# A *SLIGHTLY* MODIFIED ECONOMY PRINCIPLE: STABLE PROPERTIES HAVE NON-STABLE STANDARDS

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## 1 Introduction: Absolute vs. Relative Adjectives

Vagueness is a persuasive feature of adjectives (Kamp 1975; Kennedy 2007; van Rooij 2009). Consider, for example, the adjective *tall*. First, the truth value of sentences in the positive construction – sentences of the form *x is tall* – varies with context. For example, a person may be considered tall when compared with his age group and not tall when compared to basketball players. The truth value depends on a context dependent comparison class (Klein 1980).

Second, some contextual comparison classes contain a point or an interval that 'stands out' to such a degree that it functions as a *standard of membership*, such that entities whose height exceeds the standard fall in the positive extension and other entities fall in the negative extension. However, in most cases, neither the comparison class nor the standard is fully determined. As a result, some entities exist for which we cannot say whether they are tall or not. They form an extension gap. Moreover, often there are no clear boundaries between the positive, negative, and extension gap.

Third, vague adjectives are characterized by the Sorites paradox. For example, an entity 1mm shorter than a clearly tall entity is intuitively judged to be tall too, and so is any entity 1mm shorter, and so on. This leads to a paradoxical conclusion, a conclusion that we intuitively judge false, whereby any entity is tall.

Some adjectives, however, are not as vague as others are. They are often called *absolute adjectives* to distinguish them from the vague *context relative* adjectives. As their name suggests,

their interpretation is often regarded as based on a conventionally fixed standard of membership. Consider for example, the adjectives *clean* and *dirty*. Intuitively, no other entities are needed for us to decide whether some object is dirty or not: an entity is clean iff it is completely free of dirt, and it is dirty otherwise. Hence, the criterion for the application of the adjective is fixed by a conventional rule (McNally 2011), and the standard assumption is that neither *clean* nor *dirty* are interpreted relative to a context dependent standard of membership based on a comparison class (Kennedy 2007).

Let s(G) stand for the membership standard of a gradable adjective G, and assume a $\lambda$-categorial language (Heim and Kratzer 1998) and an analysis of adjectives as denoting relations between entities x and degrees d based on a mapping $f_G$ of entities to their degree in G: *x is G* is true in a context c iff x is G to at least degree s(G), i.e. $f_G(x) \geq s(G)$ or in short G(s(G))(x) in c (e.g., x is tall iff x's height exceeds the contextual height standard). On *Scale structure theory* (Bierwisch 1989, Rotstein & Winter 2005, Kennedy & McNally 2005, Kennedy 2007) gradable adjectives classify by their scale type, namely as lower-closed (+min), upper closed (+max), both, or neither, and endpoints, when exist, function as standards:

(1) Adjectives classified by their standards:
    a.  G is *total* iff G's standard is the maximum on G's scale: s(G) = max(G).
    b.  G is *partial* iff G's standard is next to the minimum on G's scale: s(G) > min(G).
    c.  G is *relative* otherwise; any adjective associated with an open scale has a vague and context relative – non stable – standard.

(1) states that partial adjectives have a minimum standard; for example, one stain suffices for a shirt to count as *dirty*, meaning that *dirty* is a partial adjective. Total adjectives have a maximum standard; e.g., to count as *clean* a shirt has to be completely free of dirt (maximally clean), meaning that *clean* is a total adjective. The standard of relative adjectives like *tall* is a midpoint on the adjective's scale, which varies with context.

In Kennedy (2007) the fact that scale endpoints function as membership-standards is derived through a principle of *Interpretive Economy*, according to which speakers and listeners maximize the contribution of the conventional meanings of the elements of a sentence to the computation of its truth conditions. Hence, if a scale of an adjective G has an endpoint, this point stands out, and therefore functions as a standard of membership for the calculation of truth conditions of positive constructions with G (sentences of the form *x is G*). By contrast, in open-scale adjectives G, unless contexts specify which midpoint functions as the standard, the transition between G's and non G's is not clear cut and there is a gap consisting of borderline cases.

## 1.1 Absolute Adjectives and 'Stage Level' Properties

Recently, van Rooij (2009) proposed that all gradable adjectives are associated with a comparison class. Following him, Toledo and Sassoon (2011) argued that absolute and relative adjectives differ with respect to the method for determining the comparison class. In relative adjectives, this class can be any of infinitely many categories of the entity the adjective predicates of; e.g. in *the child is tall,* the comparison class may consist of the child's class, age group, age and gender group, children in the child's country, and so forth. These categories are

*extensional* in the sense that each individual contributes only one height value to the comparison. By contrast, in absolute adjectives, the comparison class is the set of temporal stages (or counterparts) of the entity the adjective is predicated of; e.g., in *the glass is full*, we compare the referent of *the glass* to how full it is in other circumstances that we consider 'normal'. The resulting comparison class is *intensional* – it is composed of the different temporal stages (or counterparts) of the given glass, so the entity the adjective predicates of contributes the entire set of values with which to compare it in each context of evaluation.

Toledo and Sassoon (2011) show that this distinction solves a number of puzzles from the literature on scale structure theory. Overall, this proposal eats the cake and has it too. On the one hand, this analysis captures context effects, e.g., a full glass of wine need not be as full as a full glass of tea – each glass comes with its own comparison class – its set of 'normal' temporal stages. The maximal elements in each set may be filled to different degrees. On the other hand, this analysis captures the apparent context insensitivity of absolute adjectives, because the way their argument normally is highly restricts their interpretation, providing a clear membership standard, e.g., since wine glasses are normally filled up to only half of their capacity, the maximum degree in their comparison class is that of a half full glass. Thus, an endpoint exists, which therefore, functions as their standard. The situation is different with relative adjectives, as in the latter the indeterminacy of the comparison class results in absence of a convention regarding an endpoint; as a consequence the standard is indeterminate – it can be any degree instantiated by an entity in any of the possible comparison classes.

Inspired by Kennedy & McNally's (2005) seminal work on the connections between scale structure and event types, Sassoon and Toledo (2012) argue that the well known distinction between stage-level and individual-level predicates (Carlson1977) gives rise to the two types of comparison class they discuss. On this proposal, adjectives that encode highly variable – *stage level* – values of entities give rise to an interpretation of the positive construction which is based on their set of temporal stages. By contrast adjectives that encode relatively stable – *individual level* – values of entities, give rise to an interpretation based on an extensional category of those entities. This idea is appealing because natural languages encode a rich variety of markers of the stage-individual (I/S) distinction (Carlson1977; McNally1994; Kratzer1995; Kertz 2006; Rafael Marín 2011), as the following examples illustrate. The variable X should be substituted with a definite noun phrases such as *this glass* or *this child*.

