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Dimensional Adjectives in Nuosu Yi

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Abstract:	In this paper, we discuss two types of dimensional adjectives in Nuosu Yi (Tibeto-Burman), which we refer to as Positive adjectives (PAs) and Equative Adjectives (EAs). We show that PAs and EAs are subject to different distributions in gradation structures: EAs are only admissible in gradation structures that can be associated with measure phrases, which include differential comparatives (e.g., Ayi is 2 cm taller than Aguo.) and degree questions (e.g., How tall is Ayi ?). PAs are licensed elsewhere, including comparatives that do not introduce a differential (e.g., Ayi is taller than Aguo.), the intensification construction (e.g., Ayi is very tall), the superlative construction (e.g., Ayi is the tallest), etc. Assuming that measure phrases are degree-denoting expressions, we propose that the complimentary distribution of PAs and EAs in Nuosu Yi is due to their different semantics.

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Abstract

In this paper, we discuss two types of dimensional adjectives in Nuosu Yi (Tibeto-Burman), which we refer to as Positive adjectives (PAs) and Equative Adjectives (EAs). We show that PAs and EAs are subject to different distributions in gradation structures: EAs are only admissible in gradation structures that can be associated with measure phrases, which include differential comparatives (e.g., *Ayi is 2 cm taller than Aguo.*) and degree questions (e.g., *How tall is Ayi*?). PAs are licensed elsewhere, including comparatives that do not introduce a differential (e.g., *Ayi is taller than Aguo.*), the intensification construction (e.g., *Ayi is very tall*), the superlative construction (e.g., *Ayi is the tallest*), etc. Assuming that measure phrases are degree-denoting expressions, we propose that the complimentary distribution of PAs and EAs in Nuosu Yi is due to their different semantics: PAs are context sensitive predicates that do not introduce a degree argument (of type <e, t>), while EAs are degree predicates (of type <d, <e, t>>).

Key Words   Nuosu Yi, degrees, dimensional adjectives, degree constructions

1. Introduction

In Nuosu Yi (a Tibeto-Burman language spoken in Liangshan Yi Autonomous Prefecture, Sichuan Province, China), adjectives can be classified into (at least) seven semantic categories according to Dixon's (2004: 3-4) criterion.

Table 1. Adjectives in Nuosu Yi

Semantic types	Exemplar Nuosu Yi words	Meaning
DIMENSION	a³⁴ʐ̩³³	big
	ε⁵⁵ts̩³³	small
	a³³ʂo³³	long
AGE	a³³ʂ̩⁵⁵	young
	a⁵⁵mo²¹	old
VALUE	mbo²¹	good
	di³³	bad
COLOUR	a³⁴nɔ³³	black
	a³³tɕhu³³	white
	a³³vu⁵⁵	blue
PHYSICAL PROPERTY	nu³³	soft
	kɔ³³	hard
	bo³⁴ʂo³³	clean
	a³³tsha³³	hot
HUMAN PROPENSITY	kha⁵⁵	happy
	hε³³ma⁵⁵mbo²¹	kind
	o³³bu³³	clever
SPEED	ndʑi³³	fast
	ε³⁴za³³	slow

While all categories of adjectives in this language can be used in a positive structure like (1) and (2), some dimensional adjectives like $a^{34}z\eta^{33}$ 'tall' differ from all the other adjectival categories in that with some morphological change, they can be used to form a special kind of equative construction as shown in (3) and (4). [1, 2]

(1)   Context: Ayi is 6 feet. Compared to the average Nuosu Yi women, she is tall.
    $a^{33}zi^{55}$ li^{33} $a^{34}\,z\eta^{33}$.   Dimensional
    Ayi   TOP   tall.PA
    'Ayi is tall.'

(2) $a^{33}zi^{55}$ li^{33} $o^{33}bu^{33}$.   Non-dimensional
    Ayi   TOP   clever
    'Ayi is clever.'

(3)   Context: Ayi is 6 feet. Aguo is 5 feet 6. Ayi is (at least) as tall as Aguo.
    $a^{33}\,zi^{55}$ $a^{55}\,k\mathupsilon^{33}$ $z\eta^{21}$.   Dimensional
    Ayi   Aguo   as.tall.as
    'Ayi is (at least) as tall as Aguo.'

