The polarity sensitivity of bleached degree modifiers

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The puzzle This paper is concerned with a pattern that arises with degree modifiers where a modifier that introduces a specific standard, such as *that* in (1), has a bleached counterpart with a less specific meaning that exhibits NPI behavior, as in (2).

(1) *Height requirement for ride is 160cm.*
   a. Suzy is that tall.
   b. Suzy isn't that tall.

(2) *Talking about Homer's qualities*
   a. *Homer's that tall.
   b. Homer's not that tall.

The questions we will address are: (i) what is the semantics of bleaching?, (ii) why does bleaching lead to polarity sensitivity? and (iii) why negative polarity specifically?

Background As discussed by Israel (2011), polarity sensitive items (PSIs) come in 4 varieties, depending on their polarity (PPI vs. NPI) and their force (emphatic vs. attenuating). Emphatic polarity items (e.g.*a red cent*, PPI *scads of* or *amazingly*) make stronger assertions than potential alternatives, while attenuating ones (e.g. NPI *much*, PPI *fairly*) make weaker assertions, and may thus have a hedged or understated feel. In this abstract we deal with PSIs of the attenuating variety, a type of item that has received little attention in the formal literature (see Schwab & Liu 2022, Onea & Sailer 2013, Solt & Wilson 2021). We further focus on degree modifiers, which we observe come in two varieties: (i) **threshold setters**, which introduce a specific standard (e.g. *too, -er, as*) and (ii) **intensifiers**, which strengthen or weaken the interpretation of the adjective but are otherwise vague (e.g. *fairly, pretty, very, extremely*). Basic *that* in (1) is a threshold setter, whereas its bleached counterpart in (2) is an intensifier.

More supporting data The pattern exemplified in (1-2) is not specific to *that*, but is also found with *so* and *too*. In (3) we see these on their basic, threshold setting, interpretations where the threshold is provided by the adjuncts 'she can touch the ceiling' and 'to sleep in this bed', respectively. On this interpretation, they can occur in both positive and negative contexts. These same modifiers can also take on bleached interpretations where they no longer seem to reference any particular standard but simply act as intensifiers. In this use, they can only occur in the scope of negation, as shown in (4).

(3) *threshold-setter interpretation*
   a. Suzy is(n't) so tall she can touch the ceiling.
   b. Martin is(n't) too tall to sleep in this bed.

(4) *bleached, intensifier, interpretation*
   a. That *was/✓wasn't so smart.
   b. He *is/✓isn't too bright.

We now turn to the three questions introduced above.

What is bleaching? We begin with the semantics of the basic unbleached item, taking *that* as an example. On its threshold-setter interpretation in (1), we analyze *that* as a pronominal element which introduces reference to a specific degree d_c recoverable in the context via deixis or anaphora (5), yielding (6) as the truth conditions of (1):

(5) $[\![\text{that}_{basic}]\!] = \lambda D_{\langle dt \rangle}.D(d_c)$, where d_c is a unique degree recoverable in the context

(6) $[\![(1a)]\!] = \text{HEIGHT}(Lisa) \geq 160cm$ $\quad$ $[\![(1b)]\!] = \neg\text{HEIGHT}(Lisa) \geq 160cm$

We argue that bleaching occurs when this specific, contextually supplied degree is replaced by an underspecified variable over degrees d^* that must be existentially closed at the end of the derivation, deriving an intensifier meaning from the original threshold setter:

(7) $[\![\text{that}_{bleached}]\!] = \lambda D_{\langle dt \rangle}.D(d^*)$, where d^* is underspecified

(8) $[\![(2a)]\!] = \exists d^*[\text{HEIGHT}(Homer) \geq d^*]$ $\quad$ (9) $[\![(2b)]\!] = \exists d^*[\neg\text{HEIGHT}(Homer) \geq d^*]$

It will be seen below that constraints on the range of d^* are one of the crucial ingredients needed for explaining polarity sensitivity.