(2) a. X is rarely/often {dirty, clean, sick, healthy, open, closed, wet, dry}.
    b. #X is rarely/often {tall, short, wide, narrow, expensive, cheap}.
(3) a. Every time X is {dirty, clean, sick, healthy, open, closed, wet, dry}, …
    b. #Every time X is {tall, short, wide, narrow, expensive, cheap}, …
(4) a. Once {dirty, clean, sick, healthy, open, closed, wet. dry}, …
    b. #Once {tall, short, wide, narrow, expensive, cheap}, …
(5) a. We have also seen X {dirty, clean, sick, healthy, open, closed, wet, dry}.
    b. #We have also seen X {tall, short, wide, narrow, expensive, cheap}.

These tests for I/S-level in adjectives show that the absolute adjectives in the (a) examples denote stage level scalar properties, because it is possible to make reference to or quantify over stages in which the individual denoted by X exemplifies or fails to exemplify the property denoted by the adjective. For example, the combination *rarely dirty* can felicitously predicate over a definite noun phrase, because most objects can be dirty at some of their temporal stages,

and not dirty at others. By contrast, the combination *rarely tall* cannot predicate over a definite noun phrase, because height is a relatively stable property for most objects. It is true that, e.g., children change their height as they grow up, but their height is never changing back and forth the way their values in properties measured by, e.g., *dirty/clean* or *wet/dry* do, and the height of adults is almost completely stable.

In sum, the semantics of a variety of expressions restricts their distribution in such a way that they can only combine with predicates denoting S-level properties. Thereby, these expressions mark the relative instability of the properties denoted be the predicates they modify. Hence, if Sassoon and Toledo's (2012) generalization holds, the felicity of an adjective and its frequency of occurrence with markers of stage-level properties should provide evidence for comparison classes based on temporal stages of the entities the adjective predicates of. Moreover, if the latter normally highlight a closed set of degrees, these markers should thereby provide evidence for a conventional endpoint standard (absoluteness).

The main goal of the following study is to assess evidence for or against this account, by examining to what extent the stage-individual distinction patterns with the absolute-relative one. One way to achieve this goal is by assessing acceptability judgments for sentences in the positive construction with absolute and relative adjectives modified by markers of the absolute-relative distinction (presented shortly below), and compare them with identical sentences in which the adjective modifiers are substituted by markers of the stage-individual distinction. The resulting two samples of acceptability ranks can then be tested for correlations. Hence, let us briefly consider some markers of absolute vs. relative adjectives.

Among other phenomena, modifiers are used to motivate the typology of adjectives by their scale-structure and standard (Bierwisch 1989, Rotstein and Winter 2004, Kennedy and McNally 2005, Kennedy 2007; McNally 2011). For example, as the judgments in (7-10) from Kennedy (2007) illustrate, modifiers like *slightly* ('minimizers') are viewed as referencing scale minima as the semantic representation in (6a) shows. Therefore, the distribution of minimizers is thought to be restricted to lower closed (+min) scalar adjectives. By contrast, modifiers like *perfectly* and *completely* ('maximizers') are viewed as referencing scale maxima, as the semantic representation in (6b) shows. Therefore, their distribution is thought to be restricted to upper closed (+max) adjectives.

(6) a. *slightly* $\Leftrightarrow$ $\lambda G \lambda x . \exists d > \mathbf{min(G)}$, $G(d)(x)$.

　　b. *perfectly* $\Leftrightarrow$ $\lambda G \lambda x . \exists d = \mathbf{max(G)}$, $G(d)(x)$.

(7)　Open scales

　　a. ??perfectly/??slightly {tall, deep, expensive, likely}.

　　b. ??perfectly/??slightly {short, shallow, inexpensive, unlikely}.

(8) Lower closed scales

　　a. ??perfectly/slightly {bent, bumpy, dirty, worried}.

　　b. perfectly/??slightly {straight, flat, clean, unworried}.

(9) Upper closed scales

　　a. perfectly/??slightly {certain, safe, pure, accurate}.

　　b. ??perfectly/slightly {uncertain, dangerous, impure, inaccurate}.

(10) Doubly closed scales

     a. perfectly/slightly {full, open, opaque}.
     b. perfectly/slightly {empty, closed, transparent}.

By way of summary, table 1 exemplifies the five types of adjectives resulting from the two-way classification of adjectives by scale structure and standard type.

Table 1: Scale-structure theory's predictions regarding the distribution of modifiers amongst adjectives of different scale and standard types.

| | **+min** ($\checkmark$*slightly A*) | **−min** (**slightly A*) |
|---|---|---|
| **+max** ($\checkmark$*perfectly A*) | **Total**: full, empty, closed, opaque. **Partial**: open, transparent. | **Total**: clean, healthy, dry, calm. |
| **−max** (**perfectly A*) | **Partial**: dirty, sick, wet, late, early, nervous. | **Relative**: long, short, small, narrow, shallow, ugly, inexpensive, young, tall, wide, deep, beautiful, expensive, old . |

## 1.2 Minimizers and Minimal Elements in the Denotation vs. Scale

A secondary goal of the present study is to test the validity of the hypothesis that modifiers are markers of scale structure. In particular, I ask whether minimizers are sensitive to lower closed scales (scale minima) or to minimum standards (denotation minima), both or neither. An important source of evidence comes from combinations of minimizers with doubly closed, total adjectives such as *slightly full* and *a bit closed*, because these adjectives have lower closed scales, but at the same time, their standard appears to normally be indentified with the scale maximum, not minimum. Hence, the acceptability of minimizers with such adjectives as revealed in judgment surveys may be telling. If minimizers felicitously co-occur with doubly closed total (maximum-standard) adjectives, this will support the by now quite standard hypothesis that minimizers mark lower closed scales. Kennedy (2007) hypothesizes that *slightly* is such a marker, and Kennedy & McNally (2005) view *somewhat* in this way.[1] If, however, minimizers are significantly less felicitous with doubly closed total adjectives than with partial (minimum-standard) adjectives, this will speak against the standard analysis and in favor of an analysis by means of sensitivity to standard type, as for example in (11a)-(12a).[2] The presupposition in (12a) renders *slightly* compatible with partial adjectives, but also with relative adjectives for which the standard is contextually fixed, as in *slightly too tall to be a pilot*.

(11) a. *slightly* $\Leftrightarrow \lambda G \lambda x. \exists d \geq \mathbf{s(G)}$, G(d)(x).

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[1]*Slightly* is absent from their paper in line with an analysis based on sensitivity to standard types (Louise McNally 2011 and p.c. also point to that direction).

[2]Given the same reasoning, a study can assess the validity of the assumption that maximizers like *completely* are sensitive to adjectives with upper closed scales, rather than to adjectives with a maximum standard as in (11b)-(12b). This assumption, however, is harder to dispute.

b. *perfectly* $\Leftrightarrow \lambda G \lambda x. \exists d = \mathbf{s(G)}, G(d)(x)$.

