Introduction

Survival Processing

- Memory has evolved to be more attuned to fitness relevant information (Nairne, Thompson, & Pandeirada, 2007).
- Researchers have asked participants to rate words on a scale from 1-4 based upon how relevant they are to a survival scenario versus a control.
  - Survival: In this task, we would like you to imagine that you are stranded in the grasslands of a foreign land, without any basic survival materials. Over the next few months, you’ll need to find steady supplies of food and water and protect yourself from predators.
- Survival advantage: Words rated for survival relevance are better recalled than words processed through pleasantness rating, moving relevance, imagery, self-reference, and intentional learning (Nairne, Pandeirada, & Thompson, 2008).

Proximate Mechanisms

- Is the survival advantage due to enhanced relational processing (RP), item-specific processing (ISP), or both?
- Nairne and Pandeirada (2008) presented words from categorized lists (RP) in a pleasantness rating (ISP) and survival task.
  - According to Materials Appropriate Processing (Einstein & Hunt, 1980), if the survival advantage is due to RP there should be no advantage relative to pleasantness.
  - Results: survival > pleasantness
- Burns, Hwang, and Burns (2011) presented either categorized (RP) or unrelated (ISP) words in a survival, pleasantness (ISP), and categorization (RP) task.
  - Unrelated words (ISP): survival = categorization (RP)
  - Related words (RP): survival = pleasantness (ISP)
- Robinson and Altarriba (Psychonomics, 2013) presented categorized (RP) and unrelated (ISP) words in a survival, pleasantness (ISP), and categorization (RP) task.
  - Survival and pleasantness (ISP): categorized (RP) > unrelated (ISP)
  - Categorization (RP): unrelated (ISP) > categorized (RP)

Long Term Memory for Order

- Nairne (1990); Nairne and Neumann (1993)
  - Increased performance on list reconstruction task for related (RP) lists relative to unrelated (ISP) lists
- Tehan, Fallon, and Randall (1997)
  - Increased performance on list reconstruction for related (RP) lists in a pleasantness rating task (ISP)
  - Increased performance on list reconstruction for unrelated (ISP) lists in a categorization task (RP)

The Current Study

- The current experiment examines the effects of survival processing relative to item-specific (unrelated words) and relational processing (categorized words) on memory for temporal order (list reconstruction).

Methods

Participants

- 108 students from the University at Albany, SUNY

Stimuli

- 8 unrelated words and 8 categorized words (Van Overschelde, Rawson, & Dunlosky, 2004).
- All words equated on word length and frequency.
  - Unrelated: lake, ear, bee, eagle, gold, door, uncle, robe
  - Categorized: cat, bear, cow, wolf, lace, silk, wool, satin

Procedure

- Either a survival relevance or a pleasantness rating task was presented to participants.
- After each task, participants were asked to rate a list of 8 words (1 = not at all relevant/pleasant; 4 = highly relevant/pleasant).
  - The list would either be comprised of unrelated or categorized words.
  - Words were presented one after the other in a blocked order.
  - Participants had 5 seconds to respond to each word.
- After rating each of the 8 words, participants were presented with a 2-minute forward digit-span task.
- Finally, participants were presented with the original list of 8 words in a randomized order, and were asked to arrange the presented list in its original order (list reconstruction task).

Results

<table>
<thead>
<tr>
<th>Word Type</th>
<th>Encoding Condition</th>
<th>Reaction Times (Seconds)</th>
<th>Ratings (1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Unrelated</td>
<td>Survival</td>
<td>2.23</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>Pleasantness</td>
<td>2.25</td>
<td>0.43</td>
</tr>
<tr>
<td>Categorized</td>
<td>Survival</td>
<td>2.26</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>Pleasantness</td>
<td>2.22</td>
<td>0.51</td>
</tr>
</tbody>
</table>

Summary

- Reaction Times and Ratings: No differences across encoding condition or word type.
- List Reconstruction:
  - Categorized words > unrelated words ($p < .05$)
  - Survival = pleasantness

Discussion

- At a longer retention interval, both survival and pleasantness encoding conditions benefit from enhanced relational processing.
  - The data support findings from previous research (Nairne & Pandeirada, 2008; Robinson & Altarriba, 2013), suggesting that both survival and pleasantness encoding are due to item-specific mechanisms.
- Results do not provide evidence for a survival advantage when applied to memory for temporal order (at a longer retention interval).
  - What occurs at a shorter retention interval?
  - What would be expected in a serial recall task?

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