Conventionalizing at least some determiners

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1 Introduction

It has long been noted in the literature that superlative expressions in English, typically formed with superlative morphology like *-est*, can be associated with focus. My goal in this paper is to argue that not all superlative expressions bear the same relationship with focus. In particular, I argue that (i) Superlative Modifiers like *at least* and *at most* have a lexically-encoded, conventionalized dependency on focus, and that (ii) this lexically encoded dependency is not shared by the bare form of the superlative, *-est*.

The paper provides further support to the claim that different kinds of focus-sensitive elements interact with the meaning of focus in different ways, as extensively argued by Beaver & Clark (2008): within the class of superlative expressions, Superlative Modifiers are elements that show Conventional Association with Focus, whereas bare *-est* forms show Free Association with Focus. These claims are substantiated by data from a variety of unrelated languages. The resulting picture is one where Superlative Modifiers need not be treated as degree quantifiers (cf. Hackl 2000).

2 Superlative expressions and focus

2.1 Bare superlatives

Superlative expressions are always evaluated relative to a comparison class (Heim 1999; a.o.). For instance, for a sentence like (1a), the comparison class can be determined by looking at the set of all contextually relevant cakes, as indicated in (1b). In this case, (1a) is true if John buys Cake 4, the most expensive cake of all the available cakes in the context.

(1) a. John bought the most expensive cake for Jane.
     b. Cake 1 = \$20; Cake 2 = \$30; Cake 3 = \$40; Cake 4 = \$50

This interpretation is often referred to as the "absolute" reading of (1a). It is very easy to manipulate what constitutes the comparison class, however. Take, for instance, the context in (2) below.

(2) Bill, Paul and John went to the bakery to buy cakes for Jane. Bill got her a cake for $20, Paul for $30, and John for $40. Nobody bought the cake that costs $50. [Tomaszewicz 2015]

In this context, sentence (1a) is also true, despite the fact that John did not buy the most expensive cake of all the cakes available in the shop. The new context has narrowed down the set of relevant cakes to those that Bill, Paul and John bought for Jane, and so Cake 4 is deemed irrelevant and therefore excluded from the comparison class. This reading is usually referred to as a "relative" reading of (1a).

Since the comparison class can be set differently depending on the context, quite often it can be set in more than one way. As a consequence, it is not uncommon for sentences with superlative expressions to have more than one relative reading.

As observed by Jackendoff (1972), focus is one possible way of narrowing down the comparison class of superlative expressions. This is illustrated in (3): the placement of focus on the subject *John* correlates with the interpretation we obtained for (1a) in the context of (2), where the comparison class is limited to the cakes that were bought by certain people. (The presence of focus does not preclude the absolute reading of (1a).)

(3) John$_F$ bought the most expensive cake for Jane.
    ⤳ *John bought a more expensive cake for Jane than any other (relevant) cake.* ABSOLUTE
    ⤳ *John bought a more expensive cake for Jane than any other (relevant) person did.* RELATIVE

If, instead, *Jane* is the most prosodically prominent constituent, the comparison class is set to people alternative to Jane such that John also bought cakes for them.

(4) John bought the most expensive cake for Jane$_F$.
    ⤳ *John bought a more expensive cake for Jane than any other (relevant) cake.* ABSOLUTE
    ⤳ *John bought a more expensive cake for Jane than he did for any other (relevant) person.* RELATIVE

In order to derive this dependency between how the comparison class is set and focus, we can make use of the following definition of *-est* (from Heim 1999):

(5) a. $\llbracket\textit{-est}\rrbracket = \lambda C_{\langle et\rangle}\lambda D_{\langle d,et\rangle}\lambda x_e.\exists d[D(d)(x) \wedge \forall y[y \in C \wedge y \neq x \rightarrow \neg(D(d)(y))]]$
    b. Presupposition: $x \in C \wedge \forall y[y \in C \rightarrow \exists d[D(d)(y)]]$

With the definition provided in (5), we can pick between one of two main strategies to determine the content of C, the comparison class. The first method, the "movement" analysis, is due to Heim (1999). Here C is a contextual variable corresponding to the comparison class that covertly restricts *-est*. The cluster $[\textit{-est } C]$ combines with a gradable predicate D of type $\langle d, et\rangle$ and yields the property of individuals that have a degree of D such that no other individual in C has that degree of D. Since C consists of individuals that are arguments of D and D is the sister of $[\textit{-est } C]$, C is determined by the LF syntax of $[\textit{-est } C]$ alone. Thus, the cluster $[\textit{-est } C]$ can move and attach to any gradable predicate of the right type ($\langle d, et\rangle$),

including those created by movement and λ-abstraction. Different scopes yield different readings, and so focus is not necessary to derive the relevant readings– although it is not incompatible with them.