(12) a. presupposition: $\exists d_1, d_2: d_1 > s(G) > d_2$ , i.e. $s(G)$ can be any non zero, non-maximal d.

b. presupposition: $s(G) = max(G)$.

Such an analysis can draw on Klein's (1980) account of relative modifiers like *very*, and state that minimizers as in *slightly full* and maximizers as in *completely full* set the comparison class to be the adjective denotation. On such an account, minimizers and maximizers refer to the minimal and maximal elements in the denotation, not in the entire scale, e.g., they refer to the least full and fullest instances, respectively, among the full entities. This account is compatible with the idea of minimum and maximum standards, assuming Lewis's (1979) notion of granularity based *standard of precision*, and Krifka's (2002, 2007) approach to numerals and rounding, whereby complex scalar expressions are interpreted relative to scales of finer-grained granularity than simple scalar expressions, and therefore the former are assigned more precise interpretations.

Thus, on such an analysis, the denotation of *dirty* consists of minimally dirty entities, presupposing a default standard of precision (coarse granularity level) g, whereby, e.g., a few grains of dust on an object are ignorable, meaning that such objects are considered to be exactly as clean as objects which are completely free of dirt in normal contexts. However, modification of an adjective introduces a shift to scales of finer granularity – we zoom into the denotation and observe differences we previously ignored. Thus, the denotation of the complex expression *slightly dirty* consists of minimally dirty entities presupposing a finer granularity than the default one, and therefore a pedantic standard of precision $g_p$ – every dust grain counts; a few grains of dust on an object turn it dirtier than dust free entities, and therefore it classifies as dirty. (13a) presents the interpretation of *slightly dirty* on this account.

(13) a. $[dirty]_g \subset [dirty]_{gp} = [slightly\ dirty]_g$.

b. $[completely\ full]_g = [full]_{gp} \subset [full]_g$.

Similarly, as (13b) shows, the denotation of *full* consists of maximally full entities presupposing a default standard of precision g (coarse granularity level), whereby, e.g., a few missing drops in a full glass are ignorable, meaning that in that context such glasses are considered to be as full as they can normally be. However, with maximizers we zoom into the denotation and observe differences we previously ignored. Thus, the denotation of the complex expression *completely full* consists of maximally full entities presupposing a pedantic standard of precision $g_p$ – every missing drop counts. Now a few missing drops in a glass render it less full than it can be, and therefore it classifies as not full.

We assumed that entities that are indistinguishable with respect to a coarse-grained precision level (e.g. a half full glass and a glass with one more drop) are mapped to the same degree (Lewis 1979; van Rooij 2009). Formally:

(14) For any two degree functions $g, g_p \in D_{xd}$, $g_p$ is finer-grained than g, $g \subset g_p$ iff $\exists x, y \in D_x$, $(g(x) = g(y))$ & $\neg(g_p(x) = g_p(y))$, but not v.v. $\neg \exists x, y \in D_x$, $(g_p(x) = g_p(y))$ & $\neg(g(x) = g(y))$.

An advantage of this analysis over the more standard analysis in (6) is that it discerns between the semantics of modified adjectives and that of bare adjectives, while also explaining the relations between them. Thus, e.g., two similar glasses filled with an amount of wine

differing in but few drops are indistinguishable relative to g (they fall under [equally full]$_g$), but distinguishable relative to $g_p$ (they fall under [fuller]$_{gp}$). A total adjective like *full* denotes maximally full entities presupposing coarse granularity level g as stated in (15a). A few missing drops in a full glass are ignorable – such glasses are considered to be as full as they can be. By contrast, the maximized total adjective form *completely full* denotes maximally full entities, presupposing finer granularity $g_p$, as stated in (15b). A few missing drops in a glass render it less full than it can be, and thus *not full*. Since $g_p$ is finer than g, it follows $g_p$ assigns fewer entities the same degree, e.g. fewer entities are mapped to a degree identical to the maximum ( $=_g \supset =_{gp}$). Thus, (15b) is stronger than (15a). It becomes harder for an object to count as full as it can be.

(15) a. $[G_{total}]_g = \lambda x. \ g(x) = \ \max(g)$

      b. $[\text{completely } G]_g = \lambda x. \ g_p(x) = \max(g_p)$, for $g_p$ finer than g.

      c. $[G_{partial}]_g = \lambda x. \ g(x) > \min(g)$

      d. $[\text{slightly } G]_g = \lambda x. \ g_p(x) > \min(g_p)$, for $g_p$ finer than g.

      e. $[\text{slightly } G]_g = \lambda x. \ g_p(x) > d_s$, for $g_p$ finer than g: $>_g \subset >_{gp}$.

Similarly, a partial adjective like *dirty* denotes minimally dirty entities, presupposing coarse granularity g, as stated in (15c). Thus, objects covered with a few specks of dirt are considered to be as clean as objects which are completely free of dirt. By contrast, the minimized partial adjective form *slightly dirty* denotes minimally dirty entities, presupposing finer granularity $g_p$, as stated in (15d). A few dirt specks turn an object dirtier than dirt free entities, and thus *dirty*. Since $g_p$ is finer than g, more distinctions are made, i.e., $g_p$ assigns more entities different degrees ($>_g \subset >_{gp}$). Thus, (15d) is weaker than (15c). It is easier to exceed the minimum threshold.

On this account, the distribution of modifiers is not sensitive to scales with minimum and maximum degrees, but to classification rules based on identity to a degree as in (15a) vs. an external threshold as in (15c). Minimizers are restricted to adjectives which classification rule is based on a requirement that instances exceed a threshold (the relation '<'), whereas maximizers are restricted to adjectives which classification rule is based on an identity requirement (the relation '='). Thus, definition (15d) can be replaced with (15e) where $d_s$ represents a categorization threshold external to the denotation, but not necessarily the scale zero.

This account captures the use of *slightly* with relative and total adjectives. In relative adjectives *slightly* is licensed as long as some external categorization threshold is salient in the context, as, for instance, in contexts of excessive and for-phrase modification as in *slightly too tall,* and *slightly tall for her age*, respectively. With total adjectives, *slightly* triggers minimal shifting to a non maximal standard, $d_s < \max(g_p)$, which can therefore function as an external threshold for denotation members to exceed. Hence, *slightly full* implies *rather full.* In other words, combinations of minimizers with doubly closed total adjectives such as *slightly full* refer to the minimum in the denotation, not scale, namely, to relatively high degrees, rather than very low degrees. This consequence is intuitively correct, e.g., an utterance of a sentence like *the city square is slightly full* implies that the city square is rather full; it is more full than empty. Moreover, if there are but few people in the square we cannot possibly describe the situation using this sentence. These facts are unexpected given the scale-minimum analysis of *slightly*.