(4)   *$a^{33}\,zi^{55}$ $a^{55}\,k\mathupsilon^{33}$ $o^{33}bu^{33}$/ bu^{21} Non-dimensional
    Ayi   Aguo   as.clever.as
    'Ayi is (at least) as clever as Aguo.'

Comparing $a^{34}z\eta^{33}$ in (1) with $z\eta^{21}$ in (3), we can see that they differ in the presence-absence of a^{34} and their tones: [34] vs. [21]. To the best of our knowledge, there are only ten such adjectives in Nuosu Yi that can undergo the above morphological change to form an equative construction (see Table 2), all of which fall into the category of dimensional adjectives. Non-dimensional adjectives like $o^{33}bu^{33}$ 'smart' cannot undergo such a morphological change, as shown in (4).[3] Intriguingly, both $a^{34}\,z\eta^{33}$ and $z\eta^{21}$ can be used to form comparatives, as shown in (5).[4] (5a) and (5b) differ in many ways. For example, in (5a) the standard of comparison $a^{55}k\mathupsilon^{33}$ is in an adverbial clause introduced by the adverbializer mu^{33}; in (5b) $z\eta^{21}$ behaves like a transitive verb, directly introducing the standard of comparison.

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[1] Abbreviation used in the paper: ADVL = adverbializer; CL = classifier; COP = Copular; DP = Dynamic Perfect; DET = Determiner; EA = equative adjective; EVID = evidential marker; EXH= Exhaustion Particle; EXP = Experiential; LOG = Logophor; NEG = Negation; NMLZ = nominalizer; PA = positive adjective; RECL = Reciprocal; SFP = Sentence Final Particle; QUO = Quotation; STND = standard marker; TOP = Topic marker.

[2] All the Nuosu Yi examples, unless otherwise specified, were collected in the field trips to Mianning. Although Nuosu Yi comparatives have been described in Hu (2005), Liu et. al (2013), Gerner (2013), and Ding (2018), no detailed theoretical analysis has been attempted.

[3] Although almost all the positive adjectives in Table 2 bear a prefix a^{33}- or a^{34}-, this prefix can also appear in non-dimensional adjectives, for example, $a^{33}\mathrm{s}i^{33}$ 'yellow' and $a^{34}ko^{33}$ 'hard, stiff', $a^{34}li^{33}$ 'old, used', etc.

[4] Ding (2018) reported that with regard to the grammaticality of (25b), there are some dialectal differences within the three dialects of Nuosu Yi: Shynra, Yynuo, and Suondi. According to Ding (2018), Yynuo and Suondi speakers generally do not accept (25b), while Shynra speakers accept both (25a) and (25b). The data we used in this paper are based on the Shynra dialect of Nuosu Yi, spoken in the Mianning county of Liangshan Yi Autonomous Prefecture.

(5) a. a³³ʑi⁵⁵   [a⁵⁵kɔ³³   tɕo³⁴ a²¹tshŋ³³ mu³³]   a³⁴ʑŋ³³.
       Ayi   Aguo   toward exceed ADVL   tall
       'Ayi is taller than Aguo.'

    b. a³³ ʑi⁵⁵   a⁵⁵ kɔ³³   ʑŋ²¹ a²¹ tshŋ³³.
       Ayi   Aguo   tall exceed
       'Ayi is taller than Aguo.'

Table 2. Dimensional PAs and EAs in Nuosu Yi

Positive		Negative		Equative
a³⁴ʑŋ³³	'big, tall'	ɛ⁵⁵tsʅ³³	'small, short'	ʑŋ²¹
a³⁴ɲi³³	'many'	i³⁴ɲi³³	'few'	ɲi²¹
a³³fu³³	'thick' (of long, cylindrical objects)	i³⁴fu³³	'thin'	fu²¹
a³³dʑŋ³³	'wide'	i³⁴dʑŋ³³	'narrow'	dʑŋ²¹
a³³tu³³	'thick' (of flat objects)	i³⁴tu³³	'thin'	tu²¹
a³³fi³³	'wide' (of long objects)	i³⁴fi³³	'narrow'	fi²¹
a³³m̥u³³	'high, deep'	i³⁴m̥u³³	'shallow'	m̥u²¹
a³³xo³³	'thick' (of long, cylindrical objects)	i³⁴xo³³	'narrow'	xo²¹
a³³ʂo³³	'long' (of distance or shapes)	i³⁴ʂo³³	'short'	ʂo²¹
a³⁴lŋ³³	'heavy'	zo³⁴so³³	'light'	lŋ²¹