A second alternative is the "focus" analysis due to Sharvit & Stateva (2002). Under this approach, the absolute readings arise when the domain of the superlative *-est* is resolved by the context. In the focus analysis, the relative readings are obtained by constraining the content of the comparison class C by the focus association condition $C \subseteq \bigcup C'$ familiar from Roothian semantics of focus (where C' is the free domain variable of the focus operator "~"; Rooth 1992). This exemplifies a situation where focus serves to pragmatically resolve the anaphoric dependency of a quantifier's domain on the same context set as the focus operator "~", as discussed by von Fintel (1994).

This debate about how to better set the comparison class is indicative of a tension about how much relevance we should attribute to focus effects in the semantics of superlative expressions.

2.2 Superlative Modifiers

The previous section illustrated different cases where focus placement affects the interpretation of superlative expressions. Superlative Modifiers have also been shown to associate with focus (Krifka 1999). Supporting evidence comes from, among others, the fact that the implicatures that arise from Superlative Modifiers covary with the phrase that bears greater prosodic prominence. Sentences like (6) might convey different kind of speaker's ignorance depending on where the focus is placed, as illustrated by the paraphrases below (examples from Coppock & Brochhagen 2013).

(6)   a. The chair {*at least/at most*} invited the postdoc$_F$ to lunch.
          ⤳ *the speaker does not know whether {someone else/someone} was invited to lunch.*

      b. The chair {*at least/at most*} invited the postdoc to lunch$_F$.
          ⤳ *the speaker does not know whether the postdoc got invited to {something else/anything}.*

That Superlative Modifiers are associated with focus is even more transparent in languages like Basque, where there is overt focus movement to a preverbal position (Ortiz de Urbina 1989). In Basque, Superlative Modifiers only associate with elements that are left-adjacent to the verb, regardless of their overt syntactic position.

(7)   (**gutxienez / gehienez**) Jon-ek   (**g/g**) bi marrubi$_F$ jan   zituen (**g/g**).
      at least   at most   Jon-ERG   two   strawberry eat   AUX.
      'Jon ate {at least/at most} two strawberries.'

This dependency on focus suggests that what matters for interpreting Superlative Modifiers is not the overt syntactic position of the Superlative Modifier itself, but what phrase it associates with[1]. We can then conclude that, like *-est*, Superla-

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[1]With some caveats related to the difference between concessive and epistemic readings of *at least*. I will not discuss these cases here; the reader is referred to Nakanishi & Rullmann (2009) and Biezma (2013) for discussion.

tive Modifiers can also set their comparison class via focus. The next question is whether they have to. The remainder of the paper is devoted to showing that this is indeed the case: Superlative Modifiers necessarily associate with focus.

Let me also bring to the readers' attention the fact that many languages form Superlative Modifiers on top of the bare forms "many" (as in *most*) and "little" (as in *least*). Thus, one might wonder whether bare *-est* and Superlative Modifiers actually behave in such a parallel way as their surface morphology in English suggests. The answer I provide is negative. This result should be considered with respect to the aforementioned debate about how to understand the relationship between superlative expressions and focus (i.e., about how to better set their comparison class); it is with this debate in mind that I intend to look at the behavior of Superlative Modifiers.

3 Semantics

In this section I lay out my assumptions about the semantic contribution of Superlative Modifiers. I assume a Roothian framework for focus (Rooth 1985 *et seq.*), where the semantic import of focus is the introduction of alternatives to the focused constituent. Informally, the meaning of a sentence p with some focalized constituent α is the set of propositions that obtains from p by making a substitution in the position corresponding to α. The process is compositional and is derived by applying functions pointwise to their arguments[2]. The system is bi-dimensional in that it provides two tiers of meaning: an ordinary semantic value $[\![\alpha]\!]^o$ that corresponds to the singleton containing the meaning of α, and a focus semantic value $[\![\alpha]\!]^f$, corresponding to the set of alternatives generated from α. Finally, the focus operator "~" presupposes that there is some contextually relevant set of alternatives C which is a subset of the focus value $[\![\alpha]\!]^f$ containing, minimally, $[\![\alpha]\!]^o$ and one other element.