In sum, the distributional predictions of this analysis differ from those of the scale structure analysis. The standard shifting involved in modification of total adjectives according to this

analysis renders combinations of *slightly* with total adjectives less compatible than combinations with partial adjectives.

This account is consistent with Rotstein & Winter's (2005) observation that *slightly* is felicitous iff there is enough room, so to speak, within an adjective denotation, for both *slightly* and *completely* to denote, i.e. iff the denotation covers more than one degree on the given scale. Similarly, this account is consistent with Sevi's (2001) observation that *barely G* denotes G entities that almost fail to be G (they are G to a minimal point along some partial ordering).[3] Finally, in a similar vein, Kagan and Alexeyenko (2011) analyze the Russian minimizing suffix -*ovat* as denoting a contextually determined small range above the membership standard.

This paper does not investigate the validity of the semantic relations in (13) (see Zevakhina & Sassoon 2011 for relevant experimental evidence and discussion). Rather, in the present study, I ask whether minimizers selectively prefer lower closed- than lower open scalar adjectives, and/or partial (minimum standard-) than non partial adjectives. To this end, notice that adjectives can be classified by their standard types based on the following established tests of inference patterns (Kennedy & McNally 2005; Rotstein & Winter 2005; Kennedy 2007). The results of these tests are in principle independent from considerations pertaining to the felicity of modifiers.

First, in partial (minimum standard) adjectives, unlike total (maximum standard) adjectives and relative (midpoint standard) adjectives, any non-zero degree in P entails P-hood. Thus, (16a), but not (16b-c), intuitively is judged to be a contradiction.

(16)  a. #The door is not open, but it is still ajar.           [contradiction]
      b. The door is not closed, but it is almost closed.       [No contradiction]
      c. Sam is not tall but his height is normal for his age.  [No contradiction]

Second, in total adjectives, unlike partial and relative ones, P-hood entails maximum degree in P. Thus, (17b), but not (17a,c), intuitively is judged to be contradiction.

(17)  a. The door is open, but it is not completely open.       [No contradiction]
      b.#The door is closed, but it is not completely closed.   [Contradiction]
      c. Sam is tall but he could be taller.                    [No contradiction]

Third, mid-point modifiers like *half* or *partially* entail P-hood in partial adjectives and non-P-hood in total adjectives (18a-b). They entail neither in relative adjectives (18c).

(18)  a. The door is half open       $\Rightarrow$       The door is open.
      b. The door is half closed     $\Rightarrow$       The door is not closed.
      c. The tree is half tall       $\neg\Rightarrow$   The tree is (not) tall.

Fourth, total and partial antonyms tend to be complementary; by contrast, entities may neither fall under a relative adjective nor under its relative antonym:

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[3]The difference between these analyses and the one proposed here is that on those analyses sentences with minimizers (such as sentences of the form " x is slightly A") are no weaker (and possibly stronger) than the equivalent sentences without them ("x is A"). This is not intuitive. On a granularity shifting analysis minimizers like *slightly* weaken the truth conditions rendering e.g. "x is slightly dirty" weaker than "x is dirty", as stated in (13).

(19)  a. The door is not closed      $\Rightarrow$      The door is open.

      b. Sam is not short          $\neg\Rightarrow$      Sam is tall.

Fifth, *x is more P than y* entails that *x is P* in partial adjectives (20a), that *y is not P* in total adjectives (20b), and neither in relative adjectives (20c):

(20)  a. The door is more open than the window $\Rightarrow$      The door is open.

      b. The door is more closed than the window $\Rightarrow$      The window is not closed.

      c. Rod A is longer than Rod B      $\neg\Rightarrow$      Rod A is long/ Rod B is not long.

# 2 Stable Properties Have Non Stable Standards: Experimental Evidence

We are ready to present an acceptability judgment survey that tests some of the predictions of the accounts presented in the introduction.

## 2.1 Method

The participants were 25 native speakers of English, 7 males and 18 females, of variable ages ranging between 19 and 61 (M = 42, SD = 16); all of them had at least 12 years of school education (M = 17; SD = 4). The target items consisted of sentences with 30 different adjectives in the positive construction, including the 14 relative adjectives *small, short, narrow, shallow, ugly, inexpensive, young, tall, long, wide, deep, beautiful, expensive*, and *old*, and the 16 absolute adjectives included *healthy, dry, clean, calm, empty, full, open, closed, opaque, transparent, sick, wet, dirty, late, early,* and *nervous*. The adjectives were arbitrarily chosen from the list of examples in the literature on absolute versus relative adjectives (Kennedy & McNally 2005; Rotstein & Winter 2005; Kennedy 2007). They were divided to 5 groups differing by the type of standard and/or scale, as shown in table 1 above.

    In order not to beg the research questions the classification of adjectives neither was based on acceptability nor on frequency of modification by minimizers or maximizers (cf., the judgments in (7-10)). Rather, scale types were determined by robust speaker intuitions concerning the existence/absence of endpoints,[4] and standard types were determined based on the established tests of inference patterns in (16)-(20) above. The classifications were based on data from the above cited scale-structure literature, and were confirmed by judgments of at least one native English informant per adjective.

    Each adjective occurred in each one of the contexts illustrated in (21)-(23). As (21a,b) show, the study focused on two modifiers that, on scale-structure theory, indicate an absolute (partial or

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[4] Intuitively, some relative adjectives are associated with lower closed and others with lower open scales. Nonetheless, in the present experiment they were grouped together in accord with the literature. Discussion of this point is postponed to section 2.5.

total) status of an adjective, *slightly* and *completely*. The former was expected to be acceptable with lower/doubly closed adjectives, the latter with upper/doubly closed ones. Neither was expected to be acceptable with relative adjectives, which in this theory, have a doubly open scale. Hence, the maximum acceptability of an adjective with these two modifiers may form an indication of its status as absolute (either partial or total) vs. relative. Moreover, to balance the acceptability ratings for relative and absolute adjectives, and to separate between target sentences, similar fillers with *extremely* were used as (21c) illustrates. The rationale was that, if restricted at all, *extremely* would be more acceptable with relative- than absolute adjectives (cf. Syrett 2007).

(21)   The absoluteness tests

    a.   Def-det N is completely A, e.g., *The floor is completely dirty*
    b.   Def-det N is slightly A, e.g., *The floor is slightly dirty*
    c.   Def-det N is extremely A. e.g., *The floor is extremely dirty*

As (22a,b) show, the study further focused on two measures of the stage-individual level of the property denoted by an adjective, acceptability of modification with *rarely* and acceptability of occurrence in a small clause embedded under the verb *saw*. Both *rarely* and *saw* are likely to be affected by additional felicity conditions, orthogonal to the stage-individual distinction, restrictions which certain adjectives or others may violate. None the less, one may hypothesize that all in all absolute adjectives will rank higher than relative ones in these two measures. Moreover, to balance the acceptability ratings for relative and absolute adjectives and to separate between target sentences, similar fillers with *consider* were used as (22c) illustrates. If restricted at all, *consider* was expected to be more acceptable with small clauses headed by relative adjectives than absolute ones (Carlson 1977).