Although both *a³⁴ ʑŋ³³* and *ʑŋ²¹* can be used to form comparatives, they are subject to different distributions in other degree constructions. Adjectival forms like *ʑŋ²¹* appear in degree constructions that are typically associated with measure phrases, for example, differential comparatives (e.g., *Ayi is 2 cm taller than Aguo*) and degree questions (e.g., *how tall is Ayi?*). Adjectives like *a³⁴ ʑŋ³³*, on the other hand, appear in degree constructions that do not usually involve measure phrases, for example, the intensification construction (e.g., *Ayi is very tall*), the excessive construction (e.g., *Ayi is too tall*), the superlative construction (e.g., *Ayi is the tallest*), and the comparatives that do not allow differential measure phrases.

For purpose of exposition, we refer to dimensional adjectives like *a³⁴ʑŋ³³* 'tall' as Positive adjectives (PAs), and adjectival forms like *ʑŋ²¹* 'tall' as Equative adjectives (EAs). We intend both terminologies to be theoretically neutral, as they merely describe the distribution of *a³⁴ʑŋ³³* 'tall' in the positive construction in (1) and that of *ʑŋ²¹* in the equative construction in (3).

On the assumption that measure phrases are degree-denoting expressions,[5] we propose that the different distributions of PAs and EAs in degree constructions are due to their different semantics. Specifically, PAs are context sensitive predicates that do not introduce a degree argument (of type $<e, t>$), while EAs are degree predicates (of type $<d, <e, t>>$). Our analysis of PAs and EAs is essentially built upon the two major approaches to the semantics of adjectives in the literature: the delineation approach (McConnell-Ginet 1973; Kamp 1975; Klein 1980, 1982; van Rooij 2011, etc.), which relies on the contextual parameter to account for the vagueness and gradability of adjectives, and the degree-based approach which resorts to a new ontological entity, degrees, to explain the semantics of adjectives (Cresswell 1976; von Stechow 1984, etc.).

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[5] Alternatively, on the delineation approach, measure phrases denote equivalence classes of individuals that share the same measurement. For instance, the measure phrase, *6 feet*, denotes a set of individuals that are at least 6 feet tall. This view of measure phrases becomes less intuitive when it comes to analyzing differential measure phrases in comparatives such as *John is 2 inches taller than Mary*.

Our study of PAs and EAs in Nuosu Yi also bears great relevance to the hotly debated Degree Semantic Parameter (DSP) (Beck et al. 2009), as it argues that a language can have both gradable predicates that introduce degree arguments and gradable predicates that do not. If correct, it shows that Nuosu Yi is different from languages like English where gradable adjectives introduce a degree argument as well as languages like Motu (Austronesian, Beck et al. 2009) and Washo (isolate/Hokan, Bochnak 2015) where gradable adjectives do not introduce a degree argument.

(6)   Degree Semantic Parameter (DSP):
        A language {does/does not} have gradable predicates (type <d, <e, t>> and related), i.e., lexical items that introduce degree arguments.

This paper is organized as follows. Section 2 provides a description of the distribution of PAs and EAs in Nuosu Yi: PAs appear in gradable structures that are not usually associated with measure phrases, while EAs do. Section 3 focuses on the two types of comparison constructions of PAs and EAs in (5). We show that they do not demonstrate properties associated with explicit (e.g., *John is taller than Mary*) and implicit comparison (e.g., *compared to Mary, John is tall*), as discussed in Kennedy (2007). In section 4, we argue that the complementary distributions of PAs and EAs is due to their different semantic interpretations: PAs are context-sensitive vague predicates (of type <e, t>), while EAs are degree predicates (of type <d, <e, t>). In section 5, we provide further evidence for the non-degree semantics of PAs by showing that degree modifiers in Nuosu Yi are cross-categorial in nature. We can achieve a unified analysis of them by assuming that they target either the contextual variable of PAs or the event argument of non-gradable predicates. In section 6, we attempt a possible explanation of the relation between PAs and EAs. In section 7, we compare PAs and EAs in Nuosu Yi to gradable adjectives in Navajo (Bogal-Allbritten 2013) and Washo (Bochnak 2015) and conclude the paper.