(8)   a. $[\![$ Sue ate [pie]$_F$ $]\!]^f$ = {*Sue ate x* | $x \in D_e$}, where D_e = {*pie, nuts, kale*}
      b. $[\![$ Sue ate [pie]$_F$ $]\!]^o$ = {*Sue ate pie*}

I suggest the following lexical entries for Superlative Modifiers:[3]

(9)   For some constituent α of type $\langle\sigma, \langle s, t\rangle\rangle$, where σ is any type, $\leq$ is a – possibly pragmatic– ordering of contextually salient alternatives, and $[\![\alpha]\!]^f$ is the set of focus alternatives of α:
     a. $[\![at\ least\ \alpha]\!] = \lambda\beta_{\langle\sigma\rangle}.\lambda w_{\langle s\rangle} : \exists\gamma\big[\gamma \in [\![\alpha]\!]^f \ \wedge \ [\![\alpha]\!]^o \leq \gamma \ \wedge \ \gamma(\beta)(w)\big]$
     b. $[\![at\ most\ \alpha]\!] = \lambda\beta_{\langle\sigma\rangle}.\lambda w_{\langle s\rangle} : \forall\gamma\big[\gamma \in [\![\alpha]\!]^f \ \wedge \gamma(\beta)(w) \rightarrow \gamma \leq [\![\alpha]\!]^o\big]$

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[2]It is well know that an alternative generation algorithm that, like Rooth's, is purely type–driven over-generates. See Katzir (2007), a.o., for discussion and a proposal to repair the algorithm.

[3]I am glossing over a number of issues that are not directly related to the relationship of Superlative Modifiers with focus. For instance, the proposed lexical entries in (9) require "rearrangement" for discontinuous cases of association (e.g., the examples in (6)). Moreover, the analysis provided is not fully compositional, since I have only provided syncategorematic definitions. I leave the question as to how to improve these issues for a future occasion.

In addition to an ordinary semantic value, these definitions will produce a set of propositions determined by the focus semantic value (derived as roughly sketched above). The lexical entry in (9a) renders true a proposition *p* containing the Superlative Modifier *at least* if there is some proposition *q* in the relevant set of alternative propositions which is at least as strong as *p* and *q* is true in the evaluation world. In turn, a proposition *p* containing the Superlative Modifier *at most* is true if for every true proposition *q* in the set of alternative propositions, *q* is at most as strong as the prejacent *p* in the evaluation world. Thus, for a sentence like *Sue ate at least pie*, it is asserted that there is some alternative proposition *q* at least as strong as the prejacent *Sue ate pie*, and so possibly stronger, like *Sue ate pie and kale*.

Superficially, there are two main differences between the bare form *-est* in (5) and the proposed semantics for Superlative Modifiers in (9) that are worth noting. First, Superlative Modifiers are treated as focusing elements that can combine with a variety of constituents, not just gradable predicates. This is required, since Superlative Modifiers can directly modify propositions, as well as DPs, VPs, PPs, APs, etc. Second, the connection with degree quantification is lost (cf. (5)): the definitions in (9) make no reference whatsoever to degree semantics, since the ordering of the alternatives that are quantified over are set by independent means (in some cases, also pragmatically).

More importantly, according to (9) the association of Superlative Modifiers with focus is no longer optional. In the case of the bare forms of the superlative, we saw cases where the comparison class C was fixed by the context. In the case of Superlative Modifiers, the comparison class C is always constrained by the same set: the focus value of the associate, $[\![\alpha]\!]^f$. The focus interpretation operator "~" does not determine the interpretation of the variable C uniquely, but it constrains it heavily: if a sentence contains a focused constituent α, the relevant set of alternatives C is presupposed to be a subset of $[\![\alpha]\!]^f$. Therefore, the strength of a proposition containing a Superlative Modifier can only be assessed with respect to the focus semantic value of that proposition.

The main consequence of the lexical entries presented above, then, is that the domain variable of Superlative Modifiers can no longer be resolved by the context alone. In this respect, they behave very much unlike *-est*, whose comparison class amounts to the resolution of a free variable determined by some possibly implicit (contextual) domain. Superlative Modifiers, in turn, behave like *only* and other focus particles in that their dependency on focus is rooted in their lexical properties; the ways in which the comparison class can be set is limited by the focus alternatives of the focused constituent.

Following Beaver & Clark (2008), I shall refer to the kind of association with focus shown by the bare form of the superlative as Free Association with Focus (F-AwF), whereas Superlative Modifiers show Conventional Association with Focus (C-AwF). In the following sections I present several arguments showing that Superlative Modifiers do in fact behave like elements whose association with focus is conventional, and that the bare form of *-est* behaves like elements whose association with focus is free, like *always* and other quantificational adverbs.

4 Evidence

The diagnostics in this section are drawn from Beaver & Clark (2008) and others to support the claim that Superlative Modifiers are indeed conventionally associated with focus. To make the discussion clearer, I will draw parallels between Superlative Modifiers and *only*, and between bare superlatives and *always*, and then show that both pairs of expressions behave differently from each other[4].

