

RESEARCH

Gradability, scale structure, and the division of labor between nouns and adjectives: The case of Japanese

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Japanese has three major “adjective-like” word classes, which roughly correspond to “adjectives”, “adjectival nouns”, and “precopular nouns” in Martin’s (1975) *A Reference Grammar of Japanese*. This work explores how the three classes contrast semantically, paying special attention to the notion of gradability. Their scale-structural characteristics, in comparison with the English adjective class, will be examined, aiming to contribute to a better understanding of how languages may contrast in terms of (i) how different kinds of stative predicates divide the labor in encoding different kinds of state concepts, and (ii) how the niche of their noun class (as a major part-of-speech) is delimited. The major findings include (i) that “adjectives” and “adjectival nouns” have a strong tendency to encode relative gradable concepts, (ii) that “precopular nouns” tend to be nongradable, and (iii) none of the three Japanese classes is closely tied to the feature of absolute gradability.

Keywords: adjectival noun; stative predicate; grammatical category; gradability; Japanese

1 Introduction

Languages differ considerably as to how they encode state concepts.¹ By state concepts, we refer to concepts that represent any kind of state (= nondynamic eventuality), which may be monadic or polyadic, volitional or nonvolitional, and stage-level or individual-level. In English and many other languages, three word classes (possibly among others) are used for this purpose: (i) adjectives, (ii) nouns, and (iii) (stative) verbs.

- (1) a. Fido is {i. **carnivorous**_{Adj}/ii. a **carnivore**_N}.
b. Ann {i. is **fond**_{Adj} of/ii. **likes**_v} Fido.
c. Johan is (a) **German**_{N/Adj}*

One focal point of cross-linguistic variation is the nature, size, and perhaps existence, of the adjective. In general-linguistic and typological research, “adjectives” are generally understood to be the label for a class of words (i) that encode state concepts and (ii) that are distinct from the noun and the verb. It is, however, not a straightforward matter to settle the question of: How distinct is distinct enough?

While in some languages (including English) the status of adjectives as a category distinct from nouns and verbs is hardly questionable, in many others the situation is much less clear-cut. (Alleged) adjectives in some languages exhibit a good deal of resemblance

¹ Our state concepts can be equated with what is called “property concepts” in the typological literature. We chose not to use the latter term because, in much of the formal-semantic literature, the term “property” is used in a broad sense so as not to entail stativity (nondynamicity).

with nouns (or with verbs). As such, oftentimes it is hard to tell whether a given class of words had better be considered “nouny” (or “verby”) adjectives, or rather a subclass of nouns (or verbs).

This article explores the semantic characteristics of three word classes in Japanese which have been labeled, at least by some, as “adjectives”, paying special attention to their scale-structural properties. The three classes correspond to “adjectives”, “adjectival nouns”, and “precopular nouns” (+ “predicable adverbs”) in Martin’s (1975) renowned referential grammar. Our main objective is not to determine which of these should be labeled as adjectives. We will argue, however, that Martin’s inclusion of “adjectival nouns” and “precopular nouns” to nouns can be justified outside (as well as within) the structuralist context in which his grammar was written, and has a good potential to deepen our general-linguistic understanding of the noun class.

2 Classes of stative predicates in Japanese

2.1 How many adjective classes: One, two, or three?

One point of contention regarding the Japanese grammar is where to draw a line between the noun class and the adjective class, and how to subdivide each of these two basic categories.

On the one hand, there are thousands of lexemes that are to be regarded as nouns by any reasonable standard; e.g., YAMA ‘mountain’, BENGOSHI ‘lawyer’, and PASOKON ‘PC’.² In Japanese there is no inflectional morphology on nouns; there is no systematic number or gender distinction, and grammatical functions are primarily encoded with postpositional particles.

On the other hand, the language has a class of lexemes that has been almost unanimously regarded as adjectives, and has been labeled as “*i*-adjectives” (*i* being the inflectional suffix for present indicative), “verbal adjectives”, or simply “adjectives”. YASASHII ‘kind, easy’, for example, belongs to this class.

- (2) Ken wa {yasashii/yasashikatta}.
K. TH kind.PRS/kind.PST
‘Ken {is/was} kind.’

In scholarly writings in Japanese, the standard term for this class is *keiyōshi* (形容詞; ‘adjective’). We refer to them as “*i*-predicates” in what follows. *I*-predicates are generally considered to be inflecting, but are quite different from verbs (including stative ones such as IRU ‘exist, be present’) in their conjugation pattern and other morphological properties (Backhouse 2004; Oshima 2014, and references therein). Some might not consider this to be a conclusive reason *not* to treat them as a subclass of verbs, however. Nishiyama (1999), on the other hand, suggests that “*i*-adjectives” are *noninflecting* adjectives, regarding putative endings *i*, etc. as copula forms (see also Section 2.2 below). Notwithstanding such controversy, we accept the common practice of considering them to be inflecting adjectives.

Besides regular nouns and *i*-predicates, Japanese has two classes of words that are in a “gray area”. The first is what has been called “adjectival nouns”, “nominal adjectives”, or “*na*-adjectives” (*na* being an attributive copula form; see below), and includes words such as SHIZUKA ‘quiet’, MAJIME ‘serious, studious’, TAISETSU ‘important, precious’, KIREI ‘beautiful, clean’, and KYUUTO ‘cute’; we will temporarily call them “*na*-items”. A *na*-item can neither directly modify a noun nor form a predicate on its own, and forms a predicate in combination with a copula, like a regular noun does.

² Expressions in small capitals represent lexemes.

- (3) a. *regular noun*
 Ken wa **bengoshi** {da/datta}.
 K. TH lawyer COP.PRS/COP.PST
 ‘Ken {is/was} a lawyer.’
- b. *na-item*
 Ken wa **shizuka** {da/datta}.
 K. TH quiet COP.PRS/COP.PST
 ‘Ken {is/was} quiet.’

In much of the scholarly work in Japanese, the term *keiyoo dooshi* (形容動詞; lit. ‘adjectival verb’) has been used to refer to copular predicates involving a *na*-item (e.g., *shizuka da*). The term *keijooshi* (形状詞), a recent coining by the developers of the *UniDic* electronic dictionary project (Den et al. 2007), is used specifically to refer to *na*-items (i.e., *keijooshi* = the “stem” of a *keiyoo dooshi*).

Na-items differ from regular nouns in two respects. First, they occur only in a grammatical slot immediately preceding a copula, and cannot head an NP serving as a (nonprecopular) complement (subject, object, etc.).³

- (4) a. **Bengoshi** (no hito) ga kuru.
 lawyer COP.ATTR person NOM come.PRS
 ‘A (person who is a) lawyer will come.’
- b. **Shizuka** *(na hito) ga kuru.
 lawyer COP.ATTR person NOM come.PRS
 ‘A person who is quiet will come.’

Na-items also resist modification by an adnominal modifier, such as adnominal demonstrative SONO ‘that’ and a genitive phrase, even when they occur in a precopular position.

- (5) Ken ga sono {i. **bengoshi**/ii. ***shizuka**} da.
 K. NOM that lawyer/quiet COP.PRS
 ‘Ken is that lawyer.’/(Ken is that quiet individual.)

For convenience, we will refer to these properties of *na*-items as the lack of the referential use,⁴ or equivalently, the “predication-only” feature.

³ Some *na*-items, as well as some predication-only *no*-items (see below), may occur in complement positions of a restricted set of predicates that involve evaluative judgment. In (i) and (ii) below, MAJIME, HEIBON, and KANPEKI are *na*-items, and FUTSUU and SAIKOO are predication-only *no*-items.

- (i) Kato (2003: 93)
 Ningen, yappari, **majime** ga ichiban da yo.
 human after.all earnest NOM the.most.important COP.PRS DP
 ‘After all, earnest(ness) is the most important quality of people.’
- (ii) {**Heibon/futsuu**} wa dame da. {**Kanpeki/saikoo**} o mezase.
 mediocre/ordinary TH bad COP.PRS perfect/highest ACC aim.IMP
 ‘{Mediocre/ordinary} is no good. Aim for {perfect/superlative}.’

Exactly what types of combinations are allowed is an intriguing question, which we leave open for future research. It is interesting to note that a similar construction is observed with English adjectives, as in: “**Cute** doesn’t win games.”, “**Great** is what we’re going for.”, and “Talk about **relaxing!**”.

⁴ It is commonplace to distinguish complement NP’s into referential ones (e.g., proper names, pronouns) and non-referential ones (e.g., quantifiers like *no boy*), the boundary varying much in different frameworks. The use of the term “referential(ity)” here and thereafter is not concerned with this distinction, and is to be understood to correspond to the property of introducing a discourse referent for an entity (as opposed to eventuality, etc.) in the Context Change Semantics à la Heim (1982) or in the Discourse Representation Theory (Kamp et al. 2011).

Second, (as anticipated in (4)) in certain nonroot environments where a regular noun is accompanied by the copula form *no*, a *na*-item is instead accompanied by *na*.⁵

- (6) a. **bengoshi** {no/*na} josei
lawyer COP.ATTR woman
'a woman who is a lawyer'
- b. **shizuka** {*no/na} josei
quiet COP.ATTR woman
'a woman who is quiet'
- (7) a. **Bengoshi** {no/*na} hazu da.
lawyer COP.ATTR expected COP.PRS
'(He) must be a lawyer.'
- b. **Shizuka** {*no/na} hazu da.
quiet COP.ATTR expected COP.PRS
'(He) must be quiet.'

The usage of *no* exemplified in (6a)/(7a) is sometimes regarded as a genitive case particle. However, with Bloch (1946), Frellesvig (2010), and others, we take the view that *no* and *na* in(6)/(7) are two variant attributive forms of the copula DA. While the copula form *no* dates back to the oldest documented stage of Japanese in the 8th century, *na* (< *naru*) is relatively new, appearing in the Late Middle Japanese period (1200–1600).

The second class in a gray area is, roughly, what is called “precopular nouns” by Martin (1975) and “*no*-adjectives” by Mio (1942) and Backhouse (1984). They are like *na*-items in lacking the referential use, and also in always being accompanied by a copula; however, they are combined with the form *no*, rather than *na*, to form a predicate heading (i) a relative clause or (ii) a clause selected for by an auxiliary like HAZU. These properties are illustrated in (8), with the item HADASHI ‘barefoot’; additional examples of words in this class are MURYOO ‘free (of charge)’, DOOITSU ‘identical’, and KARA ‘empty’.

- (8) a. **Hadashi** *(no hito) ga kuru.
barefoot COP.ATTR person NOM come.PRS
'A person who is barefoot will come.'
- b. **hadashi** {no/*na} dansei
barefoot COP.ATTR man
'a man who is barefoot'
- c. **Hadashi** {no/*na} hazu da.
barefoot COP.ATTR expected COP.PRS
'(He) must be barefoot.'

Martin also posits a subclass of nouns called “predicable adverbs”, which are just like precopular nouns but can be used as adverbs on their own: e.g., FUTSUU ‘ordinar(il)y’ and GUUZEN ‘coincidental(ly)’. In what follows, we apply the same label “predication-only *no*-items” to both Martin’s “precopular nouns” and “predicable adverbs”.

⁵ In the position preceding the discourse auxiliary NO or WAKE, both a *na*-head and a regular noun, as well as a “predication-only *no*-item” (see below), are combined with the form *na*, rather than *no*.

(i) {**Bengoshi/shizuka**} {*no/na} no da.
lawyer/quiet COP.ATTR AUX COP.PRS
'(That's because/as a matter of fact/...) (he) is {a lawyer/quiet}.'

While the class of predication-only nominal items dates back to Old Japanese (Frellesvig 2010: 235), its split into *na*-items and (predication-only) *no*-items did not take place until sometime after the establishment of the innovative attributive copula form *na* in Late Middle Japanese. In contemporary Japanese, a good number of lexemes can be used either as *na*-items or *no*-items (Uehara 1998: 98–102, 186; Kato 2003: 98–99; Backhouse 2004: 64, and references therein). With certain items, the choice between *na* and *no* leads to a fairly clear difference in meaning, but with others, it induces only a subtle difference or no difference at all. (9) illustrates examples of the first type, and (10) the second type.

(9) Adapted from Uehara (1998: 113–114)

- a. saitei {*na/no} ondo
lowest COP.ATTR temperature
'the lowest temperature'
- b. saitei {na/no} yatsu
lowest COP.ATTR guy
'a terrible guy'

(10) a. toomei {na/no} ekitai
transparent COP.ATTR liquid
'transparent liquid'

- b. oohaba {na/no} henkoo
major COP.ATTR change
'a major change'

The choice is also affected by styles and idiolectal preferences.

