Focus association in superlatives and the semantics of -*est*

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Abstract

I provide new evidence from Polish that two lexical entries for the superlative morpheme -*est* are needed in the grammar of a single language: 3-place -*est* on which individuals are compared and 2-place -*est* comparing sets of degrees, (Heim, 1999) (Romero, 2010). I argue that 2-place -*est* does not associate with focus, but is used in cases of explicit comparison between degrees, e.g. in the presence of a degree relative clause in Polish. I show that focus association with 3-place -*est* accounts for the range of superlative readings found cross-linguistically (Pancheva & Tomaszewicz, 2012).

1 Superlative ambiguities and focus

The semantics of the superlative morpheme -*est* remains a question of debate, as does the role of focus in superlatives. First, the presence of a superlative expression typically allows for different interpretations of the sentence, some of which are sensitive to the presence of focus (Ross (1964), Heim (1985), Szabolcsi (1986), Gawron (1995) a.o.). For instance, the sentences (1a-b) are ambiguous. They each allow a reading where cakes are compared without regard as to who bought them for whom, as in (1i), the so-called 'absolute reading'. Additionally, each sentence also has a so-called 'relative' reading, (1ii-iii). Focus on *John*, (1a), expressed as intonational prominence, clearly biases interpretation towards the relative reading in (1ii). Focus on *Mary*, (1b), reverses the effect on relative readings in favor of (1iii). The absolute reading is available irrespective of focus, thus the absolute/relative ambiguity cannot be due solely to the effect of focus.

(1) a. [John]$_{Focus}$ bought Mary [$_{DP}$ the most expensive cake].   Readings: (i), (ii), but not (iii)
    b. John bought [Mary]$_{Focus}$ [$_{DP}$ the most expensive cake].   Readings: (i), (iii), but not (ii)

    (i) 'John bought Mary <u>the cake</u> that was more expensive than <u>any other cake</u>.'   *Absolute*
    (ii) '<u>John</u> bought Mary a more expensive cake than <u>anyone else bought her</u>.'   *Relative*
    (iii) 'John bought <u>Mary</u> a more expensive cake than <u>he bought for anyone else</u>.'   *Relative*

Second, the different kinds of comparison on each reading can be modeled in two ways, as comparison between individuals or as comparison between degrees (Heim, 1999). Theoretically, the two issues, focus sensitivity and the two "modes of comparison", to use Kennedy's (1999) term, can be treated independently. I will argue, however, that the empirical observations in Pancheva & Tomaszewicz (2012) reveal not only that association with focus is necessary to account for cross-linguistic differences in the interpretation of superlatives, but also that the semantics of the superlative

Proceedings of the 19th Amsterdam Colloquium
Maria Aloni, Michael Franke & Floris Roelofsen (eds.)

226

involves comparison of individuals and comparison of degrees in different, mutually exclusive contexts.

Pancheva & Tomaszewicz (2012) show that there is cross-linguistic variation in the availability of certain relative readings. In English, comparison on relative readings can only be established with respect to a focused nominal that is external to the superlative DP ('John' or 'Mary' in (1)), but not with respect to a DP-internal focus, e.g. 'cake' in (1). Such DP-internal relative readings are found in the Slavic languages, however. The Polish sentence in (2a) can have the DP-internal relative reading (2b).

(2) a. Jan kupił   Marii   naj-droższe   ciastko.   (Polish)
     Jan bought   for-Mary *est*-expensive cake   Readings: (1i), (1ii), (1iii), (2b).
  b. 'John bought Mary a more expensive <u>cake</u> than <u>anything else he bought her.</u>'

<div align="right">

DP-Internal Relative
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I add here an empirical argument that the reading (2b) requires focus on 'cake'. The sentence in (2), where the superlative adjective is in its base position, is four-way ambiguous and prosody disambiguates between different readings. In (3), however, where the adjective 'most expensive' is fronted (via Left Branch Extraction), only one reading obtains, the DP-internal relative reading (2b). The superlative adjective in (3) is topicalized (optionally, a topic marker '*to*' may be present), while the noun 'cake' is focused in conformity with intonational phrasing in Polish (cf. Féry et al. (2007)).

