Pragmatic underpinnings of the basic-level bias

Introduction Both children learning word meanings [1,2] and adults labelling objects [3] prefer "basic"-level terms ("dog"), over subordinate-level ("dalmatian") or superordinate-level ("animal") terms. The basic-level bias has been argued to emerge from the perceptual [4,5] or sampling [6,7] properties of label-referent pairings. Here, we propose instead that the use of basic and non-basic terms crucially involves identifying the relevant level of pragmatic informativeness [8,9]. On this proposal, basic-level labels are preferred across contexts because they are informative enough for a generic addressee [10,11].

Hypothesis We test two predictions of the hypothesis that the basic-level bias partly has linguistic-pragmatic underpinnings. First, a superordinate-level term should be judged as infelicitious (but not entirely incorrect) where the basic-level one is known and relevant, as in other cases of under-informativeness [12,13,14]. We expect adults to be sensitive to this pragmatic violation (of calling a familiar dog an "animal", for example), while children may have difficulties without specific contextual support. Second, the basic level should be preferred in production, unless the context introduces more specific (non-generic) informativeness expectations.

Experiment Fifty adults and twelve children (4;2–5;6, planned n=50) participated online. Participants interacted with Suzy, a child practicing for a show-and-tell presentation. In 8 critical trials, Suzy labelled images of everyday objects at either the *Basic* or the *Superordinate* level, and established her familiarity with them (Figure 1A). For each label, participants gave Suzy feedback using a ternary reward scale; of interest was whether superordinate labels would elicit more middle ratings as is typical of under-informativeness [15]. We also included 16 clearly true/false filler trials (high/low reward). As an additional test of pragmatic sensitivity, participants were later asked how they would label the critical images (*Self*) or how Suzy should do it (*Normative*; between-participants, Figure 1B).

Results (adults) The rating data (Figure 2A) show that the *Basic* trials were rated at ceiling, whereas the *Superordinate* trials received fewer "high" (Table 1) and more "middle" (Table 2) responses. The production data (Figure 2B) revealed a basic-level preference in the *Normative* Prompt. However, in the *Self* Prompt, that preference decreased; since adults had already been exposed to a history of Suzy's labelling, they were in contrast more likely to use more informative, *subordinate*-level terms (e.g., "dalmatian") (Table 3).

Results (children) Children rated both the *Basic* and *Superordinate* trials similarly to each other and to the true fillers, unlike adults (Figure 3A). Despite the high ratings for the *Superordinate* trials, however, children were not pragmatically insensitive: they overwhelmingly produced basic-level labels in the *Self* condition for the same objects (Figure 3B; *Normative* condition data pending).

Conclusion Adults judge superordinate labels as infelicitous but shift their basic-level preference when the prior discourse becomes relevant to the choice of label. Children are less sensitive to the under-informativeness of superordinates in (ternary) judgment tasks, though this may be due to a lack of contextual support for a more informative (basic-level) alternative. We conclude that the basic-level bias can be linked to expectations about the pragmatic levels of informativeness encoded in category labels.

Word Count: 500

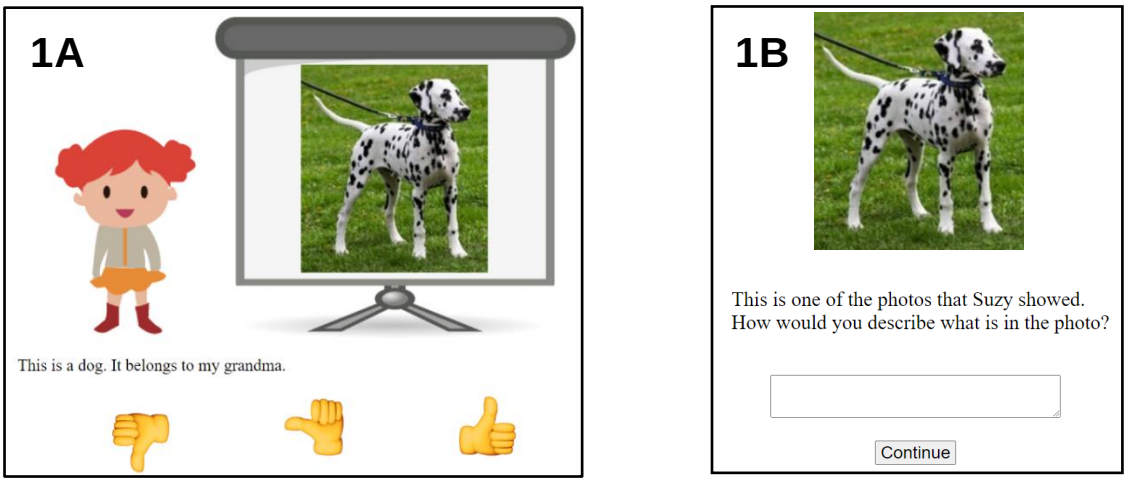

Figure 1. The rating task (A) and the production task (B). In the version for children, an experimenter role-played Suzy and delivered the stimuli verbally. The ternary scale icons were changed to strawberries of varying sizes (small, medium, large), adopted from [15]. In the production task, the experimenter instructed the children, "Now Suzy needs your help. What would you call this?".