Different authors have taken different views as to how to label and classify *i*-predicates, *na*-items, predication-only *no*-items, and regular nouns. Table 1 summarizes the major existing views; see also by Backhouse (2004: 71–72) for a wrap-up.

The One Adjective Class (+ Three Noun Classes) account à la Martin (1975), as well as the Two Adjective Classes account, is at odds with the received wisdom that nouns are those words that can head a complement NP. We find it, however, sensible to give up the doctrine that “the ability to head a complement” is an indispensable feature for all nouns. Our position can be defended based on the distributional and semantic relation between the *na*-items, predication-only *no*-items, and regular nouns. The distribution of predication-only *no*-items is properly subsumed by that of regular nouns, and the difference between the two classes boils down to the single feature of referentiality. The same holds between a *na*-item and a regular noun, except that the former exhibits a slight

Table 1: Different classifications of Japanese nouns and adjectives.

	1 Adj., 3 N's (e.g., Martin 1975)	2 Adj.'s, 2 N's (e.g., Makino and Tsutsui 1989)	3 Adj.'s, 1 N (e.g., Backhouse 2004)
<i>yasashii hito</i> 'a person who is kind '	adjective	<i>i</i> -adjective (inflecting)	<i>i</i> -adjective (inflecting)
<i>shizuka na hito</i> 'a person who is quiet '	adjectival noun	<i>na</i> -adjective (noninflecting)	<i>na</i> -adjective (noninflecting)
<i>hadashi no hito</i> 'a person who is barefoot '	“precopular noun” (+ “predicable adverb”)	“precopular noun” (+ “predicable adverb”)	<i>no</i> -adjective (noninflecting)
<i>bengoshi no hito</i> 'a person who is a lawyer '	regular noun	regular noun	noun

grammatical difference concerning the choice between the copula forms *na* and *no*. When the distribution and functions of a word class are properly subsumed by those of another, the default procedure should be to regard the former as a subclass of the latter. It is this principle that justifies admission of “attribution-only” words such as MERE and LIVE, as well as “predication-only” words such as CONTENT and ALIVE, into the English adjective class. The relation between regular nouns (which can be used either referentially or predicationally) and predication-only nouns in Japanese can be likened to that between typical adjectives (which can be used either attributively or predicationally) and predication-only adjectives in English.

One might attempt to refute the One Adjective Class account based on the fact that, across languages, there is no attested case of such a (sub)category as “predication-only nouns”. We suspect, however, that this may be due to the implicit assumption—or perhaps prejudice—that such a thing cannot exist, and that once we abandon it, putative “noun-like adjectives” in many other languages may well be amenable to the treatment as predication-only nouns.

To sum up: (i) Japanese has two “noun-like” word classes that are used to encode state concepts but cannot be used referentially, and (ii) our position is to treat them as subclasses of nouns. Accordingly, we will use the terms *na*-nouns/*no*-nouns instead of *na*-items/*no*-items. Notice that *no*-nouns subsume regular nouns, which may also be called “potentially referential (*no*-)nouns” (Table 2). Henceforth, “predication-only *no*-nouns” will be sometimes abbreviated as PONN’s.

The term *na*-predicate refers to a (not necessarily attributive) copular predicate with a *na*-noun (e.g., *shizuka na*, *shizuka da*), and the term *no*-predicate a (not necessarily attributive) copular predicate with a *no*-noun (e.g., *hadashi no*, *bengoshi datta*).

I-adjectives, *na*-nouns, and PONN’s all typically translate into English adjectives, and it is interesting ask what principles regulate how different state concepts are mapped to the three categories.⁶

2.2 Implications on feature-based accounts of syntactic categories

Chomsky (1970) proposes to regard four major syntactic categories in English—nouns, verbs, adjectives, and prepositions—as bundles of two primitive features, [\pm N] and [\pm V].

- (11) noun: [+N, -V] verb: [-N, +V]
 adjective: [+N, +V] preposition: [-N, -V]

Table 2: Our terminology in comparison to Martin (1975).

	Our labels	Martin (1975)
<i>yasashii hito</i> 'a person who is kind '	<i>i</i> -predicate (or adjective)	adjective
<i>shizuka na hito</i> 'a person who is quiet '	<i>na</i> -noun	adjectival noun
<i>hadashi no hito</i> 'a person who is barefoot '	predication-only <i>no</i> -noun (or PONN)	precopular noun + predicable adverb
<i>bengoshi no hito</i> 'a person who is a lawyer '	regular noun (or potentially referential <i>no</i> -noun)	pure noun

⁶ It is worth noting that the three categories do not exhibit conspicuous differences as to argument patterns or the animacy of their arguments.

Applying Chomsky's feature system to Japanese, Miyagawa (1987) assigns the feature specification [+N, +V] to *na*-nouns, and [+V] (with the [\pm N] feature neutralized) to *i*-adjectives. Contra Miyagawa, Ohkado (1991) argues that both *na*-nouns and *i*-adjectives are to be treated as [+N, +V], emphasizing the commonalities between *na*-nouns and *i*-adjectives (see also Nishiyama 1999). They agree that regular Japanese nouns are [+N, -V].

- (12) noun: [+N, -V]
 adjective (= *i*-adjective): [+V] (Miyagawa 1987), or [+N, +V] (Ohkado 1991)
 adjectival noun (= *na*-noun): [+N, +V]

It seems implausible to us that combinations of the two features suffice to account for the full-range of versatility exhibited by adjective classes (and their subclasses) across languages (e.g., Dixon 2010: 62–108). Putting aside the feature specification of the *i*-adjective, we propose to posit [\pm ref(erentiality)] as a subfeature of [+N], and to attribute the “predication-only” property of *na*-nouns and PONN's to the specification [-ref]. To capture the difference between *na*- and *no*-nouns, an additional, language-specific feature, [\pm no] is introduced.

- (13) regular noun: [+N{ \pm ref, +no}, -V]
 PONN: [+N{-ref, +no}, -V]
na-noun: [+N{-ref, -no}, -V]

What is special about *na*-nouns and PONN's is *not* that they *can* be used as predicates (with the aid of a copula)—regular nouns too have this property—but rather that they *cannot* head a complement NP. It seems more natural to capture this with a negative feature ([-ref]), rather than a positive one ([+V]).

2.3 Why are there predication-only nouns?

From the functional perspective, it seems natural to suppose that the presence of predication-only nouns is motivated by the “restricted niche” of the adjective class (= *i*-predicates). The adjective class in Japanese is constrained in a couple of respects, at least in comparison to the ones in major European languages. First, with sporadic exceptions, their roots are restricted to the Yamato (native) lexical stratum, as opposed to the Sino-Japanese and foreign (mostly European) strata.⁷ This implies that as a rule the Japanese adjective class cannot be expanded by loans. The vocabulary in the Yamato stratum has had a relatively stable and unvarying membership after the period of Early Middle Japanese (A.D. 800–1200), and the same tendency holds for the adjective class, which is more or less a proper subset of the stratum.

Second, Japanese adjectives are relatively small in number, in terms of both types and tokens. While the 5,000 most frequent lexemes in the Corpus of Contemporary American English (COCA; the December 2015 version) includes 839 adjectives, the 5,000 most frequent lexemes in the Balanced Corpus of Contemporary Written Japanese (BCCWJ) includes a mere 106 adjectives (*keiyooshi*). (For the sake of comparison, among the same set of words, 251 are specified as *na*-nouns or as multiple-membership words that can be used as a *na*-noun.) British National Corpus (BYU-BNC to be more specific; with about

⁷ The two nonnative strata constitute a rather large proportion of the Japanese vocabulary. Among the 5,000/10,000 most frequent lexemes in the BCCWJ corpus, only 35.1%/30.8% are listed as Yamato items. Among the 200 most frequent *na*-nouns and PONN's in BCCWJ (see Section 5), the proportions of Yamato items are mere 21.5% and 18.5%, respectively.

96 million words) contains 5,424 adjectives with a frequency over one per-million-words (PMW), which amount to 6.58 million tokens. On the other hand, the entire BCCWJ (with about 104 million words) contains only 327 adjectives with a frequency over one PMW, which amount to 1.58 million tokens.⁸

Finally, Japanese adjectives are subject to a semantic constraint concerning the scale-structural properties of state concepts. In brief, they are closely associated with gradability, and in particular relative gradability in Kennedy's (2007) sense, and accordingly are not suitable for encoding nongradable concepts. We will discuss the scale-structural characteristics of the three classes of Japanese stative predicates—*i-*, *na-*, and *no-*items—in details in Section 4, after illustrating some relevant theoretical notions as a preliminary.

We suggest that “predication-only nouns” in Japanese is a means to compensate for the relative “weakness” of its adjective category, in the three respects explained above.

2.4 Dual membership items with a use as a regular noun

As mentioned above, a single lexeme may belong both to the *na*-noun and PONN classes. In a similar vein, some lexemes (e.g., KENKOO ‘health(y)’ and SHIAWASE ‘happy, happiness’) can be used either as a regular noun or a *na*-noun, and some others (e.g., HAYARI ‘(in) vogue’ and SANSEI ‘agreed, agreement’) either as a regular noun or a PONN, with related but clearly distinct meanings.

- (14) a. *regular noun*
- i. kenkoo no iji
health GEN maintenance
‘maintenance of good health’
 - ii. shiawase no tsuikyuu
happiness GEN pursuit
‘pursuit of happiness’
- b. *na-noun*
- i. kenkoo na hito
healthy COP.ATTR person
‘a healthy person’
 - ii. shiawase na hito
happy COP.ATTR person
‘a happy person’
- (15) a. *regular noun*
- i. hayari no piiku
vogue GEN peak
‘the peak of the vogue’
 - ii. sansei no hyoomei
agreement GEN expression
‘expression of one’s agreement’
- b. *PONN*
- i. hayari no fuku
in.vogue COP.ATTR clothes
‘clothing items in vogue’

⁸ Among the 1.58 million tokens, NAI ‘absent, nonexistent’ alone accounts for 0.46 million tokens. It appears that a large proportion of (what is considered in BCCWJ as) the tokens of NAI are better treated as instances of a homophonous auxiliary of negation, rather than of the adjective NAI. This implies that the actual number of adjective tokens is considerably smaller than 1.58 million.

- ii. sansei no hito
agreed COP.ATTR person
'a person who is agreed'

3 Gradability and scale structure

3.1 Gradability and scale-structural properties of state concepts/predicates

State concepts can be classified according to their gradability and scale-structural properties. Due to recent works such as Kennedy and McNally (2005) and Kennedy (2007), it has become commonplace to distinguish them into (i) nongradable, (ii) relative gradable (or distributional-standard; Kagan and Alexeyenko 2010), and (iii) absolute gradable, and further divide the third class into (iii-a) maximum-standard and (iii-b) minimum-standard.

- (16) i. nongradable
- ii. relative (distributional-standard)
- iii. absolute
 - a. maximum-standard
 - b. minimum-standard

Throughout the article, these labels are applied to any of: (i) state concepts, (ii) stative predicates, and (iii) words that form a copular predicate in combination with a copula. A “relative adjective”, for example, means an adjective that represents a relative state concept.

A nongradable state concept is a binary, discrete notion. As such, it is anomalous for a predicate denoting a nongradable state concept to serve as the head of a comparative or excessive construction.

- (17) Kennedy (2007: 22)
 - a. ??The platinum is less **geological** than the gold.
 - b. ??The table is more **wooden** than the floor.
 - c. ??The door isn't as **locked** as I want it to be.
 - d. ??This rod is too **hand-made** to be of use for this purpose.

Also, generally (though not invariably; see below) a nongradable stative predicate resists modification with a degree modifier such as VERY, SLIGHTLY, and COMPLETELY.⁹

- (18) a. 11 is a {#very/#slightly/#completely/#almost} **prime** number.
- b. The president is {#very/#slightly/#completely/#almost} **present** at the meeting.

A complication with the diagnostics with degree modifiers is that some of them have uses other than degree specification. For example, *completely*, like its synonym *totally*, have an emphatic interpretation.

- (19) This guy was, like, {**completely/totally**} rude.

Also, *completely* and *almost* allow what Lassiter (2011) calls the distributional (not to be confounded with “distributional-standard”) interpretation, on which (20a,b) are statements about the proportion between the wet and dry parts of a cloth.

- (20) The cloth is {**completely/almost**} wet.

⁹ We use capitalization to indicate that we are not referring to a specific English expression, but rather to “an English expression and its synonyms in English and in other languages”. VERY is thus to be read as “English VERY and its synonyms in English and in other languages”.

Such distinct interpretations of degree modifiers might provide important clues as to the properties of stative predicates/concepts to which they can suitably be applied, we will put them aside for the purpose of the current work. Or at least, we will make our best efforts to do so, given that it is not always easy to tell which kind of interpretation a given instance of modifier receives in the context.