4.1 Association with weak elements

The first argument, from Beaver & Clark (2008), exploits the existence of elements which cannot be focalized. By assumption, expressions conventionally associated with focus, like *only*, *even* and *also*, are sensitive to prosodic prominence in their syntactic scope, and so they require an F-marked constituent within their c-command domain. Also by assumption, prosodically weak elements cannot be F-marked, since they lack prosodic prominence. Thus, the prediction is that conventionalized expressions are predicted to be unable to associate with weak elements. Instead, *-est* and other elements whose association with focus is free should be able to associate with weak forms.

The prediction is borne out, as shown by the association patterns with the reduced/full forms of pronominals below: Superlative Modifiers cannot associate with the reduced pronoun *'em*, whereas bare superlatives and quantificational adverbs like *always* can. Notice the contrast between *most/least often* and *at most/least*.

(10) *Context:* You can see Mrs. Hudson, but do you see Sherlock and Watson?
    a. Well, I {**always/most often/least often**} { see'<u>em</u> / see <u>them</u>}.
    b. I can {**only/at least/at most**} { *see'<u>em</u> / see <u>them</u>}.

As a consequence, some meanings cannot be obtained when coventionalized elements try to associate with a weak form. In the examples below, *only* is the only expression resulting in oddness because the context is set such that the intended interpretation requires *only* to associate with the reduced form, but this is not possible.

(11) *Context:* You discussed a lot with Sandy. Of all the times you talked with her, how often were Fred and Sue the people you talked about?
    a. I **always** talk about'<u>em</u>
       ⤳ *whenever I discussed someone with Sandy, I discussed Fred and Sue.*
    b. I talk about'<u>em</u> **the least**
       ⤳ *I discussed Fred and Sue less often than anybody else.*
    c. I talk about'<u>em</u> **the most**
       ⤳ *I discussed Fred and Sue more often than anybody else.*
    d. # I **only** talk about'<u>em</u>
       ⤳̸ *I only discussed Fred and Sue (and no one else) with Sandy.*

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[4]It should be noted that some of the grammaticality judgments that I present here are subject to speaker variation. I have always tried to provide minimal pairs with conventional *vs.* free association, such that we can reason from a contrast, rather than categorical judgments of acceptability.

The same effect that *only* has above can be reproduced with Superlative Modifiers. The paraphrases below each sentence provide the targeted meaning.

(12) *Context:* Fred has discussions with Jane very often. Bill and Sue are their officemates, so it's likely that they talk about them. Who else do you think they talk about?

    a. Well, I'm not sure, but I know that they **at least** talk about <u>them</u>.
       ↝*They talk about Bill and Sue (and maybe somebody else).*

    b. Well, I'm not sure, but I think that they **at most** talk about <u>them</u>[5].
       ↝*If they talked about anyone, they talked about Fred and Sue, and no one else.*

    c. # Well, I'm not sure, but I know that they **at least** talk about'<u>em</u>.
       ↝*They talk about Bill and Sue (and maybe somebody else).*

    d. #Well, I'm not sure, but I think that they **at most** talk about'<u>em</u>.
       ↝*If they talked about anyone, they talked about Fred and Sue, and no one else.*

Thus, Superlative Modifiers pattern like *only* but unlike *-est* with respect to the prosodic restrictions on the kind of elements they can associate with. This supports the claim that Superlative Modifiers are conventionally associated with focus, whereas *-est* is not.

4.2   Backwards association

Association with focus falls in two camps: some expressions can associate with a phrase that they do not c-command, whereas others cannot. This is usually referred to as "backwards" association. Typically, free association can happen backwards, whereas only a subset of the conventionalized expressions can associate backwards (Jackendoff 1972). The examples below show that *only* belongs to the more restrictive kind, which contrasts with the more permissive conventionalized element *even*, and freely associated elements, like *always*.

(13) a. <u>Bill</u>$_F$ **always** reads this book.
       ↝*Whenever somebody reads this book, Bill reads it.*

    b. <u>Bill</u>$_F$ will **even** read this book.
       ↝*Even Bill will read this book.*

    c. <u>Bill</u>$_F$ will **only** read this book.
       ↝ *Only Bill, and nobody else, will read this book.*

Superlative Modifiers also belong to the more restrictive kind of focus operators. The bare form *-est*, once again, patterns unlike Superlative Modifiers and allows backwards association.

(14) a. <u>Bill</u>$_F$ will {**at least/at most**} read this book.
       ↝ *at least/most Bill will read this book.*

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[5]Some speakers do not easily accept sentences with *at most* in these contexts, even with full pronouns. This might be related to the fact that *at most* sentences are generally less preferred than *at least* sentences; see (Mendia 2016b) for an experimental study showing these trends.

b. <u>Bill$_F$</u> bought **the largest cake** for Jane.
⤳ *Bill bought the largest cake for Jane than anybody else. did*

Thus, these results also speak in favor of the main claim that Superlative Modifiers' association with focus must be lexically determined.