2. Gradation structures in Nuosu Yi

In this section, we lay out the distributions of PAs and EAs in degree constructions. We show that PAs appear in degree constructions that are not associated with measure phrases, including comparatives that do not allow differential measure phrases, equatives, exclamatives, intensification structures, excessives, and superlatives. EAs appear in degree constructions that are associated with measure phrases, including differential comparatives and degree questions.

2.1 Gradation structures for PAs

Comparatives (with no differentials). The sentence in (7) (repeated from (5a)) exemplifies the basic form of the comparative structure for PAs. It contains a target of comparison $a^{33}zi^{55}$, a standard of comparison $a^{55}k\mathfrak{d}^{33}$, and a PA $a^{34}z\eta^{33}$ that specifies the dimension of comparison.

(7) $a^{33}\textrm{z}i^{55}$ $a^{55}\textrm{k}\mathfrak{d}^{33}$ tɕo^{34} a^{21}tshŋ^{33} mu^{33} a^{34}ʑŋ^{33}.
        Ayi   Aguo toward   exceed   ADVL   tall
        'Ayi is taller than Aguo.'

In (7) the standard of comparison $a^{33}zi^{55}$ is in an adverbial clause marked by mu^{33}. mu^{33} is a general adverbializer that can be used beyond a comparative context. For example, it marks a manner adverbial in (8a) and an adverbial clause in (8b).

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(8) a. a³³ʑi⁵⁵   li³³   [dʐo²¹ dʑi³³   mu³³]   do²¹ hi²¹.
     Ayi   TOP   natural   ADVL   words speak
     'Ayi speaks naturally.'

     b. tshŋ³³   [i³¹kho³³   a³¹ndʐu³³   mu³³]   bi⁵⁵bo³³   o⁴⁴.
     3sg   door   NEG-lock   ADVL   go.out   SFP
     'He left with the door unlocked.'   (Hu 2002: 226)

Inside the adverbial clause in (7), *tɕo³⁴* is a preposition that, when used in a non-comparative sentence, describes the direction of an action, as shown below.

(9) mu³³ka⁵⁵   ŋa⁵⁵   **tɕo²¹** hi²¹   ko³³   i³³   a²¹-la³³   o³⁴   di³⁴.
     Muga   1sg   toward say   TOP   LOG   NEG-come   SFP   QUO
     'Muga_i said to me that he_i would not come.'

The word *a²¹tshŋ³³* 'exceed' is a verb that morphologically consists of a negation prefix *a²¹*- (10), and the morpheme *tshŋ³³* that means 'to stop, to limit' according to Hu (2005). Therefore, *a²¹tshŋ³³* means 'not stop, not limit'. *tshŋ³³* is a bound morpheme that does not appear elsewhere except in *a²¹tshŋ³³*. In this paper, we gloss *a²¹tshŋ³³* as 'to exceed'.

(10)   a³³ ʑi⁵⁵   **a²¹** ndʐa⁵⁵.
       Ayi   NEG-pretty
       'Ayi is not pretty.'

According to our informants, it is possible to leave out the PA *a³⁴ʑŋ³³* 'tall' in (7) if the context is explicit about the dimension of comparison. For instance, if we introduce the context by reporting that Ayi's height is 170 cm and Aguo's height is 160 cm, then we can safely use (11) in such a context to express Ayi exceeds Aguo (in height).

(11)   a³³ʑi⁵⁵   a⁵⁵ko³³   tɕo³⁴   a²¹tshŋ³³.
       Ayi   Aguo   toward   exceed
       'Ayi exceeds Aguo (with respect to some property salient in the context).'

