Contrastive intonation in native- vs non-native coreference processing

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Goals and Motivation

- Use contrastive intonation to test effects of memory, expectations, salience, and information structure in coreference processing by native speakers of English and Japanese- & Korean-speaking learners of English.

Coreference Processing: Background

Previous research, with written stimuli:
\begin{itemize}
  \item \textsuperscript{1}John\textsubscript{he} gave Bob\textsubscript{him} a book \textsuperscript{he} \textsubscript{him}
  \item \textsuperscript{2}John\textsubscript{he} gave Bob\textsubscript{him} a book \textsuperscript{he} \textsubscript{him}
\end{itemize}

Expectancy/prediction plays a critical role in native-language (L1) processing of coreference: Semantic properties of the current sentence drive L1ers’ expectations about upcoming coreference & coherence. (e.g., Arvan, 2005; Rehme & Feiler, 2008).

- Event structure is used to predict next mention:
  \begin{itemize}
    \item Completed events (perfective aspect) favor the end-state referent (the Goal).
    \item Ongoing events (imperfective aspect) favor the start-state referent (the Source).
  \end{itemize}

- Pronoun/free prompt: Coreference with the preceding subject (here, the Source) increases with an overt pronoun prompt, compared to a free prompt (e.g., Rehme & Feiler, 2008; Stevenson et al., 1994).

- Non-native speakers may have reduced ability to generate expectations (RAGE) (Grüter et al. 2016): Japanese/Korean L1ers of English show:
  \begin{itemize}
    \item Similar effect of prompts to L1ers.
    \item Similar retroactive processing/integration to L1ers.
    \item No significant effects of event structure manipulation.
    \item Weaker predictive processing than L1ers.
  \end{itemize}

Participants & Knowledge-of-Aspect Test

Participants
L1: 47 native speakers of English
L2: International/exchange students at U. of Hawai`i 26 native speakers of Japanese (n=12) or Korean (n=14)
- Versant English M=51.80 (16-80)
- English self-rating M=4/6 (1-3)

Knowledge-of-aspect task
Do L2 participants understand the semantics of grammatical aspect in English? Participants read descriptions of complete vs. incomplete events and gave true/false judgments on statements about them.

- Patrick and Ron are at the pool together. [picture of towel] This is the towel that Patrick will give to Ron. At 4:05, Ron is doing water and ready to shower.

  \begin{itemize}
    \item Complete event
    \item Incomplete event
  \end{itemize}

- Later, Patrick says at 4:05, Patrick is giving the towel to Ron.

  \begin{itemize}
    \item Patrick's statement is FALSE after a complete event, TRUE after an incomplete event
  \end{itemize}

Native speakers judgments:

- 100% true after complete event, 99% true after incomplete event

Intonation: Background & Predictions

Prosody and intonation cue information structure. Contrastive intonation:

- Makes information more salient in memory (e.g., Finkbeiner et al. 2010) and can increase coreference for object pronouns (Baugh 2005).

- Predicts a simple salience effect:
  \begin{itemize}
    \item Contrast on \textsuperscript{1}“Source”/\textsuperscript{2}“Topic” \rightarrow More \textsuperscript{1}“Source” coreference
    \item Contrast on \textsuperscript{1}“Goal”/\textsuperscript{2}“Non-topic” \rightarrow More \textsuperscript{1}“Goal” coref & topic switch
  \end{itemize}

- May affect discourse expectations related to a contrastive information structure

- Predicts a Topic Maintenance pattern:
  \begin{itemize}
    \item Contrast on \textsuperscript{1}“Source”/\textsuperscript{2}“Topic” \rightarrow More \textsuperscript{1}“Source” coreference
    \item Contrast on \textsuperscript{1}“Goal”/\textsuperscript{2}“Non-topic” \rightarrow “More” Source coreference & topic maintenance with contrastive alternative goals (Kim et al. 2014). Using a similar story-continuation task, can elicit maintenance patterns in Japanese. (Wong & Schwenter 2015).
  \end{itemize}

L1 versus L2 Processing

Aspect: Driven by expectations
1. Predict an L1/L2 difference (✓ RAGE)

- Contrastive intonation can be retroactive
2. Will L2ers show weak use of any early cue, e.g. because of memory decay? (x)
3. Contrastive intonation can be used retroactively in a search for a referent/topic. Will L2ers use contrastive intonation but not aspect? (✓)

For L1 & L2: Simple Salience

Topic Maintenance? (Simple Salience)

Results: Proportion of Source Reference in Story Continuations

- Extends the limited previous research on coreference and intonation; provides full prosodic description of stimuli.

1. L1ers and L2ers both use contrastive intonation with the Simple Salience pattern. Evidence against simple memory decay in L2ers.
2. Replicates the weaker effect of aspect in the L2 group from our written study (Schafer et al. 2014).
3. Supports the RAGE account; suggests that L1ers predict a coherence relation and coreference but that L2ers initiate a retroactive search at the continuation subject (the prompt) for a referent. Contrastive intonation on an NP can serve as a cue in a retroactive referent search, but aspect cannot (since the verb is not part of the search domain).

- The strength of coreference cues may depend on their availability at times when relevant processing decisions are made – times that may not always be the same in native vs. non-native processing.

Conclusions and Work in Progress

- Relation between coherence relations and coreference in these data
- Accented vs. unaccented pronoun prompts
- Online measure of anticipatory coreference processing (Visual World)

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