A relative state concept is, according to Kennedy and McNally (2005) and Kennedy (2007), associated with a scale of degrees that is open on both ends (a totally open scale). A relative state concept covers the stretch of a scale that is delimited by (i) a contextually determined threshold (reference point) and (ii) designation of directionality (Figure 1). A relative state predicate is compatible with VERY, which has the effect of heightening the relevant threshold, but not with SLIGHTLY, COMPLETELY, or ALMOST.

- (21) a. The house is {very/#slightly/#completely/#almost} **ugly/beautiful**.
- b. Fred is {very/#slightly/#completely/#almost} **tall/short**.
- c. The book is {very/#slightly/#completely/#almost} **expensive/cheap**.

The supposition that a relative state concept is invariably associated with a totally open scale can be challenged (e.g., Lassiter 2011: 73–74; 2017: 96–106); it seems sensible to consider, for example, that the scale relevant for EXPENSIVE/CHEAP is closed on one end, and that it is a matter of the lexical semantics of CHEAP that this adjective cannot describe an entity that is provided without (or virtually without) a monetary charge, as described in Figure 2. We will not attempt to settle this issue here.

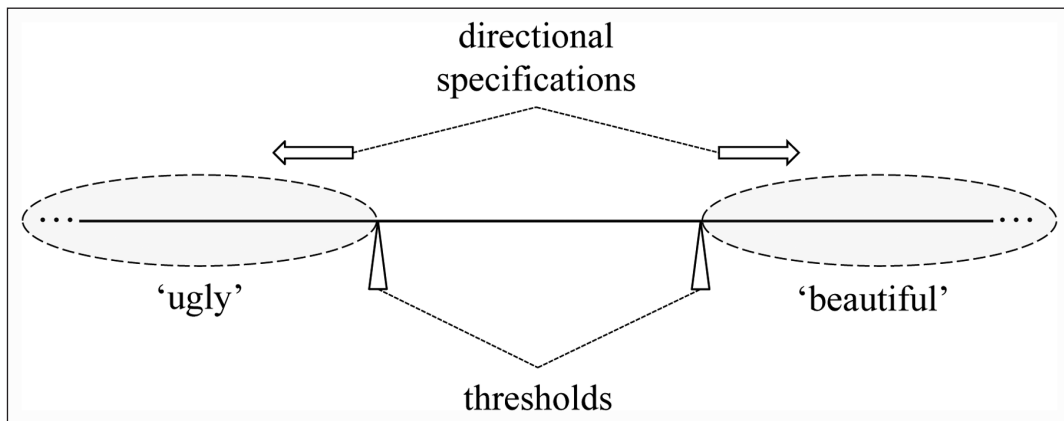


Figure 1: The scale of beauty/ugliness.

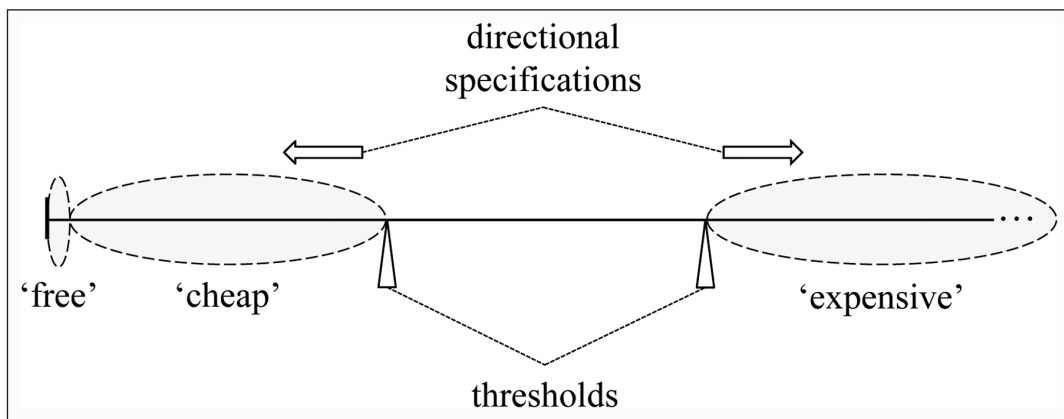


Figure 2: A possible structure of the scale of cost.

Predicates that typically receive a relative interpretation sometimes receive what Kagan and Alexeyenko (2010) call the “functional” interpretation, in which case they describe a state whose degree “exceeds the maximum degree compatible with the requirements of a given situation”, and are compatible with SLIGHTLY.

- (22) a. Adapted from Solt (2012: 5)
Three of the boards were cut to exactly the right length, but the fourth one was (slightly) long.
- b. The train was slightly late.

It is interesting to ask whether stative predicates on the functional interpretation are to be regarded as a contextually induced special reading of relative predicates, or rather as a manifestation of polysemy or scale-structural flexibility (see below for more on this). For the purpose of the current work, with Kagan and Alexeyenko (2010), we adopt the former position.

An absolute state concept is associated with a scale of degrees that is closed on at least one end. A maximum-standard predicate describes a state corresponding to (i) an endpoint of such a scale (the sole endpoint of a partially closed scale, or one of the two endpoints of a totally closed scale) or (ii) a point that is at an ignorably small distance from that endpoint; we will use the term “end interval” to refer to a stretch within a scale which consists of an endpoint and other points that are perceived (in the context) as “close enough” to it (Figure 3).

A maximum-standard stative predicate is compatible with the degree modifier COMPLETELY, and often also with ALMOST, but resists modification with VERY or SLIGHTLY.

- (23) a. The rod is {??very/#slightly/completely/almost} **straight**.
- b. The tank is {??very/#slightly/completely/almost} **full/empty**.
- c. The door is {#very/#slightly/completely/almost} **closed**.

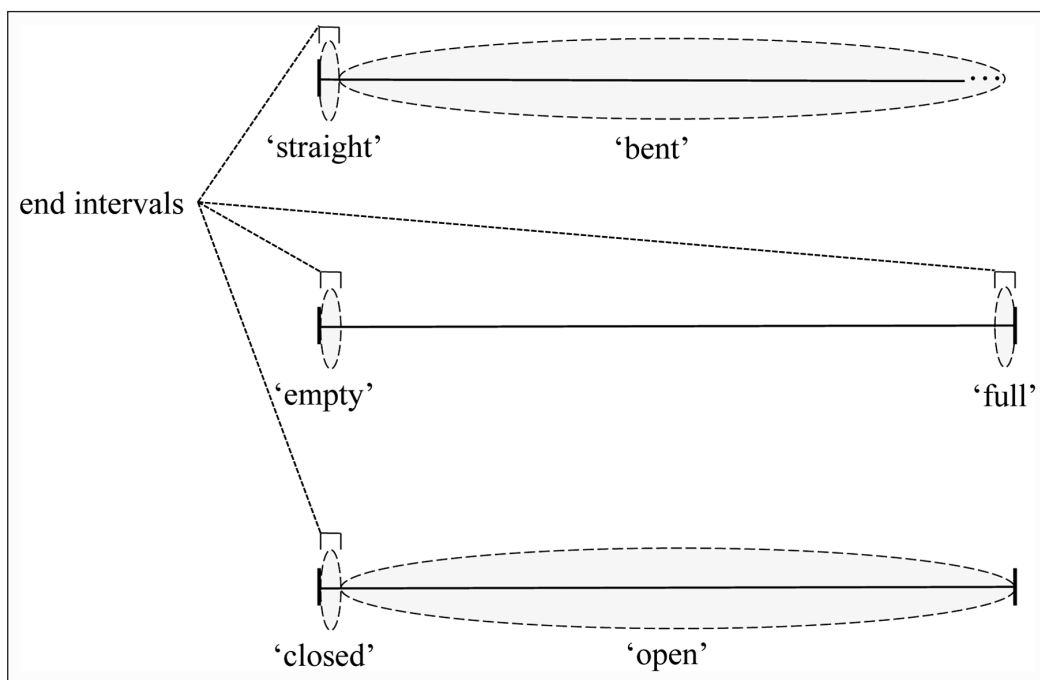


Figure 3: Some partially or totally closed scales.

COMPLETELY indicates that the described state is within the end interval even if this interval is delimited more narrowly than the default in the context; in a context where “the tank is full” is understood to mean that at least some 90% of the space in the tank is occupied by liquid, “the tank is completely full” might mean that some 98% or more of the space within the tank is occupied. ALMOST, on the relevant, degree-specificational interpretation, indicates that the described state is close to but not within the end interval (is, say, within the range of 80–90%). Interestingly, when a maximum-standard state concept is inherently associated with a higher moral value or utility than its opposite, as in the case of (IR)RATIONAL, (IN)CONSISTENT, and (DIS)HONEST, modification with ALMOST tends to be awkward.

- (24) a. The decision is {completely/??almost} **rational**.
 b. The argument is {completely/??almost} **consistent**.
 c. The man is {completely/??almost} **honest**.

A minimum-standard state concept covers the complement of an end interval, or in other words, covers the almost entire stretch of a partially or totally closed scale except for one end interval (see again Figure 3). It is compatible with the degree modifier SLIGHTLY, which indicates that the described state is not far off from the excluded end interval. If the relevant scale is totally closed, modification with COMPLETELY is possible as well, as illustrated in (25b).

- (25) a. The rod is {#very/slightly/#completely/#almost} **bent**.
 b. The door is {#very/slightly/completely/#almost} **open**.

The correspondence of stative predicates and scale-structural classes is not necessarily one-to-one. For example, DRY, CERTAIN, and SATISFIED can be either maximum-standard or relative, and WET, DIFFERENT, and PAINFUL can be either minimum-standard or relative.

- (26) Kennedy and McNally (2005: 370–371)
 a. This region of the country is {very **dry**/very **wet**}.
 b. The glasses are {completely **dry**/slightly **wet**}.

We will use the term “(scale-structural) flexibility” to characterize those predicates that can be used either as a relative or an absolute predicate, yet encoding the same concept. Scale-structural flexibility can be taken to be a sort of polysemy (perhaps “micro-level” polysemy in the sense of Croft and Cruse 2004: 116–140), but it seems sensible to distinguish it from the paradigmatic kind of polysemy, where one stative predicate encodes multiple distinct concepts, possibly corresponding to different scale-structural classes, as in SOCIAL (“(#very) social studies” vs. “very social people”). Drawing a clear line between the two kinds of “polysemy” (*scale-structural flexibility* vs. *conceptual polysemy*), however, seems not to be always straightforward; it is not clear to us, for example, whether DRY encodes the same concept or rather two related but distinct concepts when it characterizes the condition of weather and that of tableware.

It is sometimes hard to determine if a given stative predicate is (i) nongradable, (ii) absolute, or (iii) polysemous between the two. Sometimes, a predicate—even a nominal one—denoting what is intuitively felt as an “all-or-nothing” property allows modification with ALMOST, COMPLETELY, or SLIGHTLY.

- (27) a. The baby is {almost/completely} **awake**.
b. This quote is {completely/slightly} **wrong**.
c. This living organism is not completely (a) **male**, nor is it completely (a) **female**.
- (28) [A]n alternative theory does exist, arguing that coal and other fossil fuels have a completely **geological** origin.¹⁰
- (29) Gish insists Archaeopteryx is completely **a bird**.¹¹

It is interesting to note, in this connection, that the diagnostics with degree modifiers and comparatives appear not to always yield the same results. HAND-MADE and VIVIPAROUS would be regarded as having a maximum-standard sense if co-occurrence with COMPLETELY or ALMOST is used as the criterion, but probably not if the possibility of heading a comparative constriction is used instead.

- (30) a. These birthday cards are {**completely/almost**} **hand-made**.
b. ??These birthday cards are **more hand-made** than those.
- (31) a. Like the sharks and rays, the angel-fishes are ovo-viviparous, or perhaps **almost viviparous**[.]¹²
b. ??Angel-fishes are **more viviparous** than sharks.

“Gradable” usage of canonically nongradable predicates exemplified in (27)–(31) tends to be made with a figurative or humoristic intention, and can be taken to involve stretched use of language. However, it is not a straightforward matter to draw a line between “marked/nonliteral/stretched” and “regular” uses in a thorough and consistent way.

It appears to us that the boundary between nongradable and absolute state concepts is inherently fuzzy. We suggest that the former are, or at least are sometimes construed as, a special case of the latter, which are based on a totally closed scale consisting of just two degrees (the two endpoints). Under certain circumstances, this kind of scale can be “stretched” and converted to a totally closed scale with intermediate degrees (Figure 4; each circle corresponds to a degree).