(3) Context: 'Jan poszedł kupić różne drogie słodycze dla Marii. …'   (Polish)
        'Jan went to buy various expensive sweets for Maria. …'
     [[NajDRÓższe$_1$]$_{Topic}$ (to)]$_i$ [Jan   kupił Marii t_1 [CIAstko]$_{Focus}$]$_i$
      LH*   HL*
     est-expensive   (Topic)   Jan   bought for-Mary   cake
     Readings: (2b), *(1i), *(1ii), *(1iii)

The way focus determines the relative readings of -*est* resembles focus effects with the exclusive particle *only*, whose truth-conditional contribution relies on association with focus (Rooth (1985), (1992), Beaver & Clark (2008)). *Only* in the 'split construction' in Polish behaves in exactly the same way as the superlative. In (4a) *only* must associate with 'cake', while in (4b) association with 'cake' is impossible.

(4) Context: 'Jan poszedł kupić różne słodycze dla Marii.. …' (Polish)
        'Jan went to buy various sweets for Maria. …'
  a. Drogie$_i$ *pro*   kupił   jej   tylko t_i ciastko.
     expensive   bought her   only   cake
     'He bought her sweets of which only the cake was expensive.'
  b. *pro* Kupił   jej   tylko drogie   ciastko.
       bought her   only   expensive   cake
     'He bought her only an expensive cake and nothing else.'

Crucially, the split superlative construction in (3) precludes both the absolute, (1i), and the DP-external relative readings, (1ii)-(1iii). This indicates that superlative ambiguities are grammatical and not just due to contextual vagueness. I follow Pancheva & Tomaszewicz (2012) in arguing that focus association is obligatory for relative readings (1ii-iii), (2b), and that the impossibility of moving -*est* outside the superlative DP in the presence of the definite article is what blocks the DP-internal relative reading (2b) for the sentence in (1). I show that only the lexical entry on which individuals are

compared (together with focus association) correctly derives the cross-linguistic differences in the availability of the DP-internal relative reading (section 3). I further show that the lexical entry on which degrees are compared can be used in contexts where focus association does not take place, but where comparison of degrees is required by the presence of a degree relative clause (section 4). In section 2, I introduce the syntactic and semantic assumptions for the derivation of superlative ambiguities.

2 The semantics of -*est*

Heim (1999) introduces two lexical entries for the *-est* morpheme with truth-conditionally equivalent meaning. The semantics in (5) involves a comparison between individuals (the comparison class C is of type $\langle e,t \rangle$)[1], while (6) calls for a comparison between sets of degrees (C is of type $\langle dt,t \rangle$).[2]

(5) $[\![-est_{3-place}]\!] = \lambda C_{\langle e,t \rangle}.\ \lambda P_{\langle d,et \rangle}.\ \lambda x_e.\ \exists d[P(d)(x) \wedge \forall y \in C\ [y \neq x \rightarrow \neg(P(d)(y))]]$
Presuppositions: $x \in C,\ \forall y\ [y \in C \rightarrow \exists d\ [P(d)(y)]]$

(6) $[\![-est_{2-place}]\!] = \lambda C_{\langle dt,t \rangle}.\ \lambda P_{\langle d,t \rangle}.\ \exists d[P(d) \wedge \forall Q \in C\ [Q \neq P \rightarrow \neg(Q(d))]]$
Presuppositions: $P \in C,\ \forall Q\ [[Q \in C \wedge Q \neq P] \rightarrow \exists d\ [Q(d)]]$

Both entries, (5)-(6), can derive the absolute and relative readings. Assuming that *-est* can take scope inside or outside of the superlative DP (Szabolcsi (1986), (2012), Heim (1999)), comparison of individuals (using *-est*$_{3-place}$, (5)) gives us comparison between cakes on the absolute reading, (7a), and between people who bought cakes for Mary on one of the relative readings, (7b). Degree comparison (using *-est*$_{2-place}$, (6)) involves comparison between different sets of degrees, depending on the scope of *-est*, (8a-b). We cannot judge by introspection whether cakes are compared, cake buyers, or prices of cakes (Heim (1999), Farkas & Kiss (2000), Sharvit & Stateva (2002) a.o.).