4.3 Extraction

The third piece of evidence comes from an observation by Beaver & Clark (2008), who noted that only free association with focus can happen with extracted elements that are realized in higher clauses. The following examples show that this is indeed the case: *always* can associate with a topicalized and a relativized element, whereas *only* cannot[6].

(15) Topicalization

    a. <u>Fish</u>, I believe Kim **always** buys.   F-AwF
    ⤳ *I believe that whenever Kim buys something, he buys fish.*

    b. <u>Fish</u>, I believe Kim **only** buys.   C-AwF
    ↝̸ *I believe that Kim buys fish and nothing else.*

(16) Relativization

    a. <u>The friend</u> whom I **always** want to invite.   F-AwF
    ⤳ *The friend such that if I invite somebody I want to invite her.*

    b. <u>The friend</u> whom I **only** want to invite.   C-AwF
    ↝̸ *The friend such that I want to invite her and nobody else.*

Once again, the same contrast can be reproduced between the bare form of the superlative and Superlative Modifiers: only the latter fail to associate with extracted material, and so they pattern with conventionally associated expressions.

(17) Topicalization

    a. <u>For Jane</u>, I believe Kim bought **the biggest cake**.   F-AwF
    ⤳ *I believe that Kim bought the biggest of all the cakes for Jane.*

    b. <u>Fish and wine</u>, I believe Kim **at least** bought.   C-AwF
    ↝̸ *I believe that Kim bought at least fish and wine, and maybe something else.*

    c. ?<u>Fish and wine</u>, I believe Kim **at most** bought and cooked.   C-AwF
    ↝̸ *I believe that Kim bought and cooked at most fish and wine, and surely nothing else.*

(18) Relativization

    a. <u>The friends</u> whom I want to invite **the least**.   F-AwF
    ⤳ *The friends such that I prefer to invite anyone else.*

    b. <u>The friends</u> whom I want to invite **the most**.   F-AwF
    ⤳ *The friends such that I want to invite them above anyone else.*

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[6]This is true of a much wider family of constructions than what I can show here (e.g., adverb preposing, questions, inverted pseudo-clefts, among others).

    c. <u>The friends</u> whom I **at least** want to invite.   C-AwF
        ↝ *The friends such that I want to invite them and maybe somebody else*.
    d. ?<u>The friends</u> whom I **at most** want to invite.   C-AwF
        ↝ *The friends such that they are the greatest number of people that I want to invite*.

Thus, Superlative Modifiers behave like conventionally associated elements in their lack of ability to associate with extracted material in a number of constructions. Instead, bare superlatives are able to associate with extracted material, and so they share this property with other F-AwF expressions.

4.4 Ellipsis

In English, the elision of a VP containing the associate of a conventionally associated element results in ungrammaticality. This behavior contrasts with free association with focus, which can happen with elided (or implicit) material. (Example from Beaver & Clark 2008.)

(19) *Context*: At the ceremony, some soldiers salute, others fire a round in the air, some do both and others do nothing. What do Kim and Sandy do?
    a. Kim **always** <u>salutes</u>$_F$ because Sandy always does.
        ↝ *Kim salutes at every ceremony because Sandy salutes at every ceremony*.
    b. *Kim **only** <u>salutes</u>$_F$ because Sandy **only** does.
        ↝ *Kim salutes and does nothing else at every ceremony because Sandy only ever salutes*.

Like *only*, Superlative Modifiers also show this restriction.

(20) *Context*: At the ceremony, some soldiers salute, others fire a round in the air, some do both and others do nothing. What do Kim and Sandy do?
    a. *Kim **at least** <u>salutes</u>$_F$ because Sandy **at least** does.
        ↝ *Kim salutes and maybe fires at every ceremony because Sandy salutes and maybe fires at every ceremony*.
    b. *Kim **at most** <u>salutes</u>$_F$ because Sandy **at most** does.
        ↝ *Kim salutes or does nothing because Sandy salutes or does nothing at every ceremony*.

Notice that the ungrammatical sentences can be rescued with the minimal modification of using anaphoric *that* instead of ellipsis. In these cases, both *only* and Superlative Modifiers can associate with the anaphor whose referent is fixed by the previous VP, rendering the sentence grammatical and the relevant reading available.

(21) a. Kim **only** [<u>salutes</u>$_F$]$_i$ because Sandy only does that$_i$.
        ↝ *Kim salutes and does nothing else at every ceremony because Sandy only ever salutes*.
    b. Kim **at least** [<u>salutes</u>$_F$]$_i$ because Sandy **at least** does that$_i$.
        ↝ *Kim salutes and maybe fires at every ceremony because Sandy salutes and maybe fires at every ceremony*.

c. Kim **at most** [salutes$_F$]$_i$ because Sandy **at most** does that$_i$.
⤳ *Kim either salutes or does nothing at every ceremony because Sandy salutes or does nothing at every ceremony.*

Finally, even some cases reported to be acceptable with *only* seem to be unavailable with Superlative Modifiers, suggesting that the association requirements of *at least/at most* may be more strict.