Our intention here is not to suggest abolishing the class of nongradable state concepts. We believe that the distinction between nongradable and maximum-standard state concepts is not clear-cut but still is useful, and can be reflected in natural language grammar. It is worth noting that a similar kind of fuzziness has been observed and discussed in connection with the count/mass distinction in nominal reference. The issue of whether, say, AWAKE can be maximum-standard rather than nongradable appears to be quite analogous to that of whether SODA can denote a thing rather than stuff (e.g., *much soda* vs. *many sodas*). The existence of borderline cases sheds light on our understanding on, and does not diminish the importance of, the count/mass opposition. The same will apply to the nongradable/gradable opposition.

¹⁰ From: Rosen, William. 2010. *The most powerful idea in the world: A story of steam, industry, and invention*. New York: Random House.

¹¹ From: Alston, Jon P. 2003. *The scientific case against scientific creationism*. Bloomington: iUniverse.

¹² From: Partington, Charles Frederick. 1838. *The British cyclopaedia of the arts, sciences, history, geography, literature, natural history, and biography*. London: William S. Orr and Co.

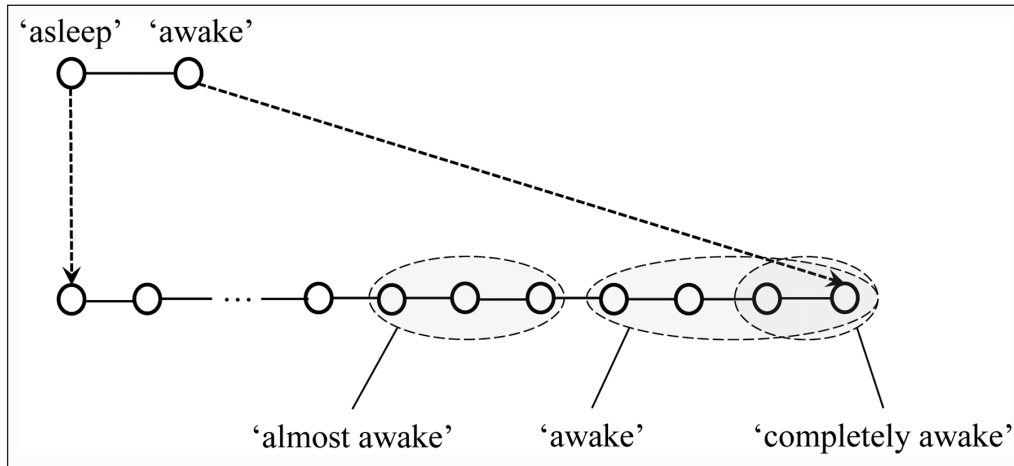


Figure 4: “Stretching” of a binary scale.

3.2 Semantic representation of state predicates

Kennedy (2007) considers a gradable adjective, such as *expensive*, to denote a (partial) measure function that maps entities to degrees $\langle e, d \rangle$, and proposes that the meaning of the positive (as opposed to comparative/superlative) form of a gradable adjective without any degree modifier is derived with the null degree morpheme *pos(itive)*, which fills the same slot as degree modifiers like *very*, *completely*, and (comparative) *more*. The meaning of *pos* is as represented in (32b), where *s* represents a “context-sensitive function from measure functions to degrees that returns a standard of comparison based both on properties of the adjective *g* [...] and on features of the context of utterance” (Kennedy 2007: 17).

- (32) a. $[[\textit{expensive}]] = \lambda x[\textit{expensive}_{\langle e, d \rangle}(x)]$
 b. $[[\textit{pos}]] = \lambda g_{\langle e, d \rangle}[\lambda x[g(x) \geq s(g)]]$
 c. $[[(\textit{be}) [\textit{pos} \textit{expensive}]]] = \lambda x[\textit{expensive}(x) \geq s(\textit{expensive})]$

This analysis is largely motivated by the supposition that the scale-structural property of a state predicate—what serves as the standard of comparison for it—is determined, or at least heavily constrained, by the structure of the relevant scale (the scales of beauty, cost, etc.), and need not be specified at the lexical level. As mentioned above, the validity of this supposition is open to debate. Without positing the flexible function *s*, the meaning of *expensive* could alternatively be represented as in (33). The semantic predicate **expensive**, as was in (32), represents a measure function from entities to degrees. \textit{Int}_θ represents a function from measure functions that returns the subset (subinterval) *i* of their range such that all members of *i* are ranked higher than the contextually determined threshold (its type is $\langle \langle e, d \rangle, \langle d, t \rangle \rangle$). *R* is a modifier on objects of type $\langle \langle e, d \rangle, \langle d, t \rangle \rangle$; *pos*, denoting an identity function, poses a trivial restriction¹³ (*very*, in contrast, would modify \textit{Int}_θ in such a way that for any measure function *g*, $\textit{very}(\textit{Int}_\theta)(g)$ is a proper subinterval of $\textit{Int}_\theta(g)$).

- (33) a. $[[\textit{expensive}]] = R_{\langle \langle e, d \rangle, \langle d, t \rangle \rangle, \langle \langle e, d \rangle, \langle d, t \rangle \rangle}[\lambda x[\textit{expensive}(x) \ni (R(\textit{Int}_\theta))(\textit{expensive})]]$
 b. $[[\textit{pos}]] = \lambda P_{\langle \langle e, d \rangle, \langle d, t \rangle \rangle}[P]$
 c. $[[(\textit{be}) [\textit{pos} \textit{expensive}]]] = \lambda x[\textit{expensive}(x) \ni \textit{Int}_\theta(\textit{expensive})]$

¹³ The null morpheme can be dispensed with by instead positing an appropriate set of construction-specific semantic rules, e.g., one that dictates that, when a gradable adjective is combined with a copula (without an intervening degree modifier), the slot of *R* is filled with an identity function and then the meaning of the copula is applied to the outcome.

The meanings of maximum-standard *full* and minimum-standard *bent*, in a similar vein, can be represented as in (34)/(35); $\text{Int}_{\text{max/min}}$ are functions from measure functions that return the subset (subinterval) i of their range such that i consists of the maximum/minimum degree and ones in its vicinity.

$$(34) \quad \begin{array}{l} \text{a. } \llbracket \text{full} \rrbracket = \lambda R[\lambda x[\text{full}(x) \ni (R(\text{Int}_{\text{max}}))(\text{full})]] \\ \text{b. } \llbracket (\text{be}) [\text{pos full}] \rrbracket = \lambda x[\text{bent}(x) \ni \text{Int}_{\text{max}}(\text{full})] \end{array}$$

$$(35) \quad \begin{array}{l} \text{a. } \llbracket \text{bent} \rrbracket = \lambda R[\lambda x[\text{bent}(x) \ni (R(\text{Int}_{\text{min}}))(\text{bent})]] \\ \text{b. } \llbracket (\text{be}) [\text{pos bent}] \rrbracket = \lambda x[\text{bent}(x) \ni \text{Int}_{\text{min}}(\text{bent})] \end{array}$$

As for non-gradable adjectives, their meaning can be taken to be a simple characteristic function of individuals (of type $\langle e, t \rangle$), as in (36a). It is also possible to regard them as a special subclass of maximum-standard predicates associated with scales with just two degrees (see Figure 4), as in (36b).

$$(36) \quad \begin{array}{l} \text{a. } \llbracket \text{geological} \rrbracket = \lambda x[\text{geological}_{\langle e, t \rangle}(x)] \\ \text{b. } \llbracket \text{geological} \rrbracket = \lambda R[\lambda x[\text{geological}_{\langle e, d \rangle}(x) \ni (R(\text{Int}_{\text{max}}))(\text{geological})]] \end{array}$$

A key contribution of Kennedy’s works on gradable adjectives is to have established that stative predicates have semantic subtypes along the lines of (33a), (34a), and (35a). It seems plausible that the way these different semantic types correspond to different word classes varies across languages; for example, there may be languages where “adjectives” are, unlike ones in English and related languages, invariably relative-gradable. In what follows, we explore how the three “adjective-like” classes in Japanese compare with each other in terms of their scale-structural properties.

4 Scale-structural characteristics of *i*-predicates, *na*-nouns, and *no*-nouns (in comparison to English adjectives)

It has been suggested in the literature that the classes of *i*-predicates and *na*-nouns have a close relationship with the semantic feature of gradability. Nishio (1972: 158–160) remarks that Japanese “adjectives”, which he takes to consist of the *i*- and *na*-classes, contrast from English adjectives in that antonym pairs within them tend to represent “contrary notions” (rather than “contradictory notions”), which amounts to saying that Japanese “adjectives” tend to be relative gradable.

More recently, Uehara (1998: 109–114), Kato (2003: 99–102), and Mihara (2008: 106–107) argue that *na*-nouns are strongly associated with the semantic feature of gradability, and *no*-nouns with nongradability, based on diagnostics with comparative constructions and degree adverbs. Kato and Mihara also observe that some “*na/no*-nouns”—i.e., words that can be used either as a *na*-noun or as a PONN—exhibit different degrees of amenability to degree modification, depending on whether they co-occur with *na* or *no*.

- (37) Adapted from (Kato 2003: 101–102; the judgments are Kato’s)
- a. kanari **iroiro** {na/???no} koto
quite various COP.ATTR matter
‘quite various matters’
 - b. hijoo ni **oohaba** {na/?no} henkoo
very Adv major COP.ATTR change
‘an extremely major change’

- c. totemo **arigatameiwaku** {na/?no} shinsetsu
very benevolent.but.unwelcome COP.ATTR kindness
'a very unwelcome kind act'
- d. kanari **betsu** {na/no} yarikata
quite distinct COP.ATTR method
'a quite distinct method'

It appears to us, however, that lexemes that exhibit this sort of contrast are not numerous, and the contrast tends to be quite subtle anyway.

The remarks by these authors are drawn on opportunistically selected lexical items; it should be noted that some PONN's—rare or exceptional as they might be—are clearly gradable.

- (38) a. totemo **totsuzen** {no/?*na} henka
very sudden COP.ATTR change
'a very sudden change'
- b. yori **oogata** {no/*na} fune
more large-size COP.ATTR ship
'a ship of a larger size'

Also, they do not take into account the distinction between the three kinds of gradability (relative, maximum-standard, and minimum-standard), which was largely unnoticed at the time of their studies.

With the aim of verifying and elaborating on these previous works, we conducted two sets of lexical surveys, whose targets, designs and results will be explained in the following sections.

5 The selection of the target items

We conducted two surveys to examine the scale-structural characteristics of *i*-adjectives, *na*-nouns, and PONN's as word classes. For the purpose of comparison, we also conducted surveys on English adjectives with parallel designs.

The target items of our surveys are, roughly, the 200 most frequent lexemes in each of the following four categories in BCCWJ (Japanese) and BYU-BNC (English).

- (39) i. Japanese *i*-adjectives
ii. "pure" *na*-nouns, i.e., Japanese lexemes that can be used as *na*-nouns but not as regular nouns or as PONN's
iii. "pure" PONN's, i.e., Japanese lexemes that can be used as PONN's but not as *na*-nouns or as regular nouns
iv. English adjectives

For the purpose of our lexical survey, "short unit words" as identified by the developers of BCCWJ were used as the unit of Japanese lexemes/words.

5.1 Japanese *i*-adjectives

We selected the 200 most frequent lexemes whose part-of-speech tag is [adjective]¹⁴ and whose present indicative form can be used as a main predicate of either a root or relative clause. The latter condition led to the exclusion of ASHII 'be bad' and YAMUNAI 'be hopeless, be unavoidable', whose distribution is restricted in contemporary Japanese.

¹⁴ For the sake of readability, in the following we will refer to part-of-speech tags in BCCWJ with mnemonic English labels. The actual tags corresponding to the labels are specified in this note, in the format of

The collected 200 *i*-predicates are distributed within the 15,372 most frequent lexemes (in BCCWJ).

5.2 Japanese *na*-nouns

According to the guidelines of BCCWJ, our “pure” *na*-nouns are supposed to be tagged as [*keijooshi*], and lexemes that can be used either as *na*-nouns or as regular nouns are supposed to be tagged as (i) [noun that can be used as a *keijooshi*], as is the case with KENKOO ‘health(y)’ (see (14) above) or (ii) [noun that can be used as a verbal noun and as a *keijooshi*],¹⁵ as is the case with SHINPAI ‘worry, be worrisome/worried’ illustrated in (40).

- (40) a. *shinpai no gen'in*
worry GEN cause
‘the cause of worry’ (regular noun)
- b. *shinpai na hito*
worry COP.ATTR person
‘a person who is worried’ (*na*-noun)
- c. *Ken wa shinpai shita.*
K. TH worry do.PST
‘Ken worried.’ (verbal noun)

A good number of lexemes that are tagged as [*keijooshi*], however, are actually *na/no*-nouns. That is, they can be used as a PONN as well, possibly with a distinct meaning (see (9) and (10)). Some of them, furthermore, allow co-occurrence with *na* only marginally. For the purpose of comparing the properties of the *na*-noun and PONN classes, inclusion of any *na/no*-nouns (and pure PONN’s) to the former class will be problematic. On the other hand, it is often not clear-cut whether an item allows a use as a *na*-noun (or as a PONN) marginally, or rather not at all.

