Prominence guides incremental interpretation: Lessons from obviation in Ojibwe

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Animate nouns are more likely than *inanimate* nouns to be interpreted as agents under incremental ambiguity (e.g. Gennari & MacDonald, 2008; Wagers & Pendleton, 2016; Wagers, Borja, and Chung, 2018). Here, we investigate how an understudied type of prominence information, *obviation,* affects processing. Obviation organizes *animate third persons* by their discourse prominence: A third-person entity "in the spotlight" is PROX(IMATE), while all others are OBV(IATIVE). Like person and animacy, obviation can be described through the *Person-Animacy Hierarchy* (1; PAH).

(1) 1/2 (PARTICIPANTS) > 3 (PROXIMATE) > 3′ (OBVIATIVE) > 0 (INANIMATE)

We present a study of real-time processing in Ojibwe to ask **whether the PAH is *generally* employed in comprehension, with higher-ranked nouns more likely to receive agent interpretations**.

Our stimuli (2) are RCs crossing two factors: HEAD obviation (PROX/OBV) and VOICE (DIR/INV). Obviation and voice codetermine interpretation: DIRECT (-*aa*) indicates PROX acting on OBV, and INVERSE (-*igo*) the reverse.

(2) a. ... **gichi-aya'aa** gaa-baapi'**-aa**/**-igo**-d inini -wan
…elder.PROX REL-laugh **-DIR**/**-INV**-3 man -OBV
'...the elder (PROX) who is {laughing at the man/being laughed at by the man}'
b. ... **gichi-aya'aa-n** gaa-baapi **-aa**/**-igo**-d inini
…elder-OBV REL-laugh**-DIR**/**-INV**-3 man.PROX
'...the elder (OBV) who the man {is laughing at/is being laughed at by}'

There is a period of ambiguity where the obviation of the head noun is known, but the disambiguating voice information is not. We used eye-tracking while listening to **assess preferences to interpret the head noun as an agent** under ambiguity. 16 speakers of Ojibwe participated in the task schematized in (3). In the two critical images the head noun was either the agent or patient. After familiarization, a sentence played. Participants selected the image associated with their interpretation via a touch screen.

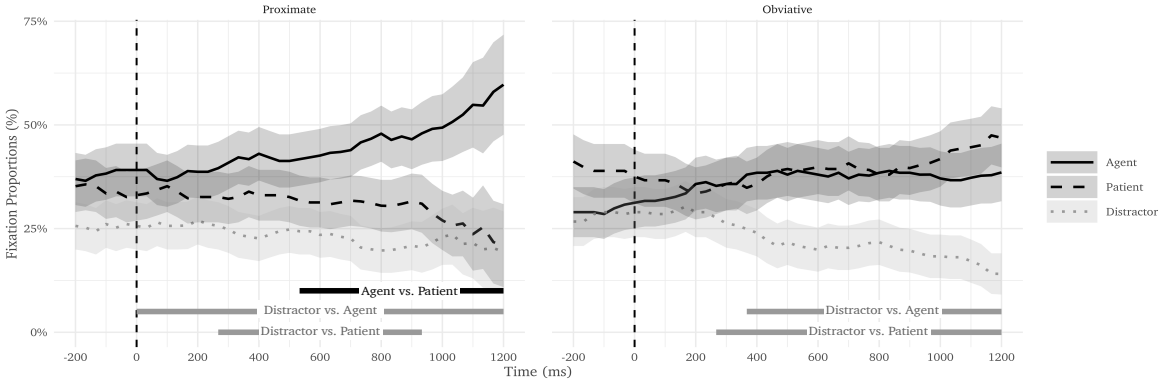
(3) *Outline of task.*

1. Fixation cross (1500ms) 2. Visual stimulus onset and familiarization (4000ms) 3. Auditory stimulus onset 4. Response selection and verification

Looks towards each image during the ambiguous region, collapsed across levels of VOICE (not yet encountered in the sentence), are in (4). Cluster-based permutation tests (Barr, Jackson, and Phillips, 2014) showed an effect of HEAD (p = .005), driven by increased looks towards the agent image after proximate heads (p = .013). There were no differences following obviative heads. This finding suggests that **PROXIMATE nouns are more likely to be incrementally interpreted as agents**.

A logistic mixed effects model of picture selection accuracy (5) revealed a main effect of HEAD ($p < .001$) and an interaction between HEAD and VOICE ($p < .001$) such that inverse was associated with increased accuracy with obviative heads, and decreased accuracy with proximate. The main effect of obviation is consistent with a passive-like analysis of the inverse (e.g. Bruening, 2005). This leads to increased accuracy via the "Subject Gap Advantage" (e.g. Kwon et al., 2010). The interaction between HEAD and VOICE suggests an *agent-first preference* (e.g. Bornkessel-Schlesewsky & Schlesewsky, 2009): When the head is an agent, accuracy is high, perhaps because reanalysis is not necessary. This may also explain the *lack of looking preference with obviatives*: There is competition between pressures toward a patient interpretation (PAH), and towards an agent interpretation (agent-first preference). Overall, **the findings support a model where prominence effects are unified under the PAH**, with similar effects appearing with different types of prominence information (i.e. animacy, obviation) and across typologically diverse languages (e.g. Indo-European, Algonquian).

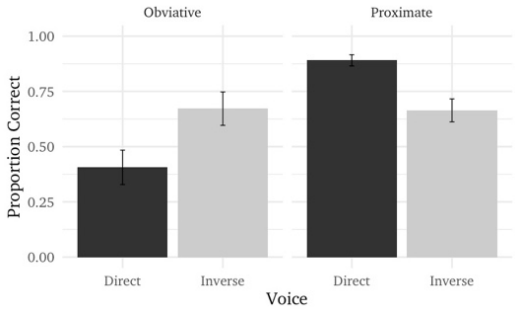
(4) *Critical ROI looking results*



Contrast	Head	Cluster (ms)	CMS (z)	p-value
Agent v. Patient	Proximate	533–1200	48.54	*0.013
	Obviative	—	—	—
Distractor v. Agent	Proximate	0–1200	−112.39	*0.001
	Obviative	367–1200	−74.17	*0.009
Distractor v. Patient	Proximate	0–133	−7.60	0.185
		267–933	−38.52	*0.010
	Obviative	0–100	−5.96	0.221
		267–1200	−96.87	*< 0.001

Main Effect of Head	Cluster (ms)	CMS (z)	p-value
Agent v. Patient	433–1200	55.55	*0.005
Distractor v. Agent	—	—	—
Distractor v. Patient	0–1200	29.02	0.078

(5) *Picture selection results*



Effect	z	p-value
HEAD	3.39	*< 0.001
VOICE	0.60	0.548
HEAD:VOICE	3.67	*< 0.001

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