(22) *Context:* I think Jane always feeds bones and puppy chow$_F$ to Fido.
    a. Whaddya mean? She might **only** have!
    b. ??Whaddya mean? She might **at least** have!
    c. *Whaddya mean? She might **at most** have!

Thus, it seems that the behavior of Superlative Modifiers' is almost like that of *only*, but different in that, in those few cases where *only* can associate with elided material, Superlative Modifiers cannot. If anything, it is the more restrictive behavior of Superlative Modifiers that is in consonance with what we would expect of conventional focus association.

4.5 Intervention effects

It has been observed that a *wh*-phrase that stays in-situ cannot be c-commanded by a focusing element that disrupts the association of the *wh*-phrase with the question operator Q sitting in CP. This effect is known as an "intervention effect". Overtly moving the *wh*-element past the focus phrase dismantles the intervening configuration (Kim 2002; Beck 2006). In the following examples I provide evidence from two unrelated *wh* in-situ languages, Korean and Japanese, showing that Superlative Modifiers and *only* pattern alike, whereas bare superlatives pattern together with other F-AwF elements.

(23) *Intervention with C-AwF*   JAPANESE
    a. * Kiyomi$_F$-{ **mo** / **sae** / **dake**-ga } nani-o   yon-da-no?
        Kiyomi   also even only-NOM what-ACC read-PAST-Q
       'What did { also / even / only } Kiyomi read?'
    b. [nanio]$_1$ Kiyomi$_F$-{ **mo** / **sae** / **dake**-ga } t$_1$ yondano?

(24) *No intervention with F-AwF*   JAPANESE
    a. Kiyomi$_F$-ga **itumo** nani-o   yon-dei-ta-no?
        Kiyomi-NOM always what-ACC read-IMPFV-Q
       'What did always Kiyomi read?'
    b. [nanio]$_1$ Kiyomi$_F$-ga **itumo** yondeitano?

(25) *Intervention with* at least   JAPANESE
    a. * **Sukunakuto** Kiyomi-to   Satoshi$_F$-ga nani-o   yon-da-no?
        at least   Kiyomi-and Satoshi-NOM what-ACC read-PAST-Q
       'What did at least Kiyomi and Satoshi read?'
    b. [nanio]$_1$ **sukunakuto** Kiyomi-to Satoshi$_F$-ga t$_1$ yon-da-no?

(26) *No intervention with bare superlatives* JAPANESE

    a. **Itiban se-ga taka-i onnanoko**-ga nani-o yon-da-no?
       first   height-NOM tall-PRES girl-NOM   what-ACC read-PAST-Q
       'What did the tallest girl read?'

    b. [nanio]$_1$ **itiban se-ga taka-i onnanoko**-ga t$_1$ yon-da-no?

(27) *Intervention with C-AwF* KOREAN

    a. * Minsu$_F$-**man** nuku-lûl po-ass-ni?
       Minsu-only   who-ACC see-PAST-Q
       'Who did only Minsu see?'

    b. [nukulûl]$_1$ Minsu$_F$-**man** t$_1$ poassni?

(28) *No intervention with F-AwF* KOREAN

    a. Minsu$_F$ **hangsang** nuku-lûl po-ni?
       Minsu   always   who-ACC see-Q
       'Who does always Minsu see?'

    b. [nukulûl]$_1$ Minsu$_F$ **hangsang** t$_1$ poni?

(29) *Intervention with* at least KOREAN

    a. * Minsu$_F$-**lato** nuku-lûl po-ass-ni?
       Minsu-at-least who-ACC see-PAST-Q
       'Who did at least Minsu see?'

    b. [nukulûl]$_1$ Minsu$_F$-**lato** t$_1$ poassni?

(30) *No intervention with bare superlatives* KOREAN

    a. **Ki-ka kacang kun yeca**-ka nuku-lûl po-ass-ni?
       height-NOM most   big-NML woman-NOM who-ACC see-PAST-Q
       'Who did the tallest girl see?'

    b. [nukulûl]$_1$ **kika kacang kun yeca**ka t$_1$ poassni?

Similar patterns arise in many other *wh* in-situ languages. However, providing the full argument is sometimes impossible because the baseline constructions do not behave as expected. This might happen either because the counterparts of *only*, *even* and other English C-AwF terms do not show intervention effects, or because there are unexpected intervention effects with F-AwF elements that were not supposed to intervene, like *always* in English.

