Gradable adjectives, vagueness & context-dependence

Joint inference model: Lassiter and Goodman (2014, online first)

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Outline

look at lexical items with context-dependent "threshold semantics"

vague gradable adjectives: *tall*, *long*, *full*, . . .

here only: descriptive use of positive form

explore idea that contextual resolution of threshold . . .

. . . depends on prior expectations

. . . is a joint pragmatic inference (Lassiter and Goodman, online first)

Degree semantics for gradable adjectives

Lexical meaning of adjective *A* is a measure function

$[\![A]\!]_{\langle e,d\rangle} = \lambda x_e \,.\, \mathbf{A}(x)$ e.g., $[\![\text{tall}]\!]_{\langle e,d\rangle} = \lambda x_e \,.\, \mathbf{height}(x)$

Truth conditions for simple positive sentences

$[\![\text{Hans is tall}]\!]_t = \theta_{tall} \prec \mathbf{height}(hans)$

θ_A : contextually supplied threshold

Question for pragmatics

How to determine θ_A in a given context?

today's suggestion: as a function of prior expectations

(Rotstein and Winter, 2004; Kennedy and McNally, 2005)

Relative vs. absolute adjectives

Two types of adjectives

relative: variable thresholds in different contexts
e.g., *short*, *tall*

absolute: fixed thresholds across contexts
e.g., *open*, *closed*

Example

(1) Joe is pretty short, but he's *tall for a jockey*.

(2) ?? This door is pretty open, but it's *closed for a sliding door*.

Relative vs. absolute adjectives

Kennedy's observation

Absolute/relative distinction correlates with degree scale properties:

absolute adjective "$\Leftrightarrow$"

upper-/lower-bound are available degrees/measures

Open issue

How to fix θ for relative adjectives?

ideally: explain why absolute adjectives have fixed thresholds as well

(Kennedy, 2007)

Joint-inference of semantic parameter

Notation

$S = \mathbb{R} = \{x \in \mathbb{R} \mid \text{Al is } x \text{ tall.}\}$

$U = \{\text{tall}, \emptyset\}$

$\theta \in \mathbb{R}$

$[\![\mathit{tall}]\!]^{\theta} = \{s \in S \mid s > \theta\}$

$[\![\emptyset]\!]^{\theta} = S$

$P(s)$: prior for comparison class

Definitions

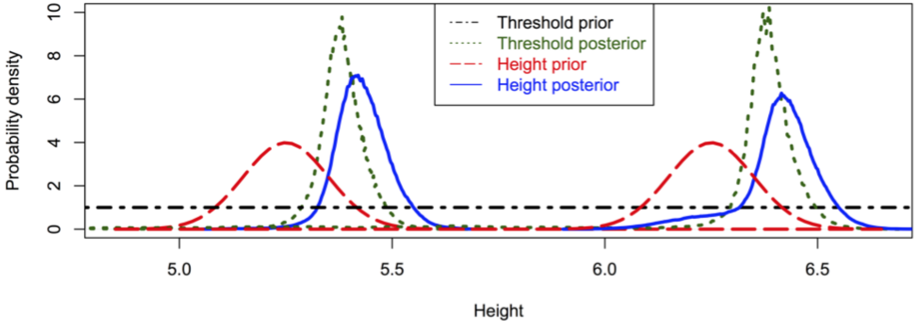
$$P_{LL}(s \mid u, \theta) = P(s \mid [\![u]\!]^{\theta})$$

$$P_{S_1}(u \mid s, \theta; \alpha, C) \propto \exp\left(\alpha\left(\log P_{LL}(s \mid u, \theta) - C(u)\right)\right)$$

$$P_{L_1}(s, \theta \mid u; \alpha, C) \propto P(s) \cdot P(\theta) \cdot P_{S_1}(u \mid s, \theta; \alpha, C)$$

assume $P(\theta) = P(\theta')$ for all θ, θ'

Simultion results



Upshot

listener has flat prior over θ

infers reasonable θ for every utterance

$\alpha = 4,\ C(\text{tall}) - C(\emptyset) = 2$

References

Kennedy, Christopher (2007). "Vagueness and Grammar: The Semantics of Relative and Absolute Gradable Adjectives". In: *Linguistics and Philosophy* 30, pp. 1–45.

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