**Abstract**

We conducted an Artificial Language Learning (ALL) experiment to examine the production behavior of language learners in a dynamic communicative setting. Participants learned an artificial language with two optional formal devices and then used the language in a competitive game.

The results showed that language learners opt-out from the use of optional formal devices to increase information efficiency, and that they avoid the production of acoustic noise.

These results could not be within a context of a language model such that the model can more accurately reflect the production behavior of human language learners.

**Introduction**

Glass’s (1975) Model of Quality: Language users avoid the use of redundant or inaudible information in conversational situations.


We present our work using the ALL paradigm but suggest that language learners change from the informational properties of the real language data to make the language more efficient (Philipp, 2020).

We conducted a novel ALL study to observe efficient linguistic behavior in a dynamic communicative setting working in a competitive game.

**Three opt-out were considered:**

- Speaker refusal: silent pauses, regardless of the communicative role in the learning process.
- Speaker variance: in the learner’s role in the game and silently follow (default proclivity) the frequency patterns to which they were exposed during training.
- Speaker random subject denotations: behavior changing in the communicative setting such as acoustic noise or opt-out against the visual context.

We present participants with an artificial language with optional overt subject (OS) and optional agential affixes (AA) in the task and assessed the range of optional devices within a cooperative situation in a dynamic setting.

**Materials and Methods**

The Artificial Language

- 4 pronouns:
  - Artificial language: mon, men, woman, and women.
- 4 adjectives:
  - black, white, green, and red.
- 2 articles (and and the)
- One delimiter (‘‘’)
- 4 Agreement Affixes (gender + number) that could be attached to the word.

All sentences in the artificial language had 5000 constituent units.

**The Experiments**

The stimuli and the effects were both optional and equally distributed during learning. Then the translation for the sentences: “The man drops [the] apple” could not have been made.

**Visual Stimuli**

**Learning:**

- **Listening:**
  - Speaker refusal: silent pauses.
  - Speaker variance: silent pauses following default proclivity.
  - Speaker random subject denotations: behavior changing in the communicative setting such as acoustic noise or opt-out against the visual context.

- **Visual Stimuli**

- **Stimulus:**
  - Words and sentence encoding: visual stimuli and language or visual was accompanied by conditioning of its description in the artistic language.

- **Background noise:** During the game session, a recording of coffee shop background noise at two levels (80 dB - low; 100 dB - high) was played.

**Stimuli**

<table>
<thead>
<tr>
<th>Stimulus Type</th>
<th>Possible</th>
<th>Present</th>
<th>Absent</th>
<th>Overt Subject (SO)</th>
<th>Verb Overlap (VO)</th>
<th>Acoustic Noise (AN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO + AA</td>
<td>0.85</td>
<td>0.35</td>
<td>0.75</td>
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<td>VO + AN</td>
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</table>

The results show that the learners’ production rate of the artificial language.

**Conclusions**

Our participants’ hypothesis on overall global efficiency in the ALL experiment correlated with the willingness to contribute to information in a similar way to what is generally observed in the human language situation. However, the most probable outcome type (OS + AA) was redundant, which does not confirm the "do not make your contribution more informative than expected" postulate. This suggests that language users may not purely Optimistic.

Since the participants, our optional settings of optional devices according to the presented paradigm knowledge between the participants and the constraints of the experiment results suggests a combination of models of language production but include Andrew Leech’s (2011) for the effect of noise; this claim would be in agreement.

The conclusion then leads towards redundant stimuli, variance to assumptions about the knowledge of the communicator and the communicative setting, could be a useful behavior to control in both measures of various processing and applied language models for technological applications.

**References**


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