The reasons why this happens vary. In some languages, the *only* counterparts of the previous examples fail to associate at a distance, suggesting that they do not share all the relevant properties usually associated with C-AwF elements. In others, language internal restrictions force a construction where the target interpretation is disallowed for independent reasons. However, what we do not find are languages were (i) a bare superlative participates in an intervening configuration, nor (ii) a Superlative Modifier that does not constitute an intervener. This cross-linguistically stable divergence between bare superlatives and Superlative Modifiers

provides good evidence for the conventionalized nature of Superlative Modifiers. The following are two such cases, illustrated by Vietnamese and Malayalam, but the same pattern holds for a number of unrelated languages, including Turkish, Mandarin and Hindi among others.

(31) *Intervention with* at least   VIETNAMESE

     a. * **It nhat** $\underline{\text{Thuy}}_F$ doc   cai gi?

        at least $\overline{\text{Thuy}}$ read-PAST CL what

        'What did always Thuy read?'

     b. [cai gi]$_1$ **it nhat** $\underline{\text{Thuy}}_F$ doc t$_1$?

(32) *No intervention with bare superlatives*   VIETNAMESE

     a. **Dua con**   **gai cao nhat** doc   cai gi?

        CL   human girl tall first read-PAST CL what

        'What did the tallest girl read?'

     b. [cai gi]$_1$ **dua con gai cao nhat** doc t$_1$?

(33) *Intervention with* at least   MALAYALAM

     a. * $\underline{\text{Ami}}_F$-**engilum** eete   pustakam-aa-ne waayicc-ate?

        Ami at least   which book-BE   read-NMZ

        'Which book did at least Ami read?'

     b. [eete pustakamaane]$_1$ $\underline{\text{Ami}}_F$-**engilum** t$_1$ waayicc-ate?

(34) *No intervention with bare superlatives*   MALAYALAM

     a. **Eettavum uyaram ull-a**   **penkutti** eete   pustakam-aane

        most   height has-REL girl   which book-BE

        waayiccate

        read-PROG-NMZ

        'Which book does the tallest girl read?'

     b. [eete pustakamaane]$_1$ **eettavum uyaram ulla penkutti** t$_1$ waayiccate?

In addition, intervention effects of a similar kind can also be found in English. In certain type of *wh*-questions, Pesetsky (2000) pointed out that English also shows intervention effects in superiority-violating multiple questions, and argued that the unmoved *wh*-phrase in these types of questions are genuinely in-situ. The contrast between *only* and *always* supports these claims.

(35) *Intervention with C-AwF*

     a. *Which* book$_1$ did {**only** / **even** } $\underline{\text{Jane}}_F$ give t$_1$ to *which* student$_2$?

     b. **Which* student$_2$ did {**only** / **even**} $\underline{\text{Jane}}_F$ give *which* book$_1$ to t$_2$?

(36) *No intervention with F-AwF*

     a. *Which* book$_1$ did **always** $\underline{\text{Jane}}_F$ give t$_1$ to *which* student$_2$?

     b. *Which* student$_2$ did **always** $\underline{\text{Jane}}_F$ give *which* book$_1$ to t$_2$?

Critically for our purposes, the same intervention configurations can be reproduced in English with Superlative Modifiers, whereas no such effect arises with bare superlatives.

(37) *Intervention with SMs*
  a. *Which* book$_1$ did {**at least/at most**} <u>Jane</u>$_F$ give t$_1$ to *which* student$_2$?
  b. **Which* student$_2$ did {**at least/at most**} <u>Jane</u>$_F$ give *which* book$_1$ to t$_2$?

(38) *No intervention with bare superlatives*
  a. *Which* book$_1$ did **the laziest student** give t$_1$ to *which* student$_2$?
  b. *Which* student$_2$ did **the laziest student** give *which* book$_1$ to t$_2$?

4.6 Restrictions on alternative questions

Questions containing a disjunction, like (39a), are ambiguous between an Alternative Question (a question about each disjunct) and a Polar Question (a "yes/no" question). However, when each disjunct is focused, the Polar Question interpretation disappears (Han & Romero 2004).

(39) a. Did Bill drink coffee or tea?   ✓Yes; ✓Tea
      b. Did Bill drink <u>coffee</u>$_F$ or <u>tea</u>$_F$?   *Yes; ✓Tea

The Alternative Question, which requires focusing each disjunct, is incompatible with an extra focus phrase c-commanding the disjunctive phrase, rendering the sentence ungrammatical (Kim 2002). As a consequence, a focusing adverb like *only* fails to associate with the subject of an Alternative Question over an object[7]. Once more, Superlative Modifiers have the same effect as focusing adverbs.

