Examining the Impact of Visual and Auditory Cues on Predicted and Actual Recall Performance

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Introduction
Perceptual information has been shown to influence participants’ expected and actual memory performance. However, whether perceptual information helps or hinders recall depends in great part on whether the information is congruent or incongruent. Congruent audio-visual information tends to enhance memory relative to incongruent pairings, which can impair memory. For example, congruency would exist if one saw a hammer and heard a thud as the hammer made contact with an object. This would show the correct audio and visual stimuli for the target item (hammer). The audio-visual information would be incongruent for example, if the audio stimuli for a hammer was a cat’s meow. Research suggests that congruent and incongruent audio-visual stimuli are processed differently and by different anatomical locations within the brain (Doehrmann & Naumer, 2008). Yet cross-modal processing increases the likelihood of recall, with perceptual information tends to enhance memory relative to incongruent whether the information is congruent or incongruent. Congruent audio-visual stimuli helps or hinders recall depends in great part on expected and actual memory performance. However, whether anatomical locations within the brain (Doehrmann & Naumer, 2008).

We hypothesized that cross-modal processing would yield higher judgments of learning (JOLs) recall performance, in particular with congruent audio-visual stimuli for the target item (hammer). This would show the correct audio and visual stimuli for the target item (hammer). The audio-visual information would be incongruent for example, if the audio stimuli for a hammer was a cat’s meow. Researchers suggest that congruent and incongruent audio-visual stimuli are processed differently and by different anatomical locations within the brain (Doehrmann & Naumer, 2008). Yet cross-modal processing increases the likelihood of recall, with congruent (Loud items in Loud Volume) versus incongruent stimuli.

Hypotheses
We wanted to investigate the possibility of congruency between the inherent sound qualities of an item and the volume in which the item is presented. We are suggesting that some words have an inherent sound associated with them that can be congruent or incongruent in the same regard as audio-visual congruency.

Method
Participants
- 132 UAH students (M age = 20.58, SD = 3.00)

Design
- 3 (Condition) x 2 (Trial) x 3 (Word Type) x 2 (Volume)
  - Between-subjects: Condition
  - Within-subjects: Trial, Word Type, Volume
  - Three Word Types
    - Loud: Items typically associated with a loud sound.
    - Quiet: Items typically associated with a quiet sound.
    - Neutral: Items that do not have an associated sound quality.
  - Dependent measures: JOLs and Mean recall performance.

Examples of Each Word Type

<table>
<thead>
<tr>
<th></th>
<th>½ Presented Loudly</th>
<th>½ Presented Quietly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loud</td>
<td>Alarm Carnival</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chainsaw Construction</td>
<td></td>
</tr>
<tr>
<td>Quiet</td>
<td>Breeze Cane</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cat Fountain</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td>Book Banana</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cable Dirt</td>
<td></td>
</tr>
</tbody>
</table>

Examples of Each Visual Aural Combination

<table>
<thead>
<tr>
<th></th>
<th>Visual</th>
<th>Audio</th>
<th>Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pumpkin</td>
<td>Pumpkin</td>
<td>Pumpkin</td>
</tr>
</tbody>
</table>

Conditions

Recall Trial 1

Recall Trial 2

Conclusions
- Louder volumes yielded higher JOLs for all word types in the conditions with sound, but not in the Visual condition.
- Recall was higher for items presented loudly than for items presented quietly in conditions with sound. However, recall was higher in the Visual condition than in conditions with sound suggesting cross-modal processing did not help memory in this experiment.

References

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