We adopted the following procedure to classify the [*keijooshi*]-tagged lexemes into: (i) “pure *na*-nouns”, (ii) dual-membership items (*na/no*-nouns), and (iii) “pure PONN’s”.¹⁶

- (41) i. For a given nominal lexeme α , check how many hits the following queries yield:
(A) $\alpha + na$ (attributive form of DA) + Noun
(B) $\alpha + no$ (“case particle”)¹⁷ + Noun
- ii. Let N_a and N_o the numbers of the hits yielded by (A) and (B), respectively.
If (i) $N_a \geq 20$ and (ii) N_a is at least 20 times as large as N_o , or $N_o = 0$, α is determined to be a “pure” *na*-noun.
If (i) $N_o \geq 20$ and (ii) N_o is at least 20 times as large as N_a , or $N_a = 0$, α is determined to be a “pure” *no*-noun.
Else, α is potentially a dual membership item.

“<mnemonic label> = <actual part-of-speech tag>”: [adjective] = [*keiyooshi*], [adverb] = [*fukushi*], [*keijooshi*] = [*keijooshi - ippan*], [noun that can be used as an adverb] = [*meishi - futsuu meishi - fukushi kanoo*], [noun that can be used as a *keijooshi*] = [*meishi - futsuu meishi - keijooshi kanoo*], [noun that can be used as a verbal noun] = [*meishi - futsuu meishi - sahen kanoo*], [noun that can be used as a verbal noun and as a *keijooshi*] = [*meishi - futsuu meishi - sahen keijooshi kanoo*], [regular noun] = [*meishi - futsuu meishi - ippan*].

¹⁵ A verbal noun is a word that forms a verb with the light verb SURU ‘do’: see (40c) for an example.

¹⁶ Note that what we call “pure *na*-nouns”/“pure PONN’s” here may be “impure” in the sense that they can be used as a verbal noun or an adverb.

¹⁷ In BCCWJ, (i) *no* as a genitive case particle and (ii) (what we take to be) *no* as an attributive form of a copula are both tagged as a case particle. This does not largely affect the task of sorting predication-only nouns into (i) the pure *na*-class, (ii) the pure *no*-class, and (iii) the dual-membership class, because only referentially used nouns occur before *no* as a genitive case particle; but see Section 5.3.

Lexemes that are identified as *na/no*-items or PONN's with this method were excluded from our list of *na*-nouns; examples of the excluded items are DOOYOO 'similar' ($N_a = 2469$, $N_o = 397$) and TOKUBETSU 'special' ($N_a = 2270$, $N_o = 1346$).

In addition, the following items, which are deictic/anaphoric or interrogative in meaning, were excluded: KONNA 'like this', SONNA 'like that', ANNA 'like that', DONNA 'what kind of', SAYOO 'so, such', and KAYOO 'so, such'.

The collected 200 *na*-nouns are distributed within the 11,335 most frequent lexemes.

5.3 Japanese predication-only no-nouns

To make a representative list of PONN's is not a straightforward task. One reason, which is theoretical, is that there is no clear consensus as to how to determine the exact delimitation of this category, and another reason, which is logistical, is that in BCCWJ they are dispersed in multiple part-of-speech tag groups.

Our basic criterion for the PONN class, mostly already explained in Section 2, is as follows.

- (42) Lexeme α has a use as a PONN if and only if:
- α in the relevant use may fill either slot X or Y in the following configurations, where *da* is the present indicative form, and *no* is one of the attributive forms, of the copula DA:

$$[{}_S \text{ NP}_{\text{Subj.}} \dots X \text{ da}]$$

$$[{}_{\text{NP}} Y \text{ no } N]$$
 - α in the relevant use *cannot* be used referentially; i.e., it cannot head a noun phrase serving as a (nonprecopular) complement of a predicate.
 - α in the relevant use *cannot* fill slot Z of the phrase of the form:

$$[{}_{\text{NP}} Z \text{ no } N]$$
 where *no* is a genitive marker. (This condition is entailed from (ii), if a genitive phrase and the modified head noun are taken to be in the relation of complement and predicate.)
 - α in the relevant use *cannot* be modified with a relative clause, a genitive phrase, or an adnominal modifier (e.g., *sono* 'that').

Application of criterion (42i) sometimes leads to unclear results. Some candidate items can fill slot X in: $[{}_S \text{ NP}_{\text{Subj.}} \dots X \text{ da}]$ only marginally, yielding a borderline area between PONN's and adnominal modifiers. We excluded such items (e.g., KYUUKYOKU 'ultimate') from our list of PONN's.

(43) *adnominal modifier*

- rei** no meisaku
aforementioned *no* masterpiece
'the aforementioned masterpiece/that masterpiece that we previously talked about'
- #Ano meisaku wa **rei** da.
that masterpiece TH aforementioned COP.PRS

(44) *adnominal modifier?*

- kyuukyoku** no meisaku
ultimate *no* masterpiece
'an ultimate masterpiece'

- b. ??Ano meisaku wa **kyuukyoku** da.
 that masterpiece TH ultimate COP.PRS
 (That masterpiece has an ultimate quality.)

To make a list of lexemes of “pure” PONN’s, it is also necessary to determine for each candidate lexeme whether it can additionally be used referentially or not (and as a *na*-noun or not). This is tricky for two reasons. First, some *no*-nouns may occur in a complement position of a predicate, but only as part of an idiomatic set phrase (see also fn. 3).

- (45) a. **Saizen** o tsukushita.
 best ACC exhaust.PST
 ‘(I) did (my) best.’
- b. Tooji wa bushi ga **zensei** o hokotteita.
 then TH samurai NOM in.the.heyday ACC boast.NPFV.PST
 ‘At that time, samurai were in their heyday.’

We did not exclude such lexemes from our list of PONN’s.

Second, quite a few lexemes that are typically used as a PONN allow a use as an abbreviative referential noun. KOKURITSU ‘national’, NAMA ‘raw’, and YUUKYUU ‘paid’, for example, can be used as abbreviative alternatives of the compounds KOKURITSU DAIGAKU ‘national university’, NAMA BIIRU ‘draft beer’ and YUUKYUU KYUUKA ‘a paid vacation’. For such words, we can expect typical contemporary speakers to agree that they are not “true” or “full” names of the denoted objects. It seems reasonable to distinguish these lexemes from ones with genuine dual membership, such as HAYARI ‘(in) vogue’ and SANSEI ‘agreed, agreement’ (see (15)), which are not conceived as abbreviative by speakers when used referentially. While we excluded lexemes which clearly allow a use as a referential noun from our list (such as HAYARI and SANSEI), we did not exclude words that can head a referential noun only abbreviatively.¹⁸

Obviously, the criteria explained above are not free from vagueness and may well be applied somewhat differently by different investigators. To ensure the transparency of our survey, the full list of the selected 200 PONN’s is provided as an Appendix A.

We also excluded lexemes that can be used as a *na*-noun, utilizing the procedure in (41).¹⁹ Finally, we excluded IKURA ‘how much’, which has an interrogative meaning.

We collected 200 items of “pure” PONN’s based on the criteria explained above, from within the 14,566 most frequent lexemes. Table 3 illustrates the distribution of the 200 items among different tag groups.

5.4 English adjectives

We selected the 200 most frequent words tagged as adjectives, excluding the following comparative, superlative, and abbreviated ones: *better*, *larger*, *smaller*, *best*, *Hon* (as in *the Hon. Sir William Jones*), and *Inc* (as in *Berlitz International, Inc.*). The predication-only and attribution-only properties of adjectives (adjective senses) were not taken into account.

¹⁸ A word-sense pair that is abbreviative in its origin may well cease to be conceived as such as time passes and the usage of the abbreviated alternant becomes more common, and it is hard to determine when exactly this kind of transition happens. FURYOO ‘bad, inferior, delinquent’ used in the sense of ‘(a) juvenile delinquent’, and SHINCHIKU ‘newly built’ used in the sense of ‘(a) brand-new house’, appear to be instances of borderline cases in contemporary Japanese. (They are not included in our list.)

¹⁹ Note that, when the target item has a potential to be used as an abbreviated noun, the hits of (B) may include instances where *no* is not a copula (as in, e.g., *kokuritsu no nyuushi* ‘the entrance exam of a national university’). This is not desirable, but we find it tolerable given the ample margin of error given by the 1:20 thresholds.

Table 3: The distribution of the selected predication-only *no*-nouns among BCCWJ part-of-speech tag groups.

Part-of-speech tags	# of PONN's
regular noun	126
noun that can be used as a verbal noun	26
noun that can be used as a <i>keijooshi</i>	13
<i>keijooshi</i>	18
noun that can be used as an adverb	7
adverb	6
noun that can be used as a <i>keijooshi</i> and as a verbal noun	4
(total)	200

6 Identification of the scale-structural properties of the selected items

The scale-structural properties of each of the 800 selected items were examined, using two distinct methods: (i) categorical classification by theoretically informed linguists, and (ii) a questionnaire-based acceptability judgment experiment with nonexpert participants. The specific designs of the two surveys will be explicated below, after setting out (in Section 6.1) some background assumptions pertaining to them.

6.1 Five scale-structural classes

We assume that each (sub)sense of a stative predicate belongs to one and only one of the five classes: (i) nongradable, (ii) relative, (iii), maximum-standard, (iv) unbound minimum-standard, (v) bound minimum-standard. The unbound vs. bound distinction of minimum-standard senses is exemplified by BENT and OPEN, only the latter of which has a meaning covering an end interval of a scale (see (25a, b)).²⁰

The adopted diagnostics for the five classes are as follows:²¹

- (46) A lexeme sense is:
- i. **nongradable** iff it is *not* compatible with a comparative construction;
 - ii. **relative** iff it is compatible both with (i) a comparative construction and (ii) modification with VERY (English *very*, Japanese *totemo*);
 - iii. **maximum-standard** iff it is compatible both with (i) a comparative construction and (ii) modification with COMPLETELY (English *completely*, Japanese *kanzen ni*), but is *not* compatible with modification with SLIGHTLY (English *slightly*, Japanese *wazuka ni*).
 - iv. **unbound minimum-standard** iff it is compatible both with (i) a comparative construction and (ii) modification with SLIGHTLY, but is *not* compatible with modification with COMPLETELY.

²⁰ Instead of positing the class of “bound minimum-standard” senses, one may treat predicates like OPEN as scale-structurally flexible and having both “(unbound) minimum-standard” and “maximum-standard” senses. Conversion from the five-way classification to the four-way classification (nongradable, relative, maximum-standard, minimum-standard) is straightforward; for example, when the counts based on the first system are: [maximum-standard: 4, unbound minimum-standard: 4, bound minimum-standard: 2], they will be reinterpreted as: [maximum-standard: 5, minimum-standard: 5] in the second.

²¹ Some lexical items have a meaning inherently involving some sort of degree specification; e.g., the PONN *saikoo* ‘best, superb’. Such semantic characteristics may well have affected the judgments of these items in our two surveys. Our surveys, by design, do not differentiate lexical items that have certain scale-structural properties (i) because of degree specification inherent to their meaning, or (ii) for some other reason.

- v. **bound minimum-standard** iff it is compatible with (i) a comparative construction, (ii) modification with SLIGHTLY, and (iii) modification with COMPLETELY.

Notice that we do not utilize the diagnostic with ALMOST, which yields somewhat different results than the one with COMPLETELY (see (24)).

By Japanese comparative constructions, we refer to a clause with a phrase with the standard-specificational adposition YORI ‘than’, or with a comparative adverb like MOTTO ‘more’, or with both.

- (47) a. Ken wa Rei yori (motto) tsuyoi.
K. TH R. than more strong.PRS
‘Ken is stronger than Rei.’
b. Ken wa motto tsuyoi.
K. TH more strong.PRS
‘Ken is stronger (than him).’

As mentioned in Section 2, some stative predicates belong to multiple scale-structural classes, either due to (i) scale-structural flexibility or (ii) conceptual polysemy. It should be noted that the set of diagnostics in (46) may lead to ambiguous results in two ways. First, it is sometimes hard to determine whether a predicate that has a gradable sense additionally has a nongradable sense or not. By way of illustration, let us consider the cases of BRITISH and RED, which arguably allow gradable construals (e.g., “Fish and chips are more British than French fries.”, “The sky becomes redder as the sun goes down.”). It is intuitively quite evident that BRITISH has a distinct sense—the central one—which is nongradable. It is much less clear, on the other hand, whether RED is to be regarded as having a nongradable (sub)sense. We adopt the position to admit a nongradable sense only when the lexeme has a conceptual sense on which it is exclusively nongradable (this leads us to admit a nongradable sense for BRITISH and not for RED). In other words, we assume that there is no scale-structural flexibility across gradable and nongradable construals.