(7) a. Jan bought Mary [$_{DP}$ the [[-*est* $C_{\langle e,t \rangle}$] λd. d-expensive cake]]
        $C_{\langle e,t \rangle} = \{x: \exists d\ [x$ is a d-expensive cake]\}   *Absolute* (1i)
    b. Jan [[-*est* $C_{\langle e,t \rangle}$] $\lambda d. \lambda x.\ x$ bought Mary [$_{DP}$ d- expensive cake]]
        $C_{\langle e,t \rangle} = \{x: \exists d\ [x$ bought Mary a d-expensive cake]\}   *Relative* (1ii)
(8) a. Jan bought Mary [$_{DP}$ the [[-*est* $C_{\langle dt,t \rangle}$] λd. d-expensive cake]]
        $C_{\langle dt,t \rangle} = \{D: \exists x\ [D = \lambda d.\ x$ is a d-expensive cake]\}   *Absolute* (1i)
    b. [-*est* $C_{\langle dt,t \rangle}$] λd. Jan $\lambda x.\ x$ bought Mary [$_{DP}$ d- expensive cake]
        $C_{\langle dt,t \rangle} = \{D: \exists x\ [D = \lambda d.\ x$ bought Mary a d-expensive cake]\}   *Relative* (1ii)

Unlike Heim (1999) and Szabolcsi (1986), (2012), Farkas & Kiss (2000) and Sharvit & Stateva (2002) argue that *-est* can only take DP-internal scope. On neither approach, however, is focus taken to be necessary for relative readings.

Heim (1999) introduced the 2-place semantics for *-est* specifically to allow focus to determine what enters the comparison class via the mechanism of Rooth's (1985), (1992) theory of focus interpretation. The crucial ingredient of this account is Rooth's (1992) ~ ('squiggle'), a focus operator which comes with its own restrictor variable, *S*. The ~ introduces the presupposition that *S* is a subset

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[1] Technically, the variable C in (5) is the characteristic function of a set of individuals. I will refer to it as a set, for convenience. The same goes for C in (6).

[2] The lexical entries in (5)-(6) require the assumption that gradable predicates are *downward monotonic*, (i):
(i) A relation R between objects and degrees is downward monotonic iff: $\forall x \forall d \forall d'[R(x,d)=1 \wedge d'< d \rightarrow R(x,d')]$

of the focus-value of the constituent to which [~ S] attaches, typically the clause. When a quantificational element associates with focus, its (covert) restrictor variable is set to be the subset of S. For instance, the truth-conditional contribution of the exclusive particle *only* is determined by association with focus, (9)-(10), (Rooth (1985), (1992), von Fintel (1994), Beaver & Clark (2008)).

(9)   a.   John *only* gave [Mary]$_F$ a cheap gift.
       b.   LF for (9a): [*Only C*] [[~ *S*] [$_{TP}$ John gave [Mary]$_F$ a cheap gift]]
       c. $[\![(9b)]\!] = \lambda w. \forall p[(p \in C \wedge p \neq [\![$John gave Mary a cheap gift$]\!]) \rightarrow \neg p(w)]$
       d. $C \subseteq S, C = \{P: P = \exists x[$John gave x a cheap gift$]\}$
(10) a.   John *only* gave Mary a [cheap]$_F$ gift.
       b.   LF for (10a): [*Only C*] [[~ *S*] [$_{TP}$ John gave Mary a [cheap]$_F$ gift]]
       c. $[\![(10b)]\!] = \lambda w. \forall p[(p \in C \wedge p \neq [\![$John gave Mary a cheap gift$]\!]) \rightarrow \neg p(w)]$
       d. $C \subseteq S, C = \{P: P = \exists/\exists x [$John gave Mary a gift $\wedge$ gift$(x) \wedge f(x)]\}$

Heim (1999) suggests that the truth-conditional effects of focus on the relative readings, (1), should be modeled as a contextual effect on the restrictor C, entirely parallel to the focus effects with *only*. Adding the focus association condition on the relation between C and S is straightforwardly achieved with -*est*$_{2-\text{place}}$, (11)-(12). Like *only*, *est*$_{2-\text{place}}$ takes scope over the entire sentence and in (11a) the focus value of the sister of [~ *S*], TP$_2$, is a set of sets of degrees, hence S is of type $\langle dt,t \rangle$ − the right type for C. Focus is interpreted in-situ, (11c), a focus feature on 'John' specifies C as in (11e), while focus on 'Mary' gives C the specification in (12b).

