at 25%, 50%, or 75% of the word. Source memory for copied (i.e., performed) and interrupted words was measured (in all 3 Experiments), and ERPs were recorded in Experiment 3. Source confusions (i.e., false memories) increased as more of the word was copied. ERPs indicate that source monitoring of more similar sources requires more detailed trace information and monitoring.

**Background**

In our daily life, we monitor our actions to distinguish those that we have completed from those that we need to fulfill (e.g., turning off the stove). Discriminating between different actions is a form of source memory [1, 2].

**Source memory** - Memory for the origin of information.

**Current Research question**
- How will varying amount of interruption affect the false memory rate? There are two hypotheses of how degree of action completion affects source memory:

1. **Levels of Processing theory:** Source monitoring will be more accurate when more of the action was completed before interruption because these actions are more deeply encoded.

2. **Source Monitoring theory:** there will be more source confusions when more of the action is completed prior to interruption because memories for these actions will contain more detailed information, making them more similar to actions that were performed.

**Method**

- **Study phase:** Participants copied 8-letter words from a computer onto a tablet. Participants were allowed to fully copy some words, whereas others were interrupted before completion:
  - interrupted at 25% (two letters copied)
  - interrupted at 50% (four letters copied)
  - interrupted at 75% group (6 letters copied)

- **There were three experiments:**
  - Experiment 1: Between subjects
  - Experiment 2: Within subjects
  - Experiment 3: Between subjects, ERPs, no 50%

- **Test phase:** Participants were shown 8-letter words and indicated whether each word was fully copied, interrupted, or new.

**Source Memory Accuracy**

<table>
<thead>
<tr>
<th>Completed Errors</th>
<th>Interrupted Errors</th>
<th>False Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% Group</td>
<td>75% Group</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The RFE and LPN effects were more robust in the 75% group.
- Significant ERP activity was seen in 25% group from 400-600 ms in the parietal area possibly an early LPC event.

**Conclusions**

- The results of this study supported the **Source monitoring theory:** words interrupted at 75% (more fully completed) were more confusable with performed words than those interrupted at 25%.

- In three of these events amplitude differences were more robust in the 75% group than in the 25% group.
  - This illustrates that when sources become more similar increased activity is needed during important memory events in order for correct differentiation to occur.

**Relevant References**