

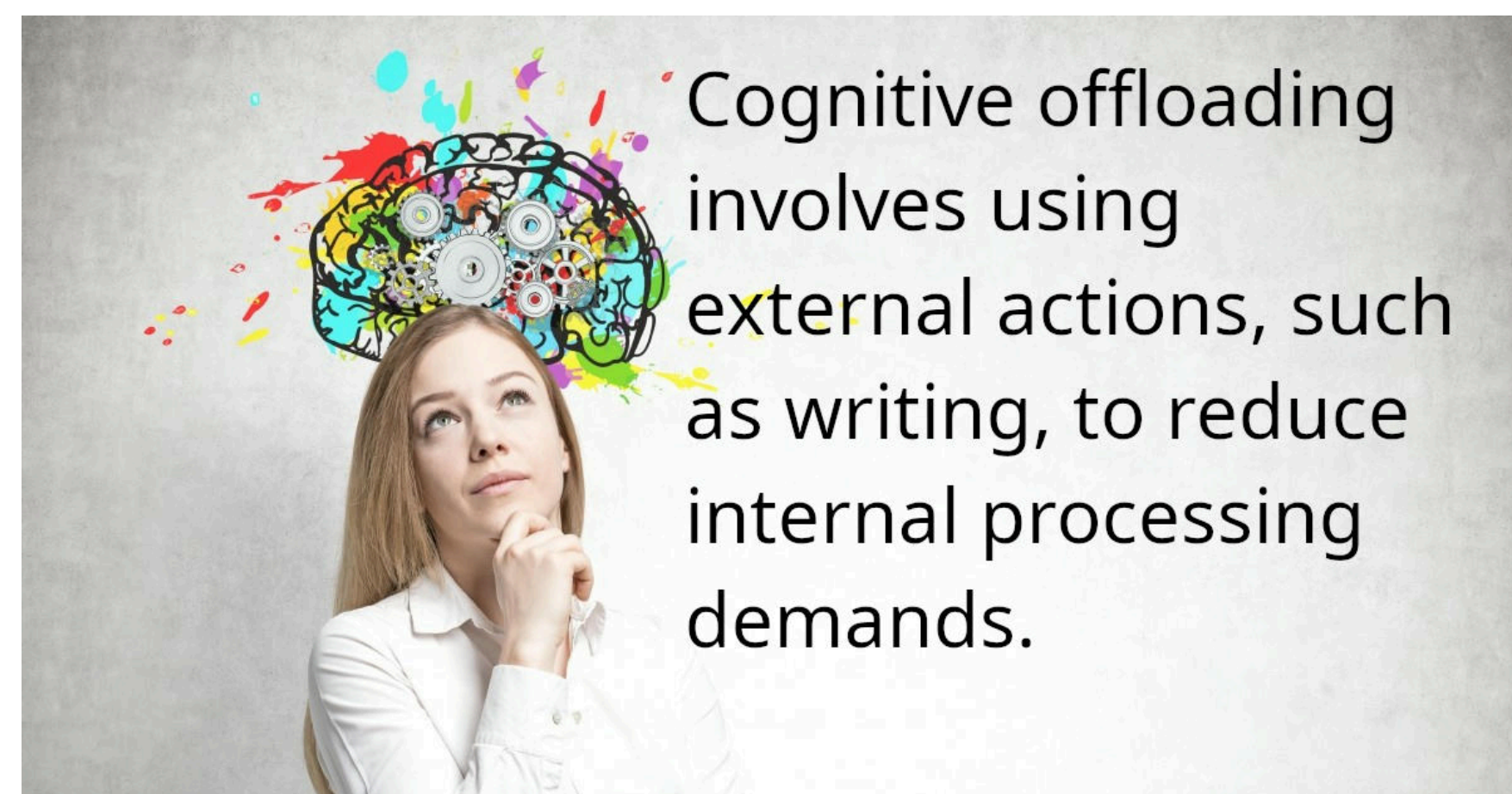
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Overview

Cognitive offloading is used to supplement internal processing demands through external actions such as writing down information. While cognitive offloading has been investigated extensively in recent years, we are only starting to understand the role that metacognitive beliefs play in decisions to offload. In the current study we investigate how and why individuals choose to use external resources to supplement their internal cognitive resources in an immediate memory task.