(22)    The Stage-Individual tests

    a.   Def-det N is rarely A, e.g., *The floor is rarely dirty*.
    b.   Pronoun also saw Def-det N A, e.g., *We also saw the floor dirty*.
    c.   Pronoun also considers Def-det N A, e.g., *We also consider the floor dirty.*

Six versions of 30 items were constructed based on the manipulations described above. The definite noun phrases used were the most straightforward definite noun phrases to combine with the adjectives in the sample, such as *the child* for *healthy*, *this window* for *open*, *my dress* for *ugly*, and so on. Finally, additional perfectly felicitous and perfectly infelicitous fillers included 20 examples like the following:

(23)    Fillers

    a.   *The material is very strong*  (acceptable)
    b.   *The tree is slowly green*  (unacceptable)
    c.   *John also saw the cake tasty*  (unacceptable)

The stimuli were counterbalanced into two lists, each containing 60 target items (15 in each condition) and 40 fillers, in a random sequence. The participants were assigned to one of the two lists, all in all 11 for the first list and 14 for the second list, and they were asked to rate each

passage by placing a cross on a scaled line ranging from 1 (makes no sense) to 7 (makes complete sense). The participants submitted the surveys through email.

The following predictions were tested. First, in line with scale-structure theory, an absolute adjective A is predicted to have higher acceptability ratings than a relative adjective B with either *completely* (if A is upper closed) or *slightly* (if A is lower closed), or both (if A is doubly closed). Thus, the maximum value in the two conditions, Max(completely, slightly) is predicted to be higher for A's than for B's. Second, given Sassoon and Toledo's (2012) account of the relative-absolute distinction, an absolute adjective A is predicted to have a higher acceptability rating than a relative adjective B in the *rarely-* and the *saw* conditions. Third, given this account, a significant correlation is expected between the acceptability ratings in the *completely* and *slightly* conditions and the *rarely* and *saw* conditions. In particular, a correlation was predicted to be found between an adjective's maximum value in the two absoluteness conditions, Max(completely, slightly), and its value in each one of the two stage-individual conditions, *rarely* and *saw*. Finally, the analysis of modifiers as granularity shifters predicts that minimizers will be more acceptable with partial than total adjectives, and more specifically, they will be more acceptable with doubly closed partial than doubly closed total adjectives.

Sections 2.2-2.3 present the results and discussion pertaining to the coupling between S/I level and the absolute-relative distinction, and sections 2.4-2.5 present the results and discussion pertaining to modifier licensing.


## 2.2 Results: Transient vs. enduring property values as a predictive factor

A split group analysis revealed high correlations between participants (r = .92 for the first list and r = .87 for the second list), suggesting that participants answered reliably and had similar judgments. Table 2 presents a summary of the raw data by means of the medians per items of the acceptability judgments.

The expectations were confirmed. A Mann-Whitney test yielded the following results. First, the relative adjecives (mean rank M = 139.7) and absolute adjectives (M = 246.7) differed significantly with respect to the maximum acceptability of each adjective with *completely* and *slightly*, Max(Completely, Slightly) ($U_{Abs}$ = 8688.5, z = 9.33, P < .001.) Second, the acceptability of *rarely* with relative (M = 105) vs. absolute adjectives (M = 243.3) differed significantly ($U_{Abs}$ = 3575, z = 12.62, P < .001), and so did the acceptability of *saw* with relative (M = 135.7) vs. absolute adjectives (M = 201.7; $U_{Abs}$ = 19649, z = -6.22, P < .001.) Third, the Spearman rank-order correlation coefficient for the acceptability ratings in the two conditions *rarely* vs. Max(Slightly, Completely) was $r_s$= .435 (n = 360, t = 9.14, P < .001), and the correlation coefficient for the acceptability ratings with *saw* vs. Max(Slightly, Completely) was $r_s$ = .2971 (n = 349, df = 347, t = 5.8, P <. 001).

Comparisons based on the median ratings per item yielded similar results. First, the maximum acceptability of each adjective with *completely* and *slightly*, Max(Completely, Slightly), differed significantly in  relative (M = 7.5) vs. absolute adjectives (M = 22.5; $U_{Abs}$ = 0, z = 4.64, p < .001.) Second, the acceptability of *rarely* with relative (M = 8.5) vs. absolute adjectives (M = 21.6) differed significantly ($U_{Abs}$ = 14.5, z = 4.03, P < .001), and so did the acceptability of *saw* with relative (M = 9.3) vs. absolute adjectives (M = 20.9; $U_{Abs}$ = 25, z = 3.6, P < .001). Third, for the two conditions *rarely* vs. Max(Slightly,Completely), the Spearman rank-

order correlation coefficient was $r_s$= .76 (n = 30, df = 28, t = 6.2, P < .001), and for *saw* vs. Max(Slightly,Completely), it was $r_s$= .724 (n = 30, df = 28, t = 5.57, P < .001).

Table 2: Median acceptability rating per items in the various conditions

| Median Acceptability | slightly | completely | Extremely | rarely | saw | Considers | max(comp,slight) |
|---|---|---|---|---|---|---|---|
| **Upper Closed Total** | | | | | | | |
| healthy | 3 | 7 | 7 | 7 | 6 | 7 | 7 |
| dry | 3.5 | 7 | 6 | 7 | 5 | 5 | 7 |
| clean | 2 | 7 | 7 | 7 | 2 | 6.5 | 7 |
| calm | 3 | 7 | 7 | 7 | 3 | 6.5 | 7 |
| **Doubly Closed Total** | | | | | | | |
| empty | 2 | 7 | 3 | 7 | 5 | 5 | 7 |
| full | 5 | 7 | 7 | 7 | 3 | 6 | 7 |
| closed | 4.5 | 7 | 1 | 7 | 7 | 3 | 7 |
| opaque | 5 | 6.5 | 6 | 3 | 1 | 7 | 6 |
| **Doubly Closed Partial** | | | | | | | |
| open | 7 | 7 | 3.5 | 7 | 6.5 | 4 | 7 |
| transparent | 6 | 7 | 4 | 1 | 1 | 6 | 7 |
| **Lower Closed Partial** | | | | | | | |
| sick | 7 | 2 | 7 | 7 | 5 | 5 | 7 |
| wet | 7 | 6.5 | 6.5 | 7 | 5.5 | 6 | 7 |
| dirty | 7 | 5.5 | 7 | 7 | 4 | 7 | 7 |
| nervous | 7 | 4 | 7 | 7 | 1 | 7 | 7 |
| late | 7 | 2.5 | 7 | 7 | 3 | 3 | 7 |
| early | 7 | 1 | 7 | 7 | 2 | 5 | 7 |
| **Relative** | | | | | | | |
| long | 4 | 1 | 7 | 2 | 2 | 7 | 4 |
| short | 6 | 1 | 7 | 1.5 | 1 | 7 | 5.5 |
| small | 7 | 3 | 7 | 2 | 1 | 7 | 5 |
| narrow | 5 | 4 | 7 | 4 | 1 | 6 | 5.5 |
| shallow | 5 | 4.5 | 7 | 1 | 1 | 7 | 5.5 |
| ugly | 2 | 3 | 6.5 | 3 | 1 | 7 | 3 |
| inexpensive | 2 | 2 | 6 | 2 | 1 | 7 | 3.5 |
| young | 5 | 2 | 7 | 1 | 1 | 6 | 5.5 |
| tall | 6 | 1.5 | 7 | 1 | 1 | 6 | 4.5 |
| wide | 4 | 3 | 7 | 1 | 1 | 6.5 | 3.5 |
| deep | 3.5 | 3 | 7 | 3 | 1.5 | 6 | 5.5 |
| beautiful | 1.5 | 3 | 7 | 2 | 1 | 7 | 3 |
| expensive | 7 | 2 | 7 | 4.5 | 1 | 7 | 4.5 |
| old | 5 | 2 | 7 | 1 | 1 | 6 | 5 |