Why does bleaching result in polarity sensitivity? As shown above, the process of bleaching involves going from a threshold-setting modifier to an intensifier. We claim that intensifiers necessarily compete with the unmodified form (e.g. *Homer is tall*), obligatory competition being a known source of polarity sensitivity (Chierchia 2013 et seq).

Why are the bleached items NPIs? Our proposal will be that bleached *that* and similar items are NPIs because in positive (but not negative) contexts, they are semantically equivalent to the corresponding unmodified form, which is preferred on Manner considerations (Rett 2020). To start, we follow Kennedy (2007) in taking the unmodified form to involve a null degree modifier which introduces a contextual standard d_{Std}:

(10)$[\![\text{Homer is } pos \text{ tall}]\!] = \text{HEIGHT}(Homer) \geq d_{Std}$

Returning to (7), we propose that the underspecified variable d^* must be constrained such that $that_{bleached}$ is a lexicalizable intensifier. This means first of all that $that_{bleached}$+*Adj* must establish a nontrivial partition on the relevant comparison class (ruling out unrealistically high degrees). Second, building on the observation that intensifier-modified forms (e.g. *fairly/very/extremely tall*) all entail the corresponding bare form, we further propose that d^* must be at least as high as the standard introduced by *pos* ($d^* \geq d_{Std}$). But with these restrictions, the positive $that_{bleached}$ sentence in (8) is, after existential closure, semantically equivalent to the unmodified form in (10), merely stating that Homer's height reaches some threshold degree $d^* \geq d_{Std}$. Recall that we assume obligatory competition with the unmodified form, so the equivalence between the two forms gives rise to blocking. By contrast, the negative $that_{bleached}$ sentence in (9) is not equivalent to the negation of (10), because it asserts the existence of some threshold degree d^* – possibly much higher than d_{Std} – that Homer's height does not reach; (9) is thus acceptable.

Can bleaching result in PPIs? In a number of languages (e.g. Romanian below), the equivalent of *enough* has both a basic (11) and a bleached (12) interpretation; crucially, on the latter bleached one, it behaves as a PPI with the interpretation of 'pretty'.

(11)Maria (nu) e destul de înaltă să participe.
Maria (not) is enough of tall to participate
'Mary is(n't) tall enough to participate.'

(12)Maria (*nu) e destul de haioasă.
Maria (*not) is enough of funny
'Mary is(*n't) pretty funny.'

The PPI status and interpretation of bleached *enough* words puts them in the class of moderate (M) degree modifiers such as *fairly/pretty/somewhat*, which are consistently PPIs crosslinguistically. Solt & Wilson account for this behavior by proposing that such modified forms are semantically equivalent to their unmodified counterparts; in positive sentences this equivalence can be broken by virtue of the scalar implicature that arises via competition with *very+Adj*. Since under negation no such implicature can be derived, the equivalence between the bare and the modified variant renders the latter unacceptable, hence the PPI behavior. Going back to bleached *enough* words, we therefore propose that these too produce a meaning is that is equivalent to the positive form (*enough tall* meaning having sufficient height to count as *pos tall*), again yielding PPI status.

As for why the same mechanism does not rescue *that+Adj* in positive contexts, we propose that *very+Adj* is not a possible alternative for it, because in contrast to the case with *fairly*, the threshold degree introduced by *that* may be as high as that for *very*.

Conclusion In accounting for why bleaching of degree modifiers is associated with polarity sensitivity, we appealed to obligatory competition with alternatives. Besides explaining the data at hand, this also allowed us to connect polarity sensitivity in the degree domain to polarity sensitivity elsewhere, reinforcing the observation that competition between alternatives plays a central explanatory role.

Selected references • Chierchia 2013: Logic in grammar. • Israel 2011: The grammar of polarity. • Kennedy 2007: Vagueness and grammar. • Schwab & Liu 2022: Attenuating NPIs in indicative and counterfactual conditionals. • Onea & Sailer 2013: Really *all* that clear? • Rett 2020: Manner implicatures and how to spot them. • Solt & Wilson 2021: M-modifiers, attenuation and polarity sensitivity.