Keywords: Cognitive offloading, Memory, Metacognition

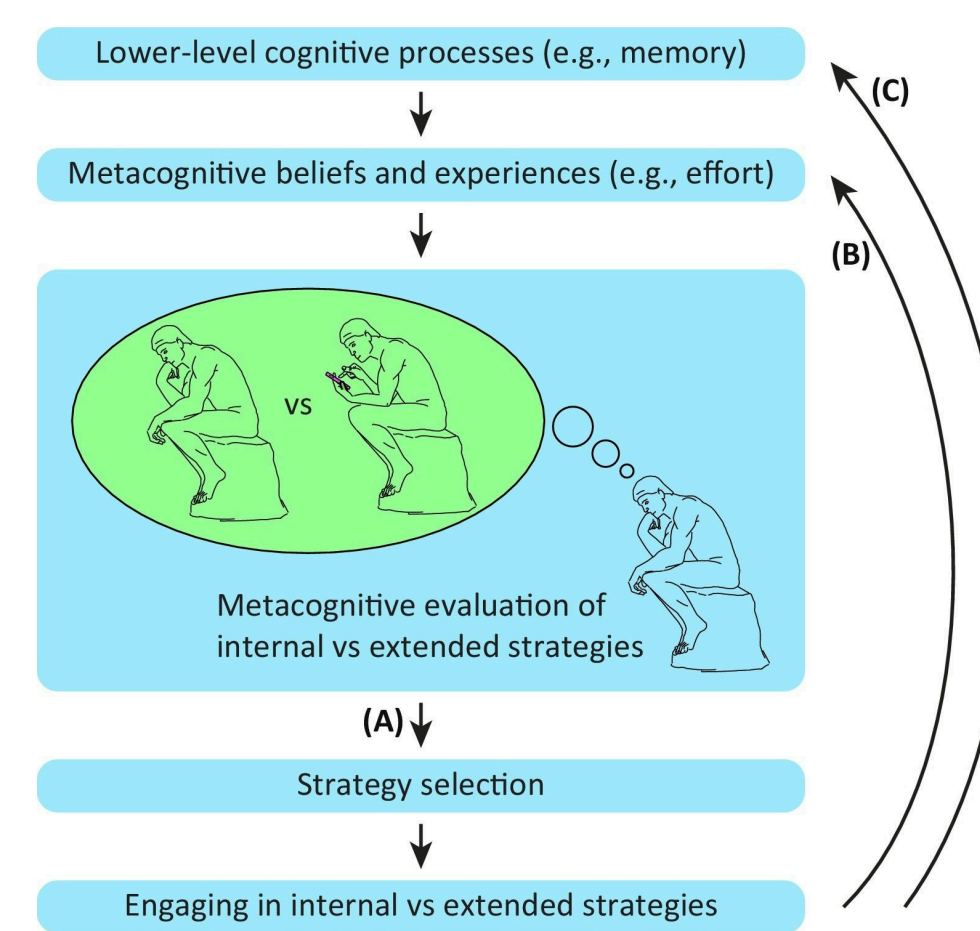
Background



Cognitive offloading involves using external actions, such as writing, to reduce internal processing demands.

However, in some cases, individuals appear to offload more than necessary. For example, in immediate recall tasks, which involve remembering sets of randomly presented letter strings of varying sizes, individuals often offload by writing information down even when presented with only two letters. This behavior may indicate that choosing whether to offload requires effort, and offloading might be easier than switching strategies.

Thus, it is possible that participants avoid switching strategies on a trial-by-trial basis, as it may be cognitively taxing. In the current study, we test this account by using a weighted probability stimuli presentation.