Second, when a predicate on a certain conceptual interpretation is compatible with both COMPLETELY and SLIGHTLY, our diagnostics alone cannot tell whether it has (i) just a bound minimum-standard construal, or (ii) a bound minimum-standard construal plus a maximum-standard construal, or (iii) a bound minimum-standard construal plus an unbound minimum-standard construal, or (iv) an unbound minimum-standard construal and a maximum-standard construal (see fn. 20). We admit just the first possibility in such cases, ignoring the possibility of the scale-structural flexibility across different types of absolute construals.

These two measures were adopted solely in purpose to enhance the consistency and replicability of our judgments.

6.2 Survey #1: Categorical labeling

Application of the diagnostics explained above to individual stative predicates involves several complications, which makes it hard for speakers without expertise in linguistics to carry it out in a consistent way. First, as noted above, to fully identify the scale-structural characteristics of individual predicates, conceptual polysemy and scale-structural flexibility need to be taken into consideration. It seems sensible, at the same time, to put aside senses that are derivative of some other “basic” sense and activated only in a highly specialized field of discourse (e.g., *positive numbers*, *major keys*; these should be distinguished from the basic senses of “inherently technical” terms, such as VERTEBRATE).

Second, the irrelevant interpretations of degree adverbs (e.g., the emphatic interpretation of *completely*), as well as the functional interpretation of (canonically) relative state predicates, must be put aside.

In one of our surveys (Survey #1), the 800 items were classified according to which scale-structural classes (what set of scale-structural classes) their senses are compatible with, based on the judgments by the first and second authors (both native speakers of Japanese) and one English native speaker consultant, who has had training and research experience in theoretical semantics. (What we consider to be) derivative, technical senses were excluded from consideration (i.e., treated as nonexistent for the purpose of the survey).

The described method is not without problems. With some combinations of lexical items and diagnostics, the judgments are quite subtle, and the results would likely fluctuate if the same task is carried out by a different set of judges (with expertise in linguistics). Also, for the reason explained above, our counts of “predicates that have a nongradable sense” may underrepresent the actual number. Accordingly, our counts (to be provided in Section 7) cannot be taken to be the single precise way to portray the scale-structural properties of the sampled lexemes.

6.3 Survey #2: An acceptability judgment experiment

To compensate for the explained drawback of Survey #1, we conducted an additional questionnaire-based survey (Survey #2). As is to be explained presently, Survey #2 consists of a series of quick, intuitive judgment tasks carried out by speakers without background theoretical knowledge. Thus, individual judgments in Survey #2 are arguably less reliable than those in Survey #1.

On the other hand, Survey #2 has the following advantages. First, it reflects the intuition of a larger number of speakers, so that idiolectal biases will be balanced out, and the results will have a higher degree of replicability. Second, given that the participants are not asked to consider the full range of possible senses/interpretations of the presented lexical items, their judgments are expected to center on the prototypical construals of the items, thereby capturing their “core” semantic characteristics.

The two surveys have their advantages and disadvantages; the convergence of their results would provide stronger evidence for any generalization than the results of either one alone would. In what follows, more details regarding the procedure of Survey #2 will be explained.

6.3.1 Japanese

120 native speakers of Japanese (the age range = 18–64 years; the age mean = 21.5 years) participated in the Japanese component of Survey #2. All participants reported that their native language is Japanese and that they are not bilingual.

The stimulus items are the total of 2,400 combinations of one of the four adverbials: *totemo* ‘very’, *kanzen ni* ‘completely’, *wazuka ni* ‘slightly’, and *motto* ‘more’, and (ii) one of the 600 state predicates consisting of the 200 *i*-predicates in their present indicative form and the 200 *na*-nouns and 200 PONN’s followed by the present indicative form of the copula *DA* (i.e., *da*). (48) exemplifies the stimulus items.

- (48) a. *totemo amai*
very sweet.PRS
‘is very sweet’
- b. *kanzen ni taira da*
complete Adv flat COP.PRS
‘is completely flat’ (TAIRA is a *na*-noun)

- c. wazuka ni ayashii
slight Adv suspicious.PRS
'slightly suspicious'
- d. motto futsuu da
more ordinary COP.PRS
'is more ordinary' (FUTSUU is a PONNN)

The 2,400 stimulus items were evenly distributed among 40 questionnaires printed on paper, each of which contained 60 items without multiple occurrences of a single stative predicate. In each of the 40 questionnaires, the order of the stimulus items were pseudorandomized. Each questionnaire was assigned to three participants, and each participant completed only one questionnaire.

The participants answered the assigned questionnaire following written instructions in Japanese, whose translation into English is provided in Appendix B. The responses by the participants were made by choosing one of the 6 options in (49), which were shown right below the stimulus item (predicate phrase).

- (49) Clearly Odd (0)
- Somewhat Odd (1)
- Borderline (2)
- More or Less Natural (3)
- Clearly Natural (4)
- Not Interpretable

Figure 5 illustrates part of one of the questionnaires.

6.3.2 English

30 native speakers of English (the age range = 25–70 years; the age mean = 37.3 years) participated in the English component of Survey #2. All participants reported that they grew up in the U.S.A., that their native language is English, and that they are not bilingual.

The stimulus items are the total of 800 adjective phrases, each of which is either (i) the combination of one of the adverbs: *very*, *completely*, and *slightly*, and one of the 200 adjectives, or (ii) the comparative form (inflected or with *more*) of one of the 200 adjectives. (50) exemplifies the target items.

- (50) a. very new
- b. completely open
- c. slightly different
- d. better

(4) もっと幅広い					
あきらかに	やや奇妙で	どちらとも	一応自然で	あきらかに	解釈不能 ()
奇妙である	ある	いけない	ある	自然である	
<--()------()------()------()------()-->					
(5) とても曖昧だ					
あきらかに	やや奇妙で	どちらとも	一応自然で	あきらかに	解釈不能 ()
奇妙である	ある	いけない	ある	自然である	
<--()------()------()------()------()-->					

Figure 5: Part of one of the questionnaires on Japanese.

For ABLE, DEAD, DIRECT, LIKELY, LITTLE, OPEN, SINGLE, REAL, and SURE, the comparative form was presented in the form of “inflected/analytic” (e.g., “abler/more able”).²²

The 800 stimulus items were evenly distributed among 10 electronic questionnaires on the cloud-based software SurveyMonkey, each of which contained 80 items without multiple occurrences of a single adjective. Each questionnaire was assigned to three participants, and each participant answered only one questionnaire. In each questionnaire, the order of the stimulus items was pseudorandomized.

The participants answered one of the 10 questionnaires over the internet, following written instructions provided in Appendix B, and choosing one of the six responses in (51) for each question.

- (51) Clearly Odd (0)
Somewhat Odd (1)
Borderline (2)
More or Less Natural (3)
Clearly Natural (4)
Not an Adjective

Figure 6 illustrates part of one of the electronic questionnaires.

7 The results of the lexical surveys

7.1 Survey #1

In Survey #1, the 600 Japanese items were classified individually (though with some mutual consultation) by the first two co-authors, and the 200 English items were classified collectively by the first co-author and the native speaker consultant. The classification of the Japanese items by the two judges diverged on certain items, but the differences in the total counts were rather small.

Table 4 and Figure 7 summarize the results of Survey #1, which conform to the hypothesis that *i*-predicates and *na*-nouns tend to be gradable, while PONN’s tend to be nongradable (Section 4). The cells for the Japanese items represent the means of the percentages in the two sets of judgments, accompanied by the (standard) deviation in parenthesis; “50% (2.5)”, for example, is to be interpreted as “The percentage was 52.5% according to one judge, and 47.5% according to the other”.

To confirm the statistical significance of the key contrasts, a mixed-effects logistic regression analysis was conducted, using the `glmer` function in R (R Development Core Team 1993–2019), with the (categorical) judgment as the dependent variable, the predicate class as the fixed effect, and the lexical item as the random effect. For the post-hoc test, multiple

4. very aware	Clearly Odd	Somewhat Odd	Borderline	More or Less Natural	Clearly Natural	Not an Adjective
	☆	☆	☆	☆	☆	○
5. completely following	Clearly Odd	Somewhat Odd	Borderline	More or Less Natural	Clearly Natural	Not an Adjective
	☆	☆	☆	☆	☆	○

Figure 6: A partial screenshot of one of the electronic questionnaires on English.

²² In the case of LITTLE, “littler/more little”, rather than “less/more little”, was selected as its comparative forms.

Table 4: Results of Survey #1 (1).

	<i>i</i> -adj.'s (200 items)	<i>na</i> -nouns (200 items)	PONN's (200 items)	Eng. adj.'s (200 items)
exclusively used as:				
a gradable pred.	97.5% (0)	91% (1)	22.25% (0.25)	47.5%
a nongradable pred.	2.5% (0)	7.5% (1)	76.25% (0.25)	25.5%
can be used as:				
a nongradable pred.	2.5% (0)	9% (1)	77.75% (0.25)	51.5%
a rel. grad. pred.	97.5% (0)	89% (1.5)	19.5% (0.5)	70.5%
but not as an abs. grad. pred.	78.75% (0.75)	70.5% (1)	10.75% (0.75)	36%
a max.-std. pred.	1.25% (0.25)	16.75% (2.25)	9% (1)	21.5%
but not as a relative pred.	0% (0)	3% (0.5)	2.75% (1.25)	1%
an unbound min.-std. pred.	15% (1)	5.25% (0.25)	2.75% (0.25)	10%
but not as a relative pred.	0% (0)	0.5% (0)	1.25% (0.75)	0%
a bound min.-std. pred.	2.5% (0)	0% (0)	1% (0)	8%
but not as a relative pred.	0% (0)	0% (0)	0% (0)	0%

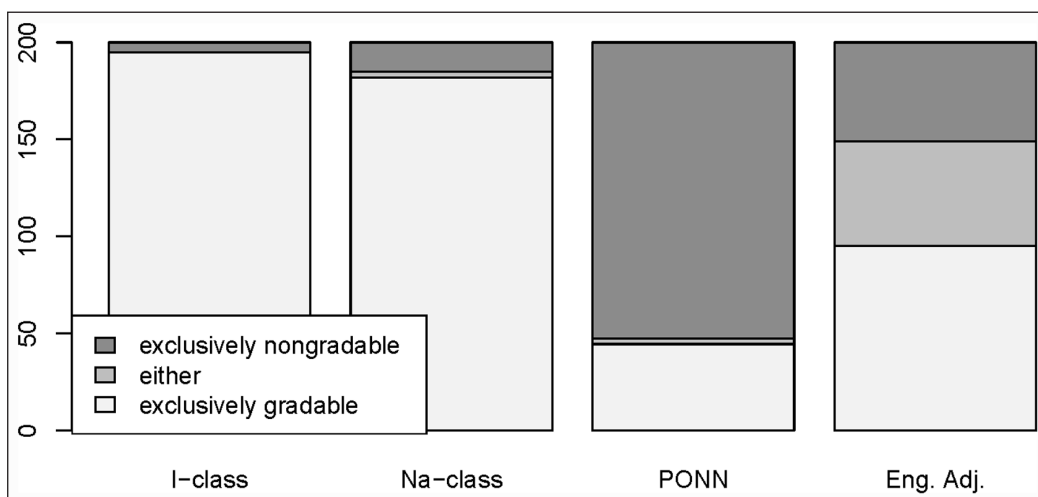


Figure 7: The proportions of exclusively (non)gradable items in the four classes.

comparisons were run with Steel-Dwass's method. The Japanese items on which there was inter-judge discrepancy were excluded from the test; Table 5 presents the counts after the exclusion of these items. The result endorses, at the $p < .01$ level, (i) that the *i*-class and *na*-class have a stronger tendency to be “exclusively gradable”, as well as “potentially

gradable” and “potentially relative gradable”, than the English adjective class,²³ and (ii) that the English adjective class has a stronger tendency to be “exclusively gradable”, as well as “potentially gradable” and “potentially relative gradable”, than the PONN class.²⁴

The survey data also indicate that none of the three Japanese stative predicate classes has a stronger orientation toward absolute gradable state concepts than the English adjective class.²⁵ Also, the proportion of items that allow an absolute construal is much smaller in the three Japanese classes pooled together than in the English adjective class (Table 6; the most frequent 200 items among the three Japanese predicate classes consist of 87 *i*-predicates, 64 *na*-nouns, and 49 PONN’s).

