That Bear is OSO Ferocious!
Animacy and Second-Language Acquisition in the Survival Memory Paradigm

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Altarriba & Basnight-Brown (2011)

- Are certain word types acquired in a new language learned more easily than others?

- English monolinguals learned a set of concrete (e.g., ankle), abstract (e.g., virtue), and emotion (e.g., scared) words in Spanish. Cued recall and sentence completion tasks were used to reinforce learning.
Learning was assessed via color-naming and recognition tasks.

- Color-naming: RTs were fastest on emotion trials
- Recognition: slowest, more errors on emotion trials

When learning a new language, words are acquired at different rates; using a variety of tasks can provide a more complete picture of performance.
According to Nairne and his colleagues (Nairne, Pandeirada, & Thompson, 2008; Nairne, Thompson, & Pandeirada, 2007), memory is optimized when a word is processed for its survival-relevance.

Considering a word’s survival-relevance increases its memorability because of the close match between a survival scenario and survival in our ancestral environment.
In this paradigm, participants first read a survival scenario (or a control scenario):

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. We are going to show you a list of words, and we would like you to rate how relevant each of these words would be for you in this survival situation. Some of the words may be relevant and others may not—it's up to you to decide.

Then, after a brief filler task, they are surprised with a word recall or recognition task.
Can survival processing also enhance foreign language instruction?

Across four experiments, memory performance following survival-relevance ratings was compared with pleasantness ratings.
Survival instructions

Imagine as best as possible that you are stranded in a foreign grassland, such as the plains of Africa. You are the only one in this environment and you have no survival materials. Over the course of a few months, you will need to find steady supplies of food and water and protect yourself from predators. *We are going to show you a list of word pairs on a PowerPoint slide show. Each slide will display a single word in Swahili on the left side, and its English translation on the right side, for 5 seconds.* Your task is to rate how relevant each of these words would be for you in this survival situation (on a scale from 1 to 5; 1 being barely relevant and 5 being highly relevant). Some of the words on these slides may be relevant and some may not—it is up to you to decide.
Pleasantness instructions

I am going to show you a list of word pairs on a PowerPoint slide show. Each slide will display a single word in Swahili on the left side, and its English translation on the right side, for 5 seconds. Your task is to rate the pleasantness of each word (on a scale of 1 to 5; 1 being very unpleasant and 5 being very pleasant). Some of the words on these slides may sound or look pleasant to you while some words may not—it is up to you to decide.
Schwartz & Brothers (2014)

 Languages:

 - Experiments 1-2: Swahili-English word pairs
 - Experiments 3-4: Lithuanian-English word pairs

 However, in none of these experiments did Schwartz and Brothers (2013) find any evidence of a survival advantage with these stimuli.

 - Feeling-of-knowing and feeling-of-forgetting judgments were also collected, with the same result.
VanArsdall et al. (2015)

- Can we detect evidence of a “survival advantage” in foreign language instruction in other ways—such as with animate and inanimate words?
  
  - Living things are among the most important things in our environment: They represent potential predators, prey, mates, kin, partners for social interaction, and so on.
Van Arsdall et al. (2015)

- Experiment 1: living things v. non-living things (stimuli selected from Nairne et al., 2007)
- Experiment 2: four-legged animals v. furniture (Van Overschelde, Rawson, & Dunlosky, 2004)
- Both experiments created Swahili-English word pairs (not the actual translations).
Van Arsdall et al. (2015)

- Across both experiments, the authors detected a robust animacy effect, indicating that it is easier to learn foreign language translations that refer to animate words.
- Animacy may also be an important dimension to consider when creating word stimuli (Nairne, Van Arsdall, Pandeirada, Cogdill, & LeBreton, 2013).
The Current Study

- Do animacy effects persist in foreign language learning, within the survival processing paradigm?
  - Does the memory advantage “work” with these materials?

- These research questions have clear implications for the way we design foreign language curricula.
Method – Participants

- 81 University at Albany, SUNY undergraduates (34 males, 47 females)
- None of our participants had prior language instruction in Spanish.
Method - Participants

- Language background information:
  - 37 English monolinguals
  - 44 bilinguals and multilinguals
    - 29 bilinguals and multilinguals listed English as one of their first languages
    - Other languages spoken: Italian (10), French (8), Japanese (5), German (4), Arabic (3), Korean (3), Russian (2), Hebrew (2), Creole (1), Haitian (1), Malinke (1), Mandarin (1), Polish (1), and Telugu (1)
Method – Materials

- **Translations**
  - 24 concrete nouns were selected, across a variety of common categories (Van Overschelde et al., 2004):
    - Animate categories: four-legged animals, insects, birds
    - Inanimate categories: articles of clothing, fruits, weapons
  - Animate and inanimate words were translated to Spanish and matched in both languages on word length, frequency, number of syllables, familiarity, imagery, and concreteness.
Method – Materials (cont.)

