Learning to express visual contrasts in the production of referring expressions in Yucatec Maya

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Background

Informativeness

Speakers over-inform (despite Grice’s Maxim of Quantity) at a rate of about 30% to 50%, [4], [5], [6]

• Is informativeness in referring be reflective of audience design? [1]

Audience design (AD)

Speakers design their utterances with their addressees in mind [5], [6], but when and how?

• Immediate or adjusting to situational communicative needs, i.e. through experience [6]

Our experiment

Speakers describe videos while listeners choose between two pictures, which best matches the speaker’s utterance

• No listener feedback, but the listener played the role of speaker in the second phase

Method

Participants

30 native speakers of Yucatec Maya at the Universidad del Oriente in Valladolid, Yucatán, México (19 females and 11 males)

Materials

Animated videos with contrasting visual features distinguishing two themes and/or recipients (Figures 1-4)

• Speakers described the videos in one sentence, with the knowledge that their partner would have to choose a picture based on their utterance

• Listeners chose one picture from a set of two, which best matched what the speaker had said

• Only one picture matched the event in video, some had minimal contrasts (Figure 5 vs. 6)

Procedure

The speaker and listener sat facing each other. The speaker sat behind a laptop and was told not to look at the pictures or talk to the listener. After completing the list, the speaker and listener switched roles.

Predictions

If speakers engage in AD, they should reference modifying expressions to describe the contrasting visual feature that differentiates two reference objects

• Prediction 1: Speaker 2 is more informative than Speaker 1, or they are the same (AD is immediate)

• Prediction 2: Speakers 1 and 2 become more informative with experience with the task (AD occurs after adjustment to situational needs [6], as cognitive load is lowered [9]

Results and Conclusions

Audience design-based learning

We found no effect of whether the speaker had first experienced the task as a comprehender

• But Speaker 2 produced slightly fewer under-specifications (see Table 1)

Table 1: Rate of under-specification by speaker

<table>
<thead>
<tr>
<th>Reference object</th>
<th>Speaker 1</th>
<th>Speaker 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme</td>
<td>89%</td>
<td>86%</td>
</tr>
<tr>
<td>Recipient</td>
<td>61%</td>
<td>57%</td>
</tr>
</tbody>
</table>

We found a significant main effect of trial order on the log-odds of under-specification. Under-specification became less likely for themes (p<0.002) and recipients (p<0.06) the more trials produced, for Speaker 1 and Speaker 2 (see Figure 9)

Results

Informativeness

The presence of a visual contrast increased the likelihood of target modifications that identified the contrasting feature for themes ($\chi^2(3)=33.3, p<.001$) and recipients ($\chi^2(3)=111.9, p<.001$)

Recipients were more often given target modifications (about 40%, see Figure 8) than themes (about 11%, see Figure 7)

Figure 1: No contrast
Carlos gave the donut to the man

Figure 2: Theme contrast
Carlos gave the donut with the sprinkles to the man

Figure 3: Recipient contrast
Carlos gave the donut to the man in the white shirt

Figure 4: Both contrast
Carlos gave the donut with the sprinkles to the man in the white shirt

Figure 5: Contrast
Carlos gave the donut to the man

Figure 6: No-contrast
Carlos gave the donut to the man in the white shirt

Figure 7: Theme Specification

<table>
<thead>
<tr>
<th>Speaker 1</th>
<th>Speaker 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under</td>
<td>0.8</td>
</tr>
<tr>
<td>Target</td>
<td>0.5</td>
</tr>
<tr>
<td>Over</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Figure 8: Recipient Specification

<table>
<thead>
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Figure 9: Proportion of under-specifications with speaker experience

Conclusions

• Yucatec speakers over-specify at a rate similar to speakers of other languages (32% for recipients, though not for themes)

• Experience as a comprehender did not make audience design more immediate

• Speakers learned (through their own experience producing) to design their utterances to be more informative

• Support for the view of AD as adjustment to situational communicative needs [6], which may reflect lowering of cognitive load through trial-and-error (such as [7]) then setting a strategy which should persist [9]

References