## 2.3 Discussion: Transient vs. enduring property values as a predictive factor

The results refute the null hypotheses, meaning that, if the sample is representative of most other relative and absolute adjectives, given a random choice of an absolute and a relative adjective it is more probable that the latter is more compatible than the former with modification by *rarely*, and embedding under *saw,* than vice versa. As can be seen by the table of medians, acceptability of modification by *rarely* is highly indicative of the absolute-relative distinction. Most absolute adjectives rank 7, while relative adjectives rank far lower. The difference between the sets of medians of the two groups is greater than it is with respect to *completely/slightly*.

Moreover, the acceptability ratings of stage modifiers (*rarely* and *saw*) positively correlate with those of degree modifiers characteristic of absolute adjectives (*completely*, *slightly*), meaning that the more acceptable an adjective is with the former, the more likely it is to be acceptable with the latter, or vice versa. The correlations are moderate to strong despite the fact that either marker of the stage-individual level and absoluteness examined may have additional felicity conditions, orthogonal to the research question.

In sum, experimental examination of examples from the literature on absolute versus relative adjectives supports the hypothesized connection between stage vs. individual level properties and absolute vs. relative interpretations (Sassoon and Toledo 2012). Future research should determine the generality of this correlation, by studying randomly selected examples of adjectives, and by looking at additional markers of the stage-individual distinction, and of the absolute-relative distinction. The questions can also be addressed by means of corpora studies of usage of stage-level modifiers with relative and absolute adjectives.

Additional question for the future is whether additional types of comparison classes exist, i.e. whether comparison classes of particular sub-classes of adjectives (epistemic modals, taste adjectives, etc.) exhibit special properties. Our understanding of gradable adjectives can considerably profit from such an investigation.

## 2.4 Results: Modifier licensing

Figures 1-2 present the more fine grained results pertaining to *slightly* and *completely* for the adjectives divided into 5 groups by their standard and scale types.

A Mann Whitney test reveals that, as scale structure theory predicts, acceptability of modification by *slightly* is significantly higher for the lower closed adjectives (n = 151, M = 235) than for the lower open adjectives (n = 225, M = 157; U = 23997, z = -6.78, P < .001). However, it is also significantly higher for the 8 partial adjectives (n = 105, M = 269) than for the 22 non partial (total or relative) adjectives (n = 271, M = 157; U = 22688, z = -8.95, P < .001). This suggests that minimizers like *slightly* are sensitive to standard type. Moreover, the acceptability of *slightly* is significantly higher with the 2 doubly closed partial adjectives (n = 24, M = 45.5) than with the 4 doubly closed total adjectives (n = 46, M = 30.3; U = 791; z = -2.95; P < .004), which supports sensitivity to the type of standard. In addition, *slightly* is significantly more acceptable with the 14 relative adjectives (n = 178; M = 119.8) than with the 4 upper closed total adjectives (n = 47, M = 87.2; U = 2969.5; z = 3.06; P < .003). However, acceptability of *slightly* is statically the same for the 2 doubly closed partial adjectives (n = 24, M = 55) and the 6 lower closed partial adjectives (n = 81, M = 46.1; U = 807.5; z = 1.25; P < .22), and it is higher in the

the lower closed partial adjectives (n=81, M = 182.1) than the relative adjectives (n = 178, M = 106.3; U = 11428.5, z = -7.55, P < .001).
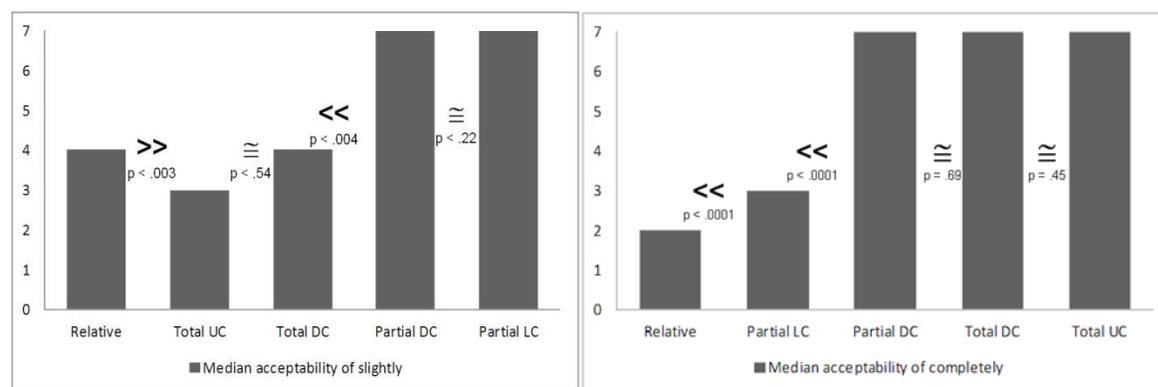


Figure 1 (left): Median acceptability ratings of modification by *slightly* per each one of 5 adjective groups, divided by standard and scale type – relative adjectives, total adjectives which are either upper closed (UC) or doubly closed (DC), and partial adjectives which are either lower closed (LC) or doubly closed (DC).
Figure 2 (right): Median acceptability ratings of modification by *completely* per each one of the 5 adjective groups.