- Learning phase instructions
  - Intentional learning (baseline)

In this task, we are going to teach you a list of Spanish-English translations. We would like you to try to remember the new Spanish words for a future memory test.
Learning phase instructions

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 past few months, you’ve had to find steady supplies of food and water and protect yourself from predators. Today, you encountered a stranger and you must work together to guarantee your chances of survival. This stranger speaks Spanish, but you do not, so you will have to learn some words in their language. We are going to teach you a list of Spanish-English translations. We would like you to try to remember the new Spanish words for a future memory test.
Learning phase instructions

Moving

In this task, we would like you to imagine that you are planning to study abroad next semester in Spain. Over the next few months, you’ll need to locate and rent a new apartment and transport your belongings overseas. Today, you learned that you will be getting a new roommate who only speaks Spanish. You must learn some words in their language to improve your living situation and study abroad experience. We are going to teach you a list of Spanish-English translations. We would like you to try to remember the new Spanish words for a future memory test.
Method – Materials (cont.)

- **Learning phase stimuli**
  - Auditory recordings of the word pairs were created using the Audacity recorder and editor program.
  - Clipart was used to select simple, black-and-white depictions of each word.
  - Two lists of 12 word pairs were created, with an equal number of animate and inanimate word pairs.
Method – Materials (cont.)

- Testing phase (3 tests, total)
  - Sentence-completion task (piloted completion rate: 70%)
    Let’s go to the dairy farm and learn how to milk a ______________.
  - Picture-naming task
  - Matching task
Method – Procedure

- Learning phase: instructions were manipulated between-subjects.
- Learning trials

- 500 ms

- duck – pato
  - 5000 ms for listening

- duck - pato
  - 5000 ms for repeating
Testing phase

- All participants completed the three tests in the same order (beginning with the most difficult): sentence-completion, picture-naming, and matching.

- Participants in the survival and moving conditions answered scenario-specific questions, to assess the effect of (1) interest; (2) imageability; (3) arousal; (4) familiarity; (5) distinctiveness; and (6) semantic richness.
The animacy x instructions interaction was significant ($p < .05$).
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The animacy x instructions interaction was not significant—but take a look at the main effect of animacy!
Results – Scenario Ratings

Scenario ratings for survival and moving conditions

<table>
<thead>
<tr>
<th></th>
<th>Survival</th>
<th>Moving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>3.71</td>
<td>3.72</td>
</tr>
<tr>
<td>Imageability</td>
<td>3.83</td>
<td>3.39</td>
</tr>
<tr>
<td>Arousal</td>
<td>2.54</td>
<td>2.50</td>
</tr>
<tr>
<td>Familiarity *</td>
<td>1.96</td>
<td>2.72</td>
</tr>
<tr>
<td>Distinctiveness *</td>
<td>3.38</td>
<td>2.83</td>
</tr>
<tr>
<td>Richness</td>
<td>3.58</td>
<td>3.39</td>
</tr>
</tbody>
</table>

* (p < .05)
Additional Research Questions

- Is future language learning benefitted by prior language learning?
  - No, our monolingual participants performed better than our bilinguals and multilinguals on all three tasks (all $p$s < .001).

- How did performance differ across monolinguals ($N = 37$) and bilinguals/multilinguals ($N = 44$)?
Additional Research Questions

- Performance on the sentence-completion task (monolinguals, $N = 10-15$ per condition):
Additional Research Questions

- Performance on the sentence-completion task (bi/multilinguals, $N = 10-15$ per condition):
Additional Research Questions

- Performance on the picture-naming task (monolinguals, $N = 10-15$ per condition):

![Bar chart showing proportion correct for Intentional, Survival, and Moving Instructions with separate bars for animate and inanimate categories.](image)
Performance on the picture-naming task (bi/multilinguals, $N = 10-15$ per condition):
Additional Research Questions

- Performance on the matching task (monolinguals, $N = 10-15$ per condition):

![Bar chart showing proportions correct for Intentional, Survival, and Moving Instructions with bars for Animate and Inanimate categories.](chart.png)
Additional Research Questions

- Performance on the matching task (bi/multilinguals, $N = 10-15$ per condition):

![Bar chart showing proportion correct for Intentional, Survival Instructions, and Moving with animate and inanimate categories.](image)
Additional Research Questions

- Can scenario rating data explain some of these differences?
  - Bi/multilingual participants rated the survival scenario *more interesting* and *more arousing* than the moving scenario.
  - Monolingual participants rated the moving scenario *more distinctive* than the survival scenario.
Additional Research Questions

- Can motivational factors account for some of these findings?
  - Our demographic questionnaire included items pertaining to motivation to learn new languages.
Can related experiences account for some of these findings?
Future Research Questions

- Do other languages show these effects?
- Do some categories produce animacy effects, but not others?
  - Testing additional exemplars from these categories and a set of new categories can help answer this question.
- Is the survival advantage a function of animacy processing?
  - Researchers do not report item-analyses, but these may provide some insight!
Thanks! 😊
Thanks! 😊