(11) a.   LF for (1ii): [-*est* $C_{\langle dt,t \rangle}$][$_{TP3}$ [~ $S_{\langle dt,t \rangle}$] [$_{TP2}$ [John]$_F$ bought Mary a *d*-expensive cake]]
       b. $[\![(11a)]\!] = 1$ iff
           $\exists d \, \exists x [$cake$(x) \wedge$ expensive$(x, d) \wedge$ bought $(j, x, m)] \wedge \forall Q \in C [Q \neq [\![TP_3]\!] \rightarrow \neg (Q(d))]]$
       c. $C \subseteq S, S \subseteq [\![TP_2]\!]^f$ (focus association)
       d. $[\![TP_2]\!]^f = \{D: \exists x [D = \lambda d. \, x$ bought Mary a *d*-expensive cake$]\}$
       e. $C_{\langle dt,t \rangle} = \{D: \exists x [D = \lambda d. \, x$ bought Mary a *d*-expensive cake$]\}$
(12) a.   LF for (1iii): [-*est* $C_{\langle dt,t \rangle}$][$_{TP3}$ [~ $S_{\langle dt,t \rangle}$] [$_{TP2}$ John bought [Mary]$_F$ a *d*-expensive cake]]
       b. $C_{\langle dt,t \rangle} = \{D: \exists x [D = \lambda d.$ John bought x a *d*-expensive cake$]\}$

Focus association with *est*$_{3-\text{place}}$ taking DP-external scope on relative readings, e.g. (7b), requires that either [~ *S*] attaches to the focus marked element that QRs to saturate the individual argument of [-*est C*], (Heim, 1999), or that [~ *S*] attaches at the clausal level and the trace of the moved third argument is marked with the focus feature, (13) (Pancheva & Tomaszewicz, 2012).

(13) a.   LF for (1ii), (Pancheva & Tomaszewicz, 2012):
           [$_{TP1}$ John   [$_{TP2}$ [-*est C*]   [$_{TP3}$ [~ *S*] [$_{TP4}$ [x]$_F$ bought Mary a *d*-expensive cake]]]]
       b. $S \subseteq [\![TP_4]\!]^f$
       c. $[\![TP_4]\!]^f = \{D: \exists d [D = \lambda x [x$ bought Mary a *d*-expensive cake$]]\}$
       d. $C = \cup S$ (focus association)   (von Fintel, 1994)
       e. $C = \{x: \exists d [x$ bought Mary a *d*-expensive cake$]\}$ (focus association)
       f. $C = \{x: \exists d [x$ bought Mary a *d*-expensive cake$]\}$ (presupposition of -*est*, (5))

Since focus marking is realized prosodically as intonational prominence, ideally ~ should scope over both focus marked and unmarked portions of the sentence, as it does with *est*$_{2-\text{place}}$. However, focus effects in the interpretation of superlatives cannot be accounted for using the 2-place semantics for -*est*, as I show below.

3 Restrictions on DP-internal relative readings

3.1 Wrong predictions of -$est_{2-\text{place}}$ for DP-internal relative readings

The 2-place semantics for *-est* makes the prediction that DP-internal focus, (14), triggers the relative reading in (14b) with the comparison set (14e). As shown in section 1, this reading is available in Polish, (2b), but not in English, even though the same DP-internal focus does have a truth-conditional effect with *only*, (15).

(14)   a.   John bought Mary [$_{DP}$ the most expensive [cake]$_F$].
         b.   'John bought Mary a more expensive <u>cake</u> than <u>anything else he bought her</u>.'
                                                   DP-Internal Relative
         c.   LF for (14a): [-*est* $C_{\langle dt,t\rangle}$][$_{TP3}$ [~ $S_{\langle dt,t\rangle}$] [$_{TP2}$ John bought Mary a d-expensive [cake]$_F$]]
         d. $[\![TP_2]\!]^f = \{D: \exists f_{\langle e,t\rangle} \exists x [D = \lambda d.\ f(x) \wedge x \text{ is } d\text{-expensive} \wedge \text{John bought } x \text{ for Mary}]\}$
         e. $C_{\langle dt,t\rangle} = \{D: \exists f_{\langle e,t\rangle} \exists x [D = \lambda d.\ f(x) \wedge x \text{ is } d\text{-expensive} \wedge \text{John bought } x \text{ for Mary}]\}$

(15)   John *only* gave Mary [$_{DP}$ a cheap [cake]$_F$].
         'John gave Mary nothing else that was cheap except the cake.'