A mixed-effects logistic regression analysis was conducted to test the statistical significance of this contrast, again with the lexical item as the random effect. As in the previous test, the Japanese items on which there was inter-judge discrepancy were excluded; Table 7 presents the counts after the exclusion of these items.

The result endorses, at the $p < .01$ level, that English adjectives have a higher tendency to be possibly absolute gradable than the three Japanese classes pooled together (600 items) ($t = -5.74$), as well as than the 200 most frequent items among them ($t = -4.45$).

One way to interpret this finding is that while *i*-predicates and *na*-nouns compensate the unsuitability of PONN’s as a means to encode relative gradable state concepts, *i*-predicates

Table 5: Results of Survey #1 (2).

	<i>i</i> -adj.’s	<i>na</i> -nouns	PONN’s	Eng. adj.’s
exclusively used as a gradable predicate	195	180	36	95
NOT exclusively used as a gradable predicate	5	16	147	105
possibly used as a gradable predicate	195	183	39	149
NOT possibly used as a gradable predicate	5	13	144	51
possibly used as a relative gradable predicate	195	175	29	141
NOT possibly used as a relative gradable predicate	5	19	151	59

Table 6: Results of Survey #1 (3).

	<i>i</i> -adj.’s + <i>na</i> -nouns + PONN’s (600 items)	<i>i</i> -adj.’s + <i>na</i> -nouns + PONN’s (the most frequent 200 items)	English adjectives (200 items)
can be used as:			
an absolute pred.	18.67% (1)	19% (1)	39.5%
a max.-std. pred.	9% (0.5)	10% (0)	21.5%
an unbound min.-std. pred.	8.5% (0.5)	6.75% (0.75)	10%
a bound min.-std. pred.	1.17% (0)	2.25% (0.25)	8%

²³ $t = 11.18$ for the relation “*i* > Eng. adj.” in terms of exclusive gradability; $t = 6.62$ for the relation “*i* > Eng. adj.” in terms of potential gradability; $t = 7.36$ for the relation “*i* > Eng. adj.” in terms of potential relative gradability; $t = 9.56$ for the relation “*na* > Eng. adj.” in terms of exclusive gradability; $t = 5.09$ for the relation “*na* > Eng. adj.” in terms of potential gradability; $t = 4.9$ for the relation “*na* > Eng. adj.” in terms of potential relative gradability.

²⁴ $t = 5.73$ for the relation “Eng. adj. > PONN” in terms of exclusive gradability; $t = 10.39$ for the relation “Eng. adj. > PONN” in terms of potential gradability; $t = 10.63$ for the relation “Eng. adj. > PONN” in terms of potential relative gradability.

²⁵ It is noteworthy, however, that the *i*-class has a relatively large number of items that allow a minimum-standard absolute construal. This tendency is replicated in Survey #2 as well.

Table 7: Results of Survey #1 (4).

	<i>i</i> -adj.'s + <i>na</i> -nouns + PONN's (600 items)	<i>i</i> -adj.'s + <i>na</i> -nouns + PONN's (the most frequent 200 items)	English adjectives (200 items)
possibly used as an absolute gradable predicate	15.82% (90/569)	17.19% (33/192)	39.5% (79/200)
NOT possibly used as an absolute gradable predicate	84.18% (479/569)	82.81% (159/192)	60.5% (121/200)

and *na*-nouns do *not* compensate the unsuitability of PONN's as a means to encode absolute gradable state concepts, thereby yielding a gap—inconspicuous as it may be—within their collective coverage. We will suggest in Section 8 that this lacuna is largely filled by verbal constructions involving the aspectual auxiliary IRU.

7.2 Survey #2

The data collected in questionnaire-based Survey #2 were put forth to two kinds of analysis. In the first, we compared the lexical classes in terms of amenability to modification with MORE, VERY, COMPLETELY, and SLIGHTLY, using individual evaluations on combinations of state predicates and modifiers as input data. In the second, we compared the lexical classes in terms of the proportions of members with different scale-structural properties, based on an interpretative summary of the collected data.

7.2.1 Analysis #1 (of the data from Survey #2)

As explained above, in the questionnaire-based survey, each combination of a state predicate and a modifier received three responses. The responses “Clearly Odd”, “Somewhat Odd”, “Borderline”, “More or Less Natural”, and “Clearly Natural” were respectively weighed as 0, 1, 2, 3, and 4 points. The responses: “Not Interpretable” (for Japanese) and “Not an Adjective” (for English) were excluded from calculation, rather than being weighed as 0. To exemplify, the combination *completely interesting* was judged as “Somewhat Odd”, “Borderline”, and “More or Less Natural” by three participants, earning the average score of 2.0 points.

Table 8 is a summary of the results, where each cell presents the mean of the average scores of the items (i) belonging to the lexical class shown on the top and (ii) being combined with the modifier shown on the left.

The distributional skews in Table 8 were tested with the mixed-effects linear regression analysis, using the `lmer` function in R, with the acceptability judgment (on a five-point scale) as the dependent variable, the predicate class as the fixed effect, and the lexical item and the subject as the random effects. For the post-hoc test, multiple comparisons were run with Tukey's method. The patterns shown in (60) were confirmed at the $p < .01$ level.

- (52) a. In terms of amenability to MORE-modification, $\{i\text{-class}, na\text{-class}\} > \text{English adjective} > \text{PONN}$.²⁶
 b. In terms of amenability to VERY-modification, $i\text{-class} > na\text{-class} > \text{English adjective} > \text{PONN}$.²⁷

²⁶ With respect to MORE-modification, $z = 4.98$ for the relation “ $i > \text{Eng. adj.}$ ”, $z = -3.5$ for the relation “ $na > \text{Eng. adj.}$ ”, and $z = -11.03$ for the relation “ $\text{Eng. adj.} > \text{PONN}$ ”. No significant difference was observed between the *i*-class and the *na*-class ($z = 1.84$, *n.s.* ($p = 0.25$)).

²⁷ With respect to VERY-modification, $z = 3.29$ for the relation “ $i > na$ ”, $z = -4.62$ for the relation “ $na > \text{Eng. adj.}$ ”, and $z = -15.81$ for the relation “ $\text{Eng. adj.} > \text{PONN}$ ”.

- c. In terms of amenability to COMPLETELY-modification, English adjective > the three Japanese classes (600/200).²⁸
- d. In terms of amenability to SLIGHTLY-modification, English adjective > the three Japanese classes (600/200).²⁹

These results align well with those of Survey #1, indicating (i) that the *i*-class and the *na*-class have a stronger tendency to be relative gradable than the English adjective class, which in turn has a stronger tendency to be relative gradable than the PONN class, and (ii) that the Japanese three classes as a whole do *not* have a stronger tendency to be absolute gradable than the English adjective class.³⁰

As explained in 6.1, we take the combination of (i) the amenability to modification with {VERY/COMPLETELY/SLIGHTLY} in combination with (ii) the amenability to modification with MORE makes a better index of {relative/maximum-standard absolute/minimum-standard} gradability than the former alone. As long as individual evaluations on combinations of state predicates and modifiers are used as input data, however, there is no straightforward way to conduct a linear regression analysis that utilizes such complex indices. Analysis #2 to be discussed below is designed to circumvent this shortcoming.

7.2.2 Analysis #2 (of the data from Survey #2)

To examine the questionnaire-based data from a different perspective, we classified the target items in accordance with the following procedure. First, we excluded from consideration any item such that the combination of that item and some modifier was judged as “Not Interpretable” or “Not an Adjective” by at least one participant; this left us with 196 *i*-adjectives, 194 *na*-nouns, 169 PONN’s, and 182 English adjectives (Table 9). Among

Table 8: Results of Survey #2.

	<i>i</i> -adj.'s (200 items)	<i>na</i> -nouns (200 items)	PONN's (200 items)	<i>i</i> -pred.'s + <i>na</i> -nouns + PONN's (600 items/the most frequent 200 items)	Eng. adj.'s (200 items)
MORE	3.32	3.13	1.27	2.57/2.86	2.68
VERY	3.78	3.46	1.13	2.79/2.95	2.97
COMPLETELY	1.87	1.98	2.19	2.01/2.02	2.57
SLIGHTLY	2.6	1.86	0.91	1.79/2.02	2.39

Table 9: The number of items to be considered in Analysis #2.

	<i>i</i> -adj.'s (200 items)	<i>na</i> -nouns (200 items)	PONN's (200 items)	<i>i</i> -pred.'s + <i>na</i> - nouns + PONN's (the most frequent 200 items)	Eng. adj.'s (200 items)
included (valid items)	196	194	169	190	182
excluded (invalid items)	4	6	31	10	18

²⁸ With respect to COMPLETELY-modification, $z = 4.21$ for the relation “Eng. adj. > Jpn. items (600)”, $z = 3.79$ for the relation “Eng. adj. > Jpn. items (200)”.

²⁹ With respect to SLIGHTLY-modification, $z = 4.46$ for the relation “Eng. adj. > Jpn. items (600)”, $z = 2.52$ for the relation “Eng. adj. > Jpn. items (200)”.

³⁰ The *i*-class has a higher average score with respect to SLIGHTLY-modification than the English adjective, but the difference was not significant at the $p < .01$ level.

the 200 most frequent Japanese items, 10 items, consisting of two *i*-adjectives and eight PONN's, were excluded.

Then, the scale-structural properties of each of these items were determined by the following criteria:

- (53) a. An item is to be regarded as “(potentially) relative gradable” iff (i) its average score with respect to MORE-modification and (ii) its average score with respect to VERY-modification both exceed 2.5 points.
- b. An item is to be regarded as “(potentially) maximum-standard absolute gradable” or “(potentially) bound minimum-standard absolute gradable” iff (i) its average score with respect to MORE-modification and (ii) its average score with respect to COMPLETELY-modification both exceed 2.5 points.
- c. An item is to be regarded as “(potentially) unbound or bound minimum-standard absolute gradable” iff (i) its average score with respect to MORE-modification and (ii) its average score with respect to SLIGHTLY-modification both exceed 2.5 points.

The choice of the threshold value of 2.5 points is somewhat arbitrary, but we find it sensible in that it means that the overall judgments by the (three) participants are closer to “More or Less Natural” than “Borderline”. For the ease of exposition, and in consideration of the relative scarcity of bound minimum-standard items (Tables 4, 6), in the remainder of the section we make a simplifying assumption and regard (53b) as a criterion for maximum-standard absolute gradability.

Table 10 presents the proportions of the items that meet criteria (53a) (relative gradability), (53b) (maximum-standard absolute gradability), and (53c) (minimum-standard absolute gradability), in each lexical class.

The distributional skews in Table 10 were tested with the mixed-effects logistic regression analysis, using the `glmer` function in R, with the gradability feature as the dependent variable, the predicate class as the fixed effect, and the lexical item as the random effect. For the post-hoc test, multiple comparisons were run with Steel-Dwass’s method. The result indicates, at the $p < .01$ level, (i) that the *i*- and *na*-classes have a stronger tendency to be “(potentially) relative gradable” than the English adjective class, and (ii) the English adjective class has a stronger tendency to be “relative gradable” than the PONN class.³¹ It was also confirmed, at the $p < .01$ level, that (i) each of the three Japanese classes has a weaker tendency to be “(potentially) maximum-standard absolute gradable” than the English adjective class,³² and (ii) the *na*- and PONN classes have a weaker tendency to be “(potentially) minimum-standard absolute gradable” than the English adjective class.³³

Table 10: Interpreted results of Survey #2.

	<i>i</i> -adj.'s (196 items)	<i>na</i> -nouns (194 items)	PONN's (169 items)	Eng. adj.'s (182 items)
rel. gradable	85.71%	75.26%	8.28%	53.85%
max.-std. abs. gradable	22.45%	22.16%	8.88%	41.21%
min.-std. abs. gradable	54.8%	27.32%	2.37%	46.7%

³¹ With respect to relative gradability, $t = 6.77$ for the relation “*i* > Eng. adj.”, $t = 4.34$ for the relation “*na* > Eng. adj.”, and $t = 9.14$ for the relation “Eng. adj. > PONN”.

³² With respect to maximum-standard absolute gradability, $t = 3.92$ for the relation “Eng. adj. > *i*”, $t = 3.97$ for the relation “Eng. adj. > *na*”, and $t = 6.92$ for the relation “Eng. adj. > PONN”.

³³ With respect to minimum-standard absolute gradability, $t = 6.51$ for the relation “Eng. adj. > *na*”, and $t = 9.53$ for the relation “Eng. adj. > PONN”.

These results provide further endorsements to our generalizations as to the scale-structural characteristics of the three Japanese lexical classes.

