Contrastive utterances make alternatives salient: Evidence from cross-modal priming

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Intonation in online comprehension: the role of accentuation

- Accent on referent
  Move the candy above the triangle. Now move the {CAN/can}dle above…

- Accent on adjective
  Click on the purple scissors. Now click on the {RED/red} scissors

Dahan, Tanenhaus & Chambers (2002); Weber, Braun & Crocker (2006); Ito & Speer (2008)
Intonation in online comprehension: the role of pitch accent type

- Interpretation of $H^*$ (newness accent) and $L+H^*$ (contrastive accent)

Click on the camel and the dog. Move the dog to the right of the square. Now, move the camel/candle below ...

$L+H^*/H^*$

Bias towards camel (contrast)  Bias towards candle (new)
Motivation

- Contrastive utterances – out of context

Where were you at the time of the murder?

I was at home I was at home
Motivation

• Semantically, accentuation is formalized via alternative-sets (Rooth, 1992)

• Accented element can be replaced by contextually available alternative

“The pink panther was at home!”

\[
\text{in a bar}
\]
\[
\text{at the gallery}
\]
\[
\text{in Paris}
\]

• Do these alternatives become immediately salient to the listener?
General paradigm: cross-modal associative priming

- Priming from isolated words
  - lexical decision to visual target faster after hearing related than unrelated auditory prime (priming)

- Priming from sentences
  - for sentence-final primes
  - for sentences with syntactic or lexical focusing operators (it-clefts, focus particles) and contrastive accents

Swinney, Onifer, Prather & Hirshkowitz (1979); Norris, Cutler, McQueen & Butterfield (2006)
Research questions

• Are alternatives primed more by a contrastive intonation than by a non-contrastive intonation?

Contrastive intonation: De jongens bezochten een casino ‘The guys visited a casino’

non-contrastive intonation: De jongens bezochten een casino

• Is priming specific to contrastive alternatives or does contrastive intonation prime all kinds of associates more?

De jongens bezochten een casino

DISCO

GOKKEN
‘gamble’
Cross-modal associative priming

Dirk fotografeerde een flamingo

Dirk fotografeerde een flamingo
Cross-modal associative priming

prime

Dirk fotografeerde een **flamingo**

Dirk fotografeerde een **flamingo**
Cross-modal associative priming

Dirk fotografeerde een flamingo

PELIKAAN  ROZE
(‘pink’)

prime  Contrastive target  Non-contrastive target
Cross-modal associative priming

**Prime**
- Dirk fotografeerde een flamingo

**Contrastive target**
- PELIKAAN
- ROZE (‘pink’)

**Non-contrastive target**

**Related**
- Dirk fotografeerde een flamingo

**Unrelated**
- Dirk fotografeerde een beroemdheid

‘celebrity’
Materials

- **Participants**: 40 in both experiments
- **Primes**: 36 trisyllabic words with stress on 2nd syllable

- **Targets**
  - contrastive: chosen with help from informants, contextual alternatives
  - non-contrastive: collected in web experiment, most frequent, non-contrastive response
  - association strength between targets and primes (1-7): 5.5 for contrastive and 6.2 for non-contrastive targets

- **Recording** (trained speaker)
  - contrastive intonation cued by contrastive precursor
Exp1: contrastive visual targets (PELIKAAN)

Dirk fotografeerde een beroemdheid (‘celebrity’)

Dirk fotografeerde een flamingo

![Diagram showing reaction times for contrastive and non-contrastive intonations.]
Exp2: non-contrastive visual targets (ROZE) ‘pink’

Dirk fotografeerde een beroemdheid (‘celebrity’)  

Dirk fotografeerde een flamingo

![Graph showing reaction times for contrastive and non-contrastive intonation with unrelated and non-contrastive visual targets.](image-url)

- **Reaction time in ms**
  - Contrastive: around 530 ms
  - Non-contrastive: around 540 ms

**Legend:**
- **unrelated**
- **non-contrastive**
Conclusion

**Contrastive associates**
- i.e. contextual alternatives – are facilitated only when the primes are realized in sentences with contrastive intonation

**Non-contrastive associates**
- i.e. generic associates, no contextual alternatives – are weakly facilitated independent of intonation contour
Discussion

- Processing of utterances with **non-contrastive intonation**
  - only highly related associates became accessible (e.g., flamingo – pink)
Discussion

- Processing of utterances with **non-contrastive intonation**
  - only highly related associates became accessible
    (e.g., flamingo – pink)

- Processing of utterances with **contrastive intonation**
  - both highly related and contrastive associates became accessible
    (e.g., flamingo – pelican)
  - contrastive intonation attracts more attention and makes less strongly related associates accessible
  - “presupposition resolution mechanism” makes alternatives to accented elements salient
Discussion

• Contrastive intonation modulates sentence interpretation
  • only a contrastive interpretation makes contextual alternatives more salient, hence more easily recognizable

• Sentences with a contrastive intonation make conceptual alternatives salient
  • *even* when sentences are syntactically neutral
  • *even* in the absence of other linguistic context (e.g., discourse context)
Thank you for your attention
Dirk fotografeerde een beroemdheid (‘celebrity’)

Dirk fotografeerde een flamingo

Contrastive targets
(pelikaan)

Non-contrastive targets
(roze, ‘pink’)

Graph showing reaction times (RT) for contrastive and non-contrastive intonation with different target words.
Realization of intonation contours:
Examples

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Realization of intonation contours:
Examples

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Realization of intonation contours: pitch values

Accent 1

Target word

Intonation

- contrastive
- non-contrastive