(40) a. *Did **only** <u>Bill</u> drink <u>coffee</u>$_F$ or <u>tea</u>$_F$?
          ↝ *Did only Bill drink coffee or tea?*
      b. *Did {**at least/at most**} <u>Bill</u> drink <u>coffee</u>$_F$ or <u>tea</u>$_F$?
          ↝ *Did {**at least/at most**} Bill drink coffee or tea?*

Alternative Questions of the sort intended in (40) are nonetheless possible, we can rescue them by preposing the disjunctive phrase, in which case only the Alternative Question interpretation is available. In this too, *only* and Superlative Modifiers pattern alike.

(41) a. Was it <u>coffee</u>$_F$ or <u>tea</u>$_F$ that **only** <u>Bill</u> drank?   *Yes; ✓Tea
      b. Was it <u>coffee</u>$_F$ or <u>tea</u>$_F$ that {**at least/at most**} <u>Bill</u> drank? *Yes; ✓Tea

Bear in mind that this last argument is somewhat weaker, as it only shows a parallelism between focusing adverbs, *only* in this case, and Superlative Modifiers.

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[7]Notice that association of *only* with the disjunctive phrase in the absence of prosodic prominence on the subject is also impossible: the question *did only Bill drink coffee or tea?* cannot mean the same as *did Bill drink only coffee or only tea?* I will not discuss these cases here, but the unavailability of such readings might be related to a general difficulty of C-AwF elements to semantically associate with objects when syntactically they seem to be sisters to the subject of the sentence. (For instance, *only Bill brought a cake* cannot mean that *Bill brought only a cake, and nothing else.*)

5 Discussion

The evidence presented here shows that *at least* and *at most* behave more like focusing adverbs and less like bare superlatives with respect to how their meaning interacts with focus. Superlative Modifiers are lexically dependent on a focused phrase within their c-command domain, and so they not only can but they must associate with focus. In contrast, other superlative expressions do not have to associate with focus, although they might optionally do so.

The different behavior of the two kinds of superlative expressions is reflective of the different degrees of association with focus that are available in the grammar, as originally proposed by Beaver & Clark (2008). Bare superlatives bear the blueprint of Free Association with Focus: their interpretation depends on the resolution of a free variable which, in the case of superlatives, might be used to determine the comparison class. Thus, *-est* can be regarded as a quantifier over an implicit domain, very much in line with other expressions like quantificational adverbs (e.g., *always*), quantificational determiners (e.g., *every, many*), etc.

Superlative Modifiers instead bear the blueprint of Conventionalized Association with Focus and pose further restrictions on their interpretation. They display a grammaticalized connection between their meaning and focus, as they are necessarily interpreted with respect to a focused phrase in the sentence.

An important consequence of these results is that the connection of Superlative Modifiers with the meaning usually adopted for *-est* expressions is no longer obvious. The current proposed semantics for Superlative Modifiers as elements dependent on focus does not need to make any reference to degree semantics (see Heim 1999; Hackl 2000; Nouwen 2010; a.o.). Thus, it remains an open question whether there is a suitable way to relate Superlative Modifiers to *-est* compositionally or even whether this is at all a desirable enterprise to pursue. After all, Superlative Modifiers cannot be easily built compositionally from just any gradable predicate (as in *?he climbed at highest 3,000 feet*, meaning that *he climbed no higher than 3,000 feet*).

There are, in addition, other advantages of making an explicit connection between Superlative Modifiers and focus. For one, a focus-sensitivity based approach can account for cases that degree-based semantics are not well equipped for, as in the case of association with non-numeral scales. It also draws a clear parallel with focusing adverbs like *only*, whose capabilities to associate at a distance are more limited than those of other quantificational operators (like *always*). And it seems easier as well to account for non-entailing scales with the proposed semantics than with degree-based variants.

The relation between focus and Superlative Modifiers also makes it easier to connect their semantic properties with their role in the larger discourse. For instance, these results are compatible with Beaver & Clark (2008)'s framework where the task of conventionally focus sensitive items is to mark the status of an answer to a possibly implicit question. (See also Westera & Brasoveanu 2014, who provide evidence that the inferences of Superlative Modifiers are triggered when the question under discussion requires an exact answer.)

Moreover, these findings fit nicely with recent accounts of the implicatures of Superlative Modifiers. Both Coppock & Brochhagen (2013) and Mendia (2016a) provide an implicature calculation mechanisms that takes into account the fact that

Superlative Modifiers do not only modify numerals, but a wide range of phrases, and that the relevant implicatures arise regardless of the type of constituent Superlative Modifiers associate with. In this regard, Mendia (2016a) argues for the necessity of factoring in focus alternatives to derive the right kind of implicatures that Superlative Modifiers give rise to.

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