The contrast between Polish and English with respect to the reading in (14b)/(2b) does not follow from the presence vs. absence of -$est_{2-\text{place}}$ in the language. Bulgarian allows DP-internal relative readings, so -$est_{2-\text{place}}$ could be available in this language. I show, however, that using -$est_{2-\text{place}}$ and focus association we cannot account for the fact observed by Pancheva & Tomaszewicz (2012) that in the presence of the definite determiner, (16), only DP-external relative readings are available, just like for the English (1). When the definite is absent, (17), both DP-internal and DP-external relative readings obtain, with suitable prosody, whereas the absolute reading is unavailable.[3]

(16)   Ivan   kupi   [$_{DP}$ naj-skupa-<u>ta</u>   torta]   za   Meri.   (Bulgarian)
        Ivan   bought   *est*-expensive-<u>the</u> cake   for Mary   Readings: *(14b), (1i), (1ii), (1iii)
(17)   Ivan   kupi   [$_{DP}$ naj-skupa   torta]   za   Meri.
        Ivan   bought   *est*-expensive cake   for Mary   Readings: (14b), *(1i), (1ii), (1iii)

Assuming that the same lexical entry is used to derive relative readings in both (16) and (17), the goal is to account for the blocking effect of the definite determiner on association with DP-internal focus. Pancheva & Tomaszewicz (2012) achieve this with the 3-place semantics for *-est*, as reviewed in section 3.2. I show that an account of the cross-linguistic differences is not possible with the 2-place semantics, in section 3.3. I further offer empirical evidence that -$est_{2-\text{place}}$ does not associate with focus, whether DP-internal or external, on relative readings.

3.2 Constraining DP-internal relative readings with -$est_{3-\text{place}}$

Pancheva & Tomaszewicz (2012) argue on the basis of Bulgarian and other Slavic languages, that the DP-internal relative reading is derived by obligatory focus association, and that DP-external scope for *-est* (as in (13)) is possible only in the absence of the definite determiner. In the presence of *the*, *-est* is trapped inside the DP. The evidence that *-est* cannot be interpreted DP-internally on the DP-internal

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[3] Since in Slavic the availability/blocking of the DP-internal relative reading is strictly correlated with the definiteness of the superlative DP, Pancheva & Tomaszewicz (2012) propose that definite island effects on degree movement are universal. Their additional support for the claim that the definite DPs are degree islands comes from the fact that also QR of the comparative *-er* is blocked out of definite DPs, in English, and in the Slavic languages that have a definite article.

Proceedings of the 19th Amsterdam Colloquium
Maria Aloni, Michael Franke & Floris Roelofsen (eds.)

230

relative reading comes from sentences such as (3) and (17) where the absolute reading is not available, i.e. the comparison class determined on the basis of the sister of [-*est C*] can be neither $C_{\langle e,t\rangle}=\{x: \exists d.\ x$ is a d-expensive cake$\}$ nor $C_{\langle dt,t\rangle} \subseteq \{D: \exists x\ [D = \lambda d.\ x$ is a d-expensive cake$]\}$. This shows that the absolute/relative ambiguity is not simply a matter of the same LF and different context as has been suggested (Farkas & Kiss (2000), Sharvit & Stateva (2002)).

Mandating DP-internal scope for $-est_{3-\text{place}}$ in the presence of the definite article, Pancheva & Tomaszewicz (2012) derive the impossibility of DP-internal relative readings. A definite superlative DP can QR and -*est* can associate with a DP-external focus. In (18a) where the focus is on 'John', -*est* can associate with it, since the condition on focus association, (18c), and the presupposition of -*est*, (18d) match.