Figure 2. Distribution of adults' responses in the ternary rating task (2A) and the production task (2B).

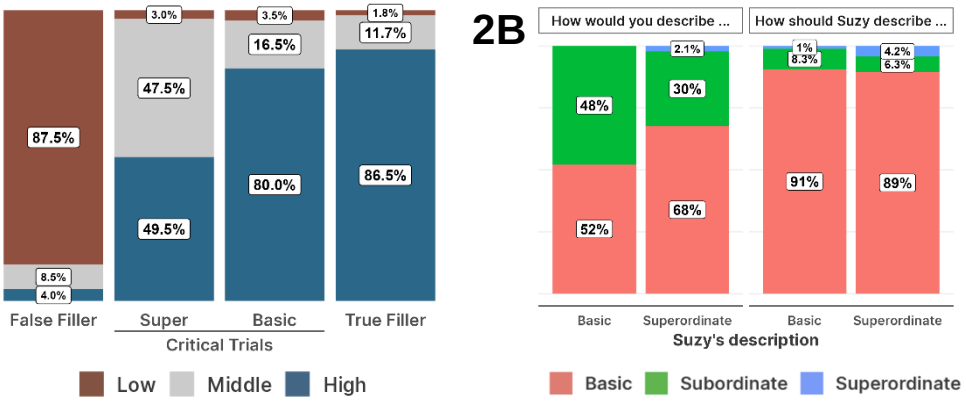

Figure 3. Distribution of children's responses in the ternary rating task (3A) and the production task (3B). All children were ran in the *Self* condition.

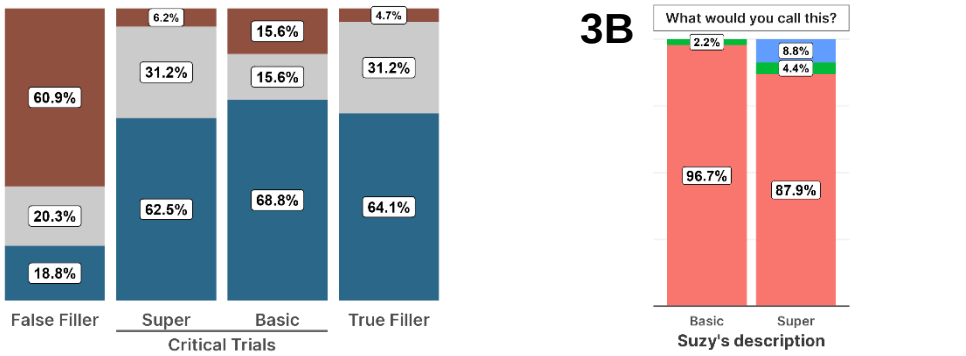

Table 1. Logistic mixed model for High ratings from adults (in Fig. 2A).

	β	t	p
Intercept	1.8	5.4	<0.001
$\text{Label}_{\text{Super}}$	-1.9	-4.5	<0.001

Table 2. Logistic mixed model for Middle ratings from adults (in Fig. 2A).

	β	t	p
Intercept	-2.2	-5.9	<0.001
$\text{Label}_{\text{Super}}$	2.0	4.4	<0.001

Table 3. Logistic mixed model for adults' production of Subordinates (Fig. 2B).

	β	t	p
Intercept	2.8	5.2	<0.001
$\text{Label}_{\text{Super}}$	-0.5	-0.9	0.355
$\text{Prompt}_{\text{Self}}$	-2.7	-4.2	<0.001
Interaction	1.2	1.8	0.072

References: [1] Mervis & Crisafi, 1982. *Child Dev.* [2] Markman, 1990. *Cog. Sci.* [3] Rosch et al., 1976. *Cog. Psy.* [4] Spencer et al., 2011. *Psy. Sci.* [5] Jenkins et al., 2015. *Cog. Sci.* [6] Xu & Tanenbaum, 2007. *Psy. Rev.* [7] Lewis & Frank, 2018. *Psy. Sci.* [8] Clark, 2017. *Cognition.* [9] Choe & Papafragou, 2023, *JML.* [10] Brown & Dell, 1987. *Cog. Psy.* [11] Grigoroglou & Papafragou, 2019. *Cog. Sci.* [12] Geurts, 2010, *Quantity Implicatures*. [13] Gweon et al., 2014. *Cognition.* [14] Papafragou & Musolino, 2003. *Cognition.* [15] Katsos & Bishop, 2011. *Cognition.*