It is interesting to note that the proportion of “(potentially) minimum-standard absolute gradable” items within the *i*-class exceeds that within the English adjective class (although this difference was not confirmed to be significant at the $p < .01$ level). Considering all the results of Surveys #1 and #2, it seems fair to say that the *i*-class exhibits a fairly strong orientation toward minimum-standard absolute gradability in comparison to the *na*-class and the PONN-class; basic sensation predicates belonging to the *i*-class, such as AMAI ‘sweet’ and ITAI ‘painful’, appear to be a major cause. At the same time, the data at hand do not allow us to ascertain that the *i*-class has a *stronger* tendency to be minimum-standard absolute gradable than the English adjective class. Of potential relevance here is the “distributional” and “functional” interpretations mentioned in Section 3; it is possible, for example, that (for some reason we cannot identify) one or both of them are more easily available with Japanese *wazuka ni* than with English *slightly*.

8 Verbal constructions that express absolute gradable state concepts

Our survey results reveal that the *i*-class, *na*-class, and PONN class, pooled together, have significantly fewer members that favor or allow an absolute construal than the English adjective class. This leads to the expectation that in Japanese, a fair number of absolute state concepts are expressed by some means alternative to the three stative predicate classes.

8.1 Aspectual constructions with *iru* (or *ta*)

It appears that verb forms that involve the nonperfective aspect auxiliary IRU are the most important alternative means of encoding absolute state concepts. The auxiliary IRU has at least three distinct uses, which may be labeled: (i) progressive, (ii) stative, and (iii) experiential (Ogihara 1998). The three uses are exemplified below.

(54) *progressive*

- a. Ken ga {utau/utatta}.
K. NOM sing.PRS/sing.PST
‘Ken {will sing/sang}.’
- b. Ken ga utatte {iru/ita}.
K. NOM sing.GER NPFV.PRS/NPFV.PST
‘Ken {is/was} singing.’

(55) *stative*

- a. Ken ga {taoreru/taoreta}.
K. NOM fall.PRS/fall.PST
‘Ken {will fall/fell}.’
- b. Ken ga taorete {iru/ita}.
K. NOM fall.GER NPFV.PRS/NPFV.PST
‘Ken {is/was} laying on the ground.’

(56) Adapted from Ogihara (1998: 88)

- experiential*
- Taroo wa jukken mo ie o tatete {iru/ita}.
T. TH 10.CL as.many.as house ACC build.GER NPFV.PRS/NPFV.PST
‘Taro {has/had} the experience of having built as many as 10 houses.’

Many verbs are compatible only with one of the progressive and stative interpretations, telicity being a major determining factor.

The aspectual construction with IRU on its state interpretation typically describes the state resulting from a dynamic event, but does not semantically entail the occurrence of a dynamic event. To illustrate, while (57a) necessarily implies the cloth used to be wet, (57b) is compatible with a situation where the cloth has never been wet since it came into existence.

- (57) a. Kono nuno wa **kawaita**.
 this cloth TH dry_{intr}.PST
 ‘This cloth dried.’
- b. Kono nuno wa **kawaite iru**.
 this cloth TH dry_{intr}.GER NPFV.PRS
 ‘This cloth is dry.’

It is interesting to note that a similar observation applies to English deverbal adjectives homophonous with past participles (Deo et al. 2011; 2013). Whereas (58a) in all likelihood makes reference to a potato that has undergone a change of state (which made it more suitable to eat), (58b) clearly does not entail that the thumb and the fingers underwent a process whereby they became shorter or more bent.

- (58) Adapted from Deo et al. (2011: 3)
- a. There is a **baked** potato on the plate.
- b. The left hand has a **shortened** thumb and **bent** fingers, and the arm is abnormal.

The form *V-te iru* on its state interpretation may alternate with *V-ta* in relative clauses without inducing a clear difference in meaning.

- (59) {**Kawaite iru**/ **kawaita**} nuno de fuke!
 dry_{intr}.GER NPFV.PRS dry_{intr}.ta cloth by wipe.IMP
 ‘Wipe (it) with a dry cloth!’

There are a good number of cases where “absolute gradable adjectives” in English translate (though not necessarily exclusively) into verb forms that involve the aspectual marker IRU (or *ta*).

- (60) *maximum-standard*
- dry ⇔ *kawaite iru* (*kawaita*), *kansoo shite iru* (*kansoo shita*)
 full ⇔ *michite iru* (*michita*)
 closed ⇔ *tojite iru* (*tojita*), *shimatte iru* (*shimatta*)
 tense ⇔ *haritsumete iru* (*haritsumeta*)
 sunny ⇔ *harete iru* (*hareta*)
 calm ⇔ *ochitsuite iru* (*ochitsuita*)
 frozen ⇔ *kootte iru* (*kootta*)

- (61) *unbound minimum-standard*
- wet ⇔ *nurete iru* (*nureta*)
 bent ⇔ *magatte iru* (*magatta*)
 slackened ⇔ *tarunde iru* (*tarunda*)
 distant ⇔ *hanarete iru* (*hanareta*)
 cloudy ⇔ *kumotte iru* (*kumotta*)
 tilted ⇔ *katamuite iru* (*katamuita*)
 dirty ⇔ *yogorete iru* (*yogoreta*)

- (62) *bound minimum-standard*
 open ⇔ aite iru (aita), hiraite iru (hiraita)
 transparent ⇔ sukito'otte iru (sukito'otta)

It must be noted that we do not intend to claim here that verb forms with stative IRU tend to encode absolute gradable concepts (although this seems to be a possibility worthy of testing).

It is interesting to observe that many English absolute-gradable adjectives, including CLOSED and BENT, are similar to Japanese verb forms with stative IRU in having the same form as a verbal form with an aspectual exponent.

8.2 Stative verbs

Japanese has a handful of stative verbs whose simple (perfective) forms denote states, rather than events. It appears that there are at most a few (lexically simple) stative verbs that encode absolute gradable states, two of them being ITAMU 'ache' and CHIGAU 'differ'.

- (63) Atama ga wazuka ni **itamu**.
 head NOM slight ADV ache.PRS
 '(My) head aches slightly.'
- (64) Futatsu no e wa wazuka ni **chigau**.
 two.CL GEN picture TH slight ADV differ.PRS
 'The two pictures are slightly different.'

Stative verbs of excessive degree, derived from an adjective or a noun with the suffix *-sugi*, denote a kind of minimum-standard state concept too.

- (65) Wazuka ni **nagasugiru**.
 slight ADV too.long.PRS
 '(It) is slightly too long.'

Furthermore, the combination of the stative, existential/possessive verb ARU and a nominal with abstract meaning sometimes expresses a minimum-standard state concept.³⁴

- (66) Futatsu no e ni wa wazuka ni **chigai ga aru**.
 two.CL GEN picture DAT TH slight ADV difference NOM exist.PRS
 'The two pictures are slightly different.'

It appears, however, that, an analytic construction of this form more commonly receives the relative interpretation, as in (67).

- (67) Ken ni wa {totemo / #wazuka ni} **yuuki ga aru**.
 Ken DAT TH very slight ADV courage NOM exist.PRS
 'Ken is very brave.'

In sum, stative verbs may be used to express absolute state concepts, but they do not appear to be a particularly favored means for it.

³⁴ See Francez and Koontz-Garboden (2017) and references therein for cross-linguistic discussion of the strategy of using possessive/existential constructions, rather than verbs and adjectives, as means to encode state concepts.

9 Conclusion

This article has discussed how three Japanese grammatical classes that encode state concepts—adjectives, *na*-nouns, and *no*-nouns—contrast with, and complement the functional loads of, one another. We suggested that unlike their counterparts in English and many other well-studied languages, the Japanese noun class is not inherently associated with the semantic feature of referentiality. Two kinds of “predication-only” nouns, i.e., *na*-nouns and predication-only *no*-nouns (PONN’s), compensate for the limited productivity/expandability of the language’s adjective class, and further make it possible to morphologically reflect the semantic feature of (non)gradability. It was also pointed out that absolute state concepts are often encoded by verbal constructions with an aspectual marker.

These observations seem to shed some light on our understanding of the noun as a cross-linguistic category. In English and many other languages, nouns are (i) inherently associated with the feature of referentiality (the ability of head a complement NP), and (ii) generally nongradable.³⁵ Japanese can be characterized as a “noun-dominant” language, in the sense that its noun category has more freedom, not adhering to these constraints. Nouns that lack referentiality and are gradable typically belong to the *na*-subclass of nouns. Nouns that lack referentiality and are nongradable, on the other hand, typically belong to the *no*-subclass, along with regular nouns (such as YAMA ‘mountain’). Japanese also has some—though probably not many—nouns that can be used referentially *and* allow grammatical degree modification (when used predicationally), including KANEMOCHI ‘rich person’ and BIJIN ‘beautiful woman’ (Sano 1997; Kato 2003).³⁶

- (68) a. Mari wa totemo **kanemochi** da.
M. TH very rich.person COP.PRS
‘Mari is a very rich person.’
- b. Yumi wa totemo **bijin** da.
Y. TH very beautiful.woman COP.PRS
‘Yumi is a very beautiful woman.’

Such nouns too belong to the *no*-class (e.g., *bijin* {*no*/**na*} *bengoshi* ‘a beautiful lawyer’, *kanemochi* {*no*/**na*} *isha* ‘a rich doctor’). The *na*-subclass, thus, can be seen as associated with (the conjunction of) two marked features, (i) lack of referentiality and (ii) gradability (Table 11).

³⁵ Notice that, while English nouns grammatically resist adverbial degree modification (e.g., **Chris is {very an/a very} athlete*), they contrast with regard to whether (how easily) they may participate in the “such a N” and “(not) much of a N” constructions illustrated in (i) and (ii), arguably reflecting their difference in semantic gradability.

- (i) a. Chris is such a(n) {athlete/jerk}! (≈ ‘Chris is very {athletic/annoying}.’)
b. #Chris is such a tax payer!
- (ii) a. Pat isn’t much of a {philanthropist/beauty}. (≈ ‘Pat is not very {philanthropic/beautiful}.’)
b. #Pat isn’t much of a dorm resident.

This suggests that even for English it may not be correct to say that all nouns are (semantically) nongradable.

³⁶ Interestingly, *no*-predicates with near-synonyms of such nouns do not necessarily allow co-occurrence with a degree adverb. It is not clear to us whether such a contrast stems from the difference in lexical meaning or grammatical property.

- (i) a. Mari wa (??totemo) **shisanka** da.
M. TH very rich.person COP.PRS
‘Mari is a person of property.’
- b. Yumi wa (#totemo) **bijo** da.
Y. TH very beautiful.woman COP.PRS
‘Yumi is a beauty.’

Table 11: The Japanese noun subclasses and their features.

Noun subclass	Further classification	Syntactic & semantic features	Examples
<i>no</i> -noun	potentially referential <i>no</i> -noun, nongradable	[±ref, + <i>no</i>]; [-gradable]	YAMA ‘mountain’, BENGOSHI ‘lawyer’
	potentially referential <i>no</i> -noun, gradable	[±ref, + <i>no</i>]; [+gradable]	KANEMOCHI ‘rich person’, BIJIN ‘beautiful woman’
	predication-only <i>no</i> -noun (PONN)	[-ref, + <i>no</i>]; mostly [-gradable]	HADASHI ‘barefoot’, MURYOO ‘free of charge’
<i>na</i> -noun		[-ref, + <i>na</i>]; mostly [+gradable]	SHIZUKA ‘quiet’, KIREI ‘beautiful’

It will be interesting to inquire what other languages count as noun-dominant in the aforementioned sense, and how their noun class/subclasses contrast with the Japanese *na*-noun and PONN. More generally, the discussion presented in this article can and should be connected to the general cross-linguistic issue of how different kinds of stative predicates—adjectival, nominal, verbal, and more complex, analytic ones (consisting of a telic verb and an aspectual marker, of a possessive verb and a nominal, etc.)—might divide the labor, each associated with a different set of semantic features, such as referentiality, gradability, permanence (Stassen 1997), sentience, and valence.

Abbreviations

ACC = accusative, ADV = adverbializer, ATTR = attributive, AUX = auxiliary, CL = classifier, COP = copula, DAT = dative, DP = discourse particle, GEN = genitive, GER = gerund, IMP = imperative, NOM = nominative, NPFV = nonperfective auxiliary, PRS = present, PST = past, TH = thematic *wa* (topic/ground-marker)

Additional Files

The additional files for this article can be found as follows:

- **Appendix A.** The list of the 200 predication-only *no*-nouns (arranged in the order of frequency). DOI: <https://doi.org/10.5334/gjgl.737.s1>
- **Appendix B.** The instructions presented to the participants of the questionnaire-based surveys. DOI: <https://doi.org/10.5334/gjgl.737.s2>

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Competing Interests

The authors have no competing interests to declare.

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