**Inhibition in the computation of scalar implicature**

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Sentences that contain scalar items often find their meanings pragmatically strengthened through a process of scalar implicature. While this process has garnered particular interest in psycholinguistics in recent years in terms of time-course (Beltrama & Xiang, 2012; Bott & Noveck, 2004; Bott, Bailey, & Grodner, 2014; Breheny, Katsos, & Williams, 2006; Huang & Snedeker, 2009; Nieuwland, Ditman, & Kuperberg, 2010; Politzer-Ahle, et al, 2012), acquisition (Bill, et al, 2014; Verbuk, 2012), and individual-differences (Chemla & Marty, 2013; Husband, 2014; Tavano & Kaiser, 2010; Zhao, et al, 2014), little is known about the cognitive mechanisms that speakers use to compute pragmatically strengthened meanings.

Here we explore the idea that scalar implicatures strengthen the meaning of a sentence by inhibiting part of the scalar representation denoted by the scalar item. A scalar adjective like *hot*, for instance, denotes a value of AT LEAST HOT along an increasing scale of temperature (Horn, 1984). We propose that *hot* activates this temperature scale in addition to the values it entails, but that contexts that license scalar implicature trigger an inhibitory mechanism that acts to suppress temperature values greater than the value denoted by *at least hot* on the scale, strengthening the meaning of AT LEAST HOT to EXACTLY HOT.

To investigate this possibility, we employed a cross-model priming study to measure the activation of higher and lower scalar alternatives to scalar adjectives in affirmative contexts where scalar implicature is calculated (1a), or negative contexts where scalar implicature is blocked (1b) (Chierchia, 2004).

1. a. The lawyer’s soup is *hot* and it’s too spicy for him to eat.
   b. The lawyer’s soup isn’t *hot* and it’s too spicy for him to eat.

35 participants listened to context sentences containing a scalar prime word (*hot*) and made word/nonword judgments to scalar alternative target words presented visually at the offset of the prime word that were either higher (*scalding*) or lower (*warm*) than the prime word on the scale. 26 scalar adjective triplets (e.g. <warm, hot, scalding>) were each used twice to create 52 items in which the middle adjective was embedded in either an implicature context (1a) or a no implicature context (1b). 187 fillers were also included to prevent subjects from forming strategies and to balance the word/non-word ratio.

Overall accuracy was very high (>98%). One participant was removed due to excessively long RTs (>2sec). Reaction times were modeled using a mixed effects model with a maximal random effects structure and sum-coded contrasts. We found a significant effect of **scalar alternative** (t=2.13, p=.03) and an interaction between **scalar alternative** and **context** (t=-1.78, p=.08). Responses to higher scalar alternative targets were inhibited in implicature contexts compared to no implicature contexts by 24 msec (t=1.66, p<.10). This was in contrast to lower scalar alternative targets which did not differ between implicature and no implicature contexts (t=-0.95, p=.34).

These results suggest that inhibition is operative in contexts that trigger the calculation of scalar implicature. By suppressing the values of a scale that are higher than those denoted by the scalar item, scalar implicature strengthens the meaning that the scalar item contributes to the sentence, making it more precise.