(18) a. LF for (1ii) in the presence of the definite (vs. (13)), (Pancheva & Tomaszewicz, 2012):
        [$_{TP3}$ [$_{DP}$ the [-*est* $C_{\langle e,t\rangle}$] [$_{NP}$ d-expensive cake]]$_1$ [$_{TP2}$ [$\sim S$] [$_{TP1}$ [John]$_F$ bought Mary t_1]]]
      b. $S \subseteq [\![TP_2]\!]^f$, $[\![TP_2]\!]^f = \{P: \exists y\ [P = \lambda x\ [y$ bought Mary $x]\}$
      c. $C = \cup S = \{x: \exists y\ [y$ bought Mary $x]\}$ (focus association)
      d. $C = \{x: \exists d\ [x$ is a d-expensive cake$]\}$ (presupposition of -*est* (5))

If focus were on 'Mary' in (18), the requirements of focus association and of the presupposition would also be compatible, but with focus on 'cake' they would clash, preventing the derivation of the DP-internal reading. Pancheva & Tomaszewicz (2012) demonstrate that when -*est* stays inside the definite superlative DP, whatever configuration with respect to the [$\sim S$] complex is attempted, the DP-internal relative reading is never derived because the DP-internal -*est* fails to associate with focus, i.e. the condition on focus association and the presuppositions of -*est*, (5), are in conflict. In the next section I explore whether the blocking effect of the definite determiner on the association with DP-internal focus can be accounted for on the 2-place semantics for -*est*.

3.3 Attempting to constrain focus association of $est_{2-\text{place}}$

There are three possible configurations where $est_{2-\text{place}}$ takes scope within the DP (its QR being blocked by the presence of the definite article) and attempts to associate with the focus on 'cake' for the DP-internal relative reading. It turns out that the blocking effect of the definite in Bulgarian, (16), and in English, (14a-b), cannot be modeled using $est_{2-\text{place}}$. Forcing DP-internal scope for $est_{2-\text{place}}$ never results in an LF where only association with DP-external focus is possible. And allowing $est_{2-\text{place}}$ to take sentential scope cannot handle the cross-linguistic facts either.

The first option is for [$-est_{2-\text{place}}$ C] to simply raise below the definite article, (19), but then its second argument NP$_2$ is not of the right type. NP$_2$ has the type $\langle d,et\rangle$, and not $\langle dt\rangle$ as required.

(19) John bought [$_{DP}$ the [-*est* $C_{\langle dt,t\rangle}$]$_{\langle dt,t\rangle}$ [$_{NP2}$ [$\sim S$] [$_{NP1}$ d-expensive [cake]$_F$]]$_{\langle d,et\rangle}$]

One way to avoid the type clash in (19) is to move [$-est_{2-\text{place}}$ C] to the edge of the DP, (20), and assume the determiner to contribute existential quantification. This second option, however, does not block the DP-internal reading. It results in an interpretation unattested in the presence of the definite, namely, that John bought a cake that was more expensive than anything relevant in the context, (20b). If [$\sim S$] has sentential scope, we get the DP-internal relative reading in (14).

(20) a. John bought [$_{DP3}$ [-*est* $C_{\langle dt,t\rangle}$]$_{\langle dt,t\rangle}$ [$_{DP2}$ [$\sim S$] [$_{DP1}$ *the/a* d-expensive [cake]$_F$]]$_{\langle d,t\rangle}$
      b. $[\![DP_3]\!] = \exists d.\exists x.[\text{cake}(x) \wedge \text{expensive}(x,d) \wedge \forall Q \in C\ [Q \neq [\![DP_3]\!] \rightarrow \neg\ (Q(d))]\ ]$
      c. $C \subseteq S,\ S \subseteq [\![DP_1]\!]^f$ (focus association)
      d. $[\![DP_1]\!]^f = \{\ D: \exists f\ \exists x\ [D = \lambda d.\ f(x) \wedge \text{expensive}(x,d)]\ \}$

e. $C_{\langle dt,t \rangle} = \{ D: \exists f \exists x [D = \lambda d.\ f(x) \wedge \text{expensive}(x,d)] \}$

The third option is to remove the superlative DP from the scope of the focus operator $\sim$, (21). This way we mandate DP-external focus, but we face further problems. We again need to avoid the type clash, e.g. by allowing the definite determiner to move leaving a variable of type e (as proposed by Romero (2010) for the derivation of the absolute reading with -$est_{2-\text{place}}$). More seriously, the focus association condition $C \subseteq S$, $S \subseteq \llbracket TP_2 \rrbracket^f$, cannot be satisfied given that DP$_2$, which by presupposition in (6) is a member of C, (21b), contains an unbound variable, (21c).