Hypotheses

Individuals will offload more than necessary, regardless of the task difficulty.

Method

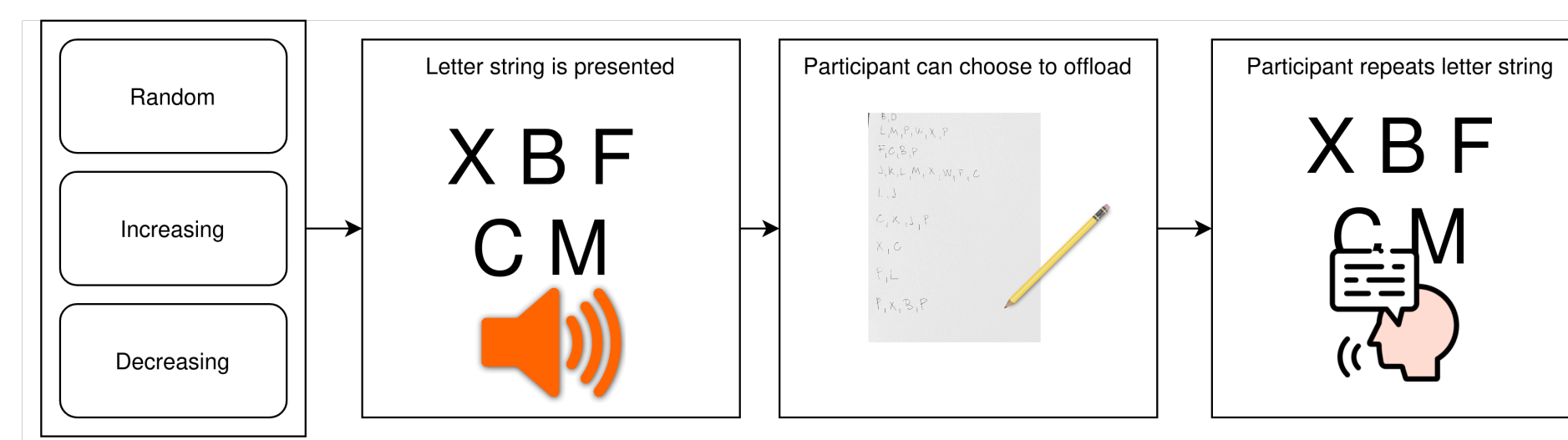


Figure 1: Experiment Procedure

In the memory task, 2, 4, 6 and 8 letter strings from the letters BCFHJKLMPQRTWX were auditorily presented. Participants were made aware of the upcoming set size of the trial. Participants were instructed to verbally repeat the letters after each trial. Participants were allowed to take

notes (write the presented letters) and use the notes during the recall phase.

Unbeknownst to participants, the letter strings were presented in 3 distinct blocks: (1) random letter string presentation, (2) presentation starting with shorter strings gradually increasing towards longer strings, and (3) presentation starting with longer strings, gradually decreasing towards shorter strings. The order of blocks was randomized.

Predicted Results

When analyzing offloading that is not necessary (i.e., does not lead to a task performance improvement; this includes 2- and 4-letter string trials) across different blocks, there are several distinct possibilities:

- (1) Individuals offload at the same rate, regardless of the stimuli presentation probability. This finding would support the notion that offloading might be easier than switching strategies or that offloading is utilized to ensure 100% accuracy.
- (2) Individuals offload differentially across the blocks (i.e., less in the increasing blocks). The finding would support the notion that a decision to offload (or not offload) could be due to metacognitive beliefs. Specifically, there could be a balance between the perceived accuracy and effort benefits that could be driving the behaviour.

Discussion

The goal of this ongoing study is to investigate the role of metacognition in cognitive offloading. By directly testing the account predicting that individuals should avoid switching strategies on a trial-by-trial basis (as it may be cognitively taxing), the study aims to elucidate the factors underlying a decision to offload in an immediate memory task.