As for the acceptability of *completely*, it is significantly higher with upper closed (n=116, M = 290.9) than upper open adjectives (n = 259, M=141.9; U=26959, z = -12.3, P<.001), as well as with total (n = 95, M = 128.8) than partial adjectives (n = 105, M =74.9; U=74.9, z = -6.57, P < .001). While the latter suggests sensitivity to standard type, the relevant pairwise comparisons do not support this conclusion. Acceptability of *completely* is statistically the same with doubly closed partial (n = 21, Mr = 31.1) and doubly closed total (n = 43, M=33.2) adjectives (U=423, z = .4, P=.69), and with upper close total (n = 53, M = 46.5) and doubly closed total adjectives (n = 43, M=50.9; U=1243, -z = .76, P=.447). This suggests that *completely* is indeed sensitive to the mere existence of upper closure. In addition, acceptability of *completely* is significantly higher with doubly closed partial (n = 21, M = 81.1) than only-lower closed partial adjectives (n = 84, M=46; U=1473, z = -4.73, P<.001), and with partial lower closed (n = 84, M = 157.5) than relative adjectives (n = 175, M=116.8; U=9657.5, z = -4.09, P<.001).

## 2.5 Discussion: Modifier licensing

### 2.5.1 Minimizers as sensitive to standard types

Considering the acceptability of *slightly*, it seems to be restricted to lower closed (+min) adjectives. However, mere minimizers should not be sensitive to the existence or absence of a maximum (±max) and to whether the minimum or maximum functions as a standard. Yet, *slightly* significantly prefers partial to non partial (total or relative) adjectives and doubly closed partial to doubly closed total adjectives. The number of adjectives, in particular, doubly closed adjectives in the present sample is small. However, Sassoon (2012) obtained similar results considering patterns of usage of *slightly* with 68 adjectives, including 22 doubly closed ones (11

partial and 11 total), as revealed in the corpus of contemporary American English (Davis 2011). The distributional data too shows that *slightly* co-occurs significantly more often with tokens of partial than total or relative adjectives (n = 68; P < .001) and with tokens of doubly closed partial than doubly closed total adjectives (n = 22; P < .01). Hence, besides the requirement for the existence of a minimum, *slightly* is clearly sensitive to the nature of the standard, a fact that is not expected by standard scale structure theory (Kennedy 2007), namely by an analysis of minimizers along the lines in (6) (slightly $\Leftrightarrow \lambda G \lambda x.\exists d > min(G), G(d)(x)$) that demands the mere existence of a scale minimum.

To capture the above findings, minimizers like *slightly* should be analyzed as referring to denotation minima, not scale minima, as in the analysis proposed and supported here (cf. (15) in this paper).[5] On this analysis of minimizers, the standard of adjectival arguments of *slightly*, G, must be smaller than their scale maximum, max(G), thus, the low frequency and reduced felicity of minimizers with total adjectives; e.g. *slightly full* forces us to accommodate a standard slightly smaller than the scale maximum, which is *full*'s actual standard. Hence, sentences such as *the city square is slightly full/empty* imply that the city square is not full/empty to its maximal degree, and are, therefore, somewhat deviant.

Moreover, combinations like *slightly full* reference a point near the maximum standard, whereas combinations like *slightly dirty* reference the minimum standard (a point above zero). Hence, with minimum-standard adjectives G, modification by *slightly* conveys 'minimally G' (*little dirty*), whereas with maximum-standard adjectives G, such modification conveys 'almost maximally G' (*rather full*).

Considering modification of relative adjectives, as in *?slightly tall*, it is important again that on the present analysis slightly G entities must be G minimally Ger than a non G. This condition is problematic in the case of relative adjectives; e.g., intuitively, any entity minimally shorter than a tall entity counts as tall too. This intuitive judgment leads to the Sorites paradox, which is indicative of relative adjectives (van Rooij 2009; Kennedy 2007). Hence, as predicted, as long as the standard s(G) of a relative adjective G remains unspecified, *slightly* cannot be licensed.

Exceptional uses of, e.g., *slightly tall, slightly short,* or *a bit tall a bit short* (mainly in children speech; cf. Tribushinina 2010) never refer to scale ends, but only to borderline cases, which, in effect, form the standard of *tall* and *short*. Borderlines are tall and short (or neither tall nor short), so this use of minimizers is contradictory and, therefore, generally avoided by adults (cf. Sassoon's 2012 corpus research results). Predictably, the situation changes once a standard is specified. While we cannot say #*slightly tall/short*, we can easily say *slightly tall for her age* and *slightly too short to reach the ceiling*. The reason is that a *for* phrase triggers specification of a distributional standard (e.g. the average at *her age*), and a *too* phrase triggers specification of a goal-based 'functional' standard (Heim 2000; Kagan et al. 2011; Bylinina et al 2011; Solt 2011).

We see that a standard-based analysis of minimizers captures our results as well as corresponding distributional results and intuitive judgments pertaining to the interpretation of *slightly*. However, for maximizers like *completely*, the present study failed to provide conclusive evidence for preference of maximum standard adjectives. The difference between total and

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[5]Alternatively, Toledo and Sassoon (2011) argue for an analysis of degree modifiers in terms of functions that either widen or restrict default adjectival comparison classes. Degree modification often strengthens the interpretation of total adjectives, but weakens the interpretation of partial adjectives (Unger 1975; Kennedy and McNally 2005). Since widening of comparison classes has precisely this effect on total and partial interpretations in their account, it can be a useful tool for accounting for the semantics of modifiers.

partial adjectives supports an analysis of *completely* as referencing maximum standards, but the comparisons between doubly closed partial and total adjectives failed to support this conclusion.

One reason could be that it is simply wrong. An alternative reason could be the fact that lower closed adjectives can license maximizers in contexts of use whereby their gradable interpretation is based on the part structure of objects. For example, over and above the fact that *dirty* is an upper open scalar adjective, an object (table, floor, shirt) can be *completely dirty* in the sense of being dirty all over. Thus, part-of interpretations might be responsible, at least partly, for the high acceptability rankings of *completely* with the doubly closed partial adjectives, and the insignificant difference between them and the doubly closed total adjectives. Future research can investigate this hypothesis by assessing speaker evaluations regarding the interpretation of such adjectives when modified by maximizers like *completely*.

Thus, our study opened up the question of the restricted distribution of modifiers and put various possible restrictions to empirical test. A main question was whether minimizers are sensitive to the existence of a lower closed scale type (scale minima), or standard type (denotation minima), both or neither. While the results provide evidence supporting an analysis of maximizers as referencing upper closures of scales (+max), the study supports an analysis of minimizers as referencing standards. These results weaken the basis for the ±minimum distinction between relative and partial adjectives.

Sassoon's (2012) corpus findings further show that *partially* and *somewhat* are not good indicators of lower closed scales. Additional counter evidence to a scale-minimum analysis of minimizers comes from two studies of agreement judgments (Sassoon and Zevakhina in preparation), as in, for example, *Nick thinks the glass is slightly full. Nick's mother thinks it is full. Would Nick agree that it is full?*. The results of these studies too suggest that minimizers select denotation minima; for instance, in the given example, virtually all the participants answered positively that Nick will probably agree (5-6 on a 7-point scale with 1 meaning *certainly not* and 7 *certainly yes*). This result suggests that *slightly full* implies *full*.