(21) a. $[_{DP2}$ the$_2$ $[$-$est\ C_{\langle dt,t \rangle}]_{\langle d,t \rangle}$ $[_{DP1}\ t_2\ d$-expensive cake$]_{\langle d,t \rangle}$ $]_1$ $[_{TP2}\ [\sim S]\ [_{TP1}\ [\text{John}]_F$ bought $t_1]$
      b. $\llbracket DP_2 \rrbracket \in C$ (presupposition of -est, (6))
      c. $\llbracket DP_2 \rrbracket^g = \lambda d.\ [\text{cake}(g(2)) \wedge \text{expensive}((g2),d)]$

No configuration where the scope of -$est_{2-\text{place}}$ is constrained by the presence of the definite article derives DP-external relative readings while simultaneously blocking the DP-internal relative reading. This suggests that only -$est_{3-\text{place}}$ together with focus and independent facts about the structure of the DP (definiteness) can determine compositionally which superlative readings are (un)available in English and Bulgarian. But could -$est_{2-\text{place}}$ be assumed for relative readings in Polish since this language lacks the definite article, which has the blocking effect in Bulgarian and English?

4 Degree comparison (-$est_{2-\text{place}}$) and degree relative clauses

Polish has a dedicated degree *wh*-operator, so the compatibility of degree relative clauses and superlatives provides a diagnostic for the type of comparison: between individuals or degrees. Modification by a degree relative clause, (22), does not allow for the relative reading on which individuals are compared, (22b). Consequently, prosodic focus in (23) results in the unacceptability of the degree relative, in contrast to (24) where the superlative quantifier is focused.

(22) Jan   kupił   najwięcej ciastek,   ile   było   dozwolone.
       Jan   bought   most   cakes   how-much   was   allowed
       a. 'Jan bought the largest amount of cakes that was allowed.'
       b. *'Jan bought a larger allowed amount of cakes than anyone else did.'
(23) [JAN]$_F$ kupił   najwięcej ciastek,   (*ile   ktokolwiek   kupił).
       Jan   bought   most   cakes   how-much   anyone   bought
       'Jan bought the most cakes that anyone bought.'
(24) Jan   kupił   [najWIĘcej]$_F$ ciastek,   ile   ktokolwiek   widział.
       Jan   bought   most   cakes   how-much   anyone   saw
       'Jan bought the most cakes that anyone saw.'

Since prosodic focus on 'Jan' in (23) triggers the relative reading, but that reading is incompatible with the degree relative, I conclude that the relative interpretation is derived with -$est_{3-\text{place}}$. With -$est_{2-\text{place}}$ the comparison would be between different amounts of cakes, just like in (22), and the degree relative clause should be able to further specify this set of sets of degrees. Because (22) and (24) show that degree relative clauses can modify superlatives, we have evidence that -$est_{2-\text{place}}$ can be used in Polish, since the degree relative can be taken to express the comparison set $C_{\langle dt,t \rangle}$, as proposed for English by Howard (2013) and for English modal superlatives by Romero (2010).

5 Conclusion

I have provided new evidence from Polish that two lexical entries for the superlative morpheme can be found in the grammar of a single language: the 3-place -*est* on which individuals are compared, (5), and the 2-place -*est* comparing sets of degrees, (6). The two morphemes are in complementary distribution in Polish and cross-linguistically. Unlike what is suggested in Heim (1999), -$est_{2-place}$ does not associate with focus to derive the focus affected relative readings. Focus association with -$est_{2-place}$ makes wrong predictions for the range of superlative interpretations available cross-linguistically as identified in Pancheva & Tomaszewicz (2012). However, -$est_{2-place}$ is used in cases of explicit comparison between degrees, e.g. in the presence of a degree relative clause. I concluded that the grammar uses -$est_{3-place}$ for the relative readings derived by focus association. This is in line with Szabolcsi's (2012) suggestion that different ways for building superlatives "may coexist in (varieties of) the same language".

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233