All considered, these results weaken the basis for the distinction between lower open and lower closed scales in relative vs. partial adjectives, respectively, as they eliminate a main motivation for it, which is to account for the distribution and interpretation of degree modifiers.

## 2.5.2 A *slightly* modified economy principle

If minimizers like *slightly* do not reference scale-minima, their unacceptability with relative adjectives like *tall* does not show that the latter fail to have a scale-minimum. In fact, the structure of an adjectival scale is usually assumed to be determined mainly by the nature of the property that the given adjective is used to measure. However, Kennedy (2007) argued that "*the different behavior of e.g.* expensive/ inexpensive *vs.* dirty/clean *suggests that this aspect of linguistic representation may diverge from what naive intuitions suggest*" (Kennedy 2007: section 4.2). The present results suggest that we ought to withdraw this conclusion, and stick to our intuitive judgments about existence/absence of endpoints. The alleged absence of scale minima in many relative adjectives (zero height, length, price, speed) is not motivated by their reduced felicity with minimizers and is intuitively doubtful.

Some adjectives are intuitively doubly-open (e.g. *glad-sad*; *negative-positive*; Bierwisch 1987). Doubly-open scales (–min,–max) capture their unique properties. But consider *heavy* and *tall*. Intuitively, there are no negative weights or heights, meaning that these scales are bounded

by zero. But if, e.g., both *tall* and *full* have a zero minimum, why should it be scale-internal for *full* but scale-external for *tall*? Scale structure theory fails to provide a principled reason, and it is highly unlikely that this difference would be arbitrary, i.e. that children in language after language would come to learn it in the absence of a way to predict why the zero would be part of the scale of absolute lower closed adjectives, but not relative adjectives.

In sum, the principle whereby endpoints function as standards (Kennedy 2007) is *economic* precisely because in all other cases the existence or absence of endpoints is predictable. And indeed, the zero of many relative adjectives is salient; e.g., speakers are aware of the zero on the scale of height, weight, speed and price, which are all scales of relative adjectives. I therefore argue that the zeros (when such exist) should be regarded as the minimum points on relative scales.

In support of this argument notice that virtually all of the accounts of the distribution and interpretation of measure phrases among relative adjectives make crucial use of scalar zeros (Sassoon 2010; van Rooij 2009; Kennedy 2001; Klein 1990, etc.) For example, Kennedy (2001) captures measure-phrase licensing in, e.g., *x is 2 inches tall/#short*, by analyzing the degrees positive adjectives like *tall* assign to entities x as intervals bounded by 0 and x's maximal height ($\lambda$d. $f_{tall}(x) \geq d$), as opposed to the degrees negative adjectives like *short* assign which are the unbounded complements of the former ($\lambda$d. $f_{short}(x) < d$). It is the availability of the zero that makes the difference between the two cases.

The question that arises is, then, why an adjective like *tall* or *expensive* is relative, whereas an adjective like *dirty* is partial, given the assumption that they do not differ with respect to the absence or existence of a scale-minimum. In other words, if relative adjectives can have lower bounds, why don't their bounds function as membership-standards?

My proposal rests on two observations. First, the economy principle is blocked when triviality bans reference to G's zero, for otherwise reference to G's negative denotation – the zero – would never be possible. For example, predicating *not tall* or *0 cm tall* of the surface of the floor is odd, because of triviality – it results in tautologies, since surfaces, by definition, never have height (dually, *not-short* or *tall* generate contradictions). Similarly, 'still objects', by the definition of 'still', never have speed (\**slow/fast*); 'free products' never cost (\**cheap/expensive*); etc. Second, triviality typically bans reference to zero **only** in adjectives predicating *stable* properties of their objects. As discussed in the introduction of this paper, height is a relatively stable property in most of the objects we normally talk about; yet consider the length in inches of a vector v that changes its length in time. Speakers may naturally call v, when its length is 0, *0 inches long*.

Hence, markers of unstable (S-level) properties may reveal when economy fails to dictate zero standards. In the absence of evidence to the effect that a gradable adjective G denotes an unstable property (e.g., given low co-occurrence frequency with *rarely/often* or *saw*), G will classify as relative, not partial, even if lower-closed. Our survey results support this hypothesis, revealing a moderate to high correlation between, e.g., the felicity of *rarely* and of either *completely* or *slightly*.

To recapitulate, reference to zero is affected by stability-sensitive triviality filters, not by a scale lacking a zero. For example, intuitively, it is not trivial to say about a door that it is *closed* (meaning maximally closed) or *not open* (not minimally open), because a door changes its position all the time. A closed door now may well be open in a minute. However, the height or length of most objects is relatively stable over time. Most of us rarely discuss the length of lines with instable length in daily life. Hence, it is too trivial to relate *short* or *tall* to mere lack or

existence of **some** height, respectively. Only for entities with some non-zero height, it is informative to ask how short/tall they are – speakers may be ignorant of how much height they have and/or (by virtue of the instable standard) whether this much height counts as tall/short or not.

Thus, for doors and windows it is informative to ask whether they are open or closed by virtue of the instability of the property measured, but it is informative to ask whether they are short or tall only by virtue of the non-zero instable standard of the latter. Their standard should be high enough to allow room for non-zero-height in the negative denotation – for entities with sufficiently much height not to count as *not-tall* by definition. But how much is high enough? In the absence of an upper bound this question often remains open, or is answered differently in different contexts. As a result, stable properties end up having non-stable standards.

Interestingly, Panzieri & Foppolo's (2011) study can be interpreted as providing experimental evidence for the role of triviality filters. Vagueness is reduced when adults are trained to ignore the quantity maxim, namely the demand that utterances be sufficiently informative, i.e. when trained to accept the truth of statements of the form *some S is P* in a situation in which it is the case that all Ss are P. After such training entities with **some** height, presented in isolation (say, a wooden cube), are judged to be tall, while normally in the absence of training, adults refuse to determine whether such entities presented in isolation are tall or not.

In sum, the present paper supports a representation of the semantics of minimizers via reference to non-maximal standards, rather than scale-minima, and an account of why relative adjectives may be lower closed, yet not partial, in which the economy principle is appropriately constrained. The main idea is that lower bounds function as standards effectively creating partial adjectives if and only if the values of the given scalar property are relatively transient. Stable property values prohibit a scale minimum from functioning as a standard. This proposal renders unnecessary the assumption of a lower-open semantic scale for all relative adjectives (Kennedy 2007), since a midpoint standard, or an absence of a convention of regarding an endpoint standard is derived from the I/S level status of the gradable property the adjective denotes.

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