It is important to note that the comparative structure in (7) does not allow any differential measure phrase to describe the difference between the two objects under comparison. Any attempt of adding a differential measure phrase such as *ŋi²¹ko³³vɛ³³* '2 cm' in (7) will render the sentence ungrammatical, as shown in (12). The intended meaning of (11) must be expressed through the comparative structure of EAs (cf. (23)).

(12)   *a³³ʑi⁵⁵   a⁵⁵ ko³³   tɕo³⁴   a²¹tshŋ³³   mu³³   **ŋi²¹ko³³vɛ³³**   a³⁴ ʑŋ³³.
       Ayi   Aguo   towards   exceed   ADVL   2 cm   tall
       Intended: Ayi is 2 cm taller than Ago.

Equatives. The equative construction in Nuosu Yi is exemplified in (13). Unlike the equative construction in English (ex. *Ayi is as tall as Aguo*), the equative in (13) lacks an *at least* reading. (13) is true iff Ayi and Aguo are of the same height. It is false if Ayi is taller than Aguo.

(13)　a³³ ʑi⁵⁵　si³³ ni²¹　a⁵⁵ kɔ³³　dʑɹ³³　su³⁴　　mu³³　　a³⁴ ʐɹ³³.
　　　Ayi　　and　　Aguo　RECL　resemble　ADVL　　tall
　　　'Ayi and Aguo are as tall as each other.'

In (13), *dʑɹ³³* is a reciprocal morpheme, which can be prefixed to any transitive verb to express 'V each other', as shown in (14).

(14)　ŋa²¹　ŋi²¹　dʑɹ³³　　hɛ³³vu³³.
　　　we　　two　RECL　　like
　　　'We two like each other.'

Exclamatives. The exclamative structure in Nuosu Yi is exemplified in (15). It is formed by adding the *WH*-word *khɯ²¹* 'how' and the adverbializer *mu³³* in front of a PA.

(15)　Context: the speaker has never seen Ayi before. On their first encounter, he found Ayi is very pretty.
　　　a³³ ʑi⁵⁵　　khɯ²¹　　　mu³³　　　ndʑa⁵⁵
　　　Ayi　　　how　　　ADVL　　　pretty
　　　a. 'How pretty Ayi is!'　　　(Exclamative)
　　　b. *'How pretty is Ayi?'　　(Degree question)

We found that (15) only receives an exclamative reading 'How pretty Ayi is!', lacking an interrogative reading 'How pretty is Ayi?'. However, if we look beyond the degree context, the *WH*-word *khɯ²¹ mu³³* is indeed a question word when it is used in front of a non-gradable verb, as shown in (16).

(16)　ha³³pi⁵⁵　　tshɹ³⁴ zɛ⁵⁵　　khɯ²¹ mu³³ ɬu⁵⁵?
　　　vegetable　　this CL　　how　ADVL　cook
　　　'How should the vegetables be cooked?'　　　　(Gerner 2013: 173)

Intensification. The intensification structure in Nuosu Yi in (17) is formed by conjoining a gradable PA and its duplicated copy through an infix *-dʑɹ³³-*.

(17)　a³³ ʑi⁵⁵　　a³⁴ ʐɹ³³ -dʑɹ³³- a³⁴ ʐɹ³³
　　　Ayi　　　tall-very-tall
　　　'Ayi is very tall.'

It is worth noting that the infix *-dʑɹ³³-* can also be used to conjoin non-gradable predicates such as a non-gradable verb, *ŋo³³* 'to cry' in (18a), or a non-gradable noun, *khɯ³³* 'dog' in (18b), to form a similar intensification structure like (17).

(18)　a.　a³³ ʑi⁵⁵　　ŋo³³-dʑɹ³³- ŋo³³.
　　　　　Ayi　　　cry-very-cry
　　　　　'Ayi is crying bitterly.'
　　　b.　tshɹ²¹ khɯ³³ a³³dʑɹ³⁴ ma³³　khɯ³³-dʑɹ³³- khɯ³³　ma³³ ŋɯ³³.
　　　　　his　dog　that　CL　dog-very-dog　　CL　COP
　　　　　'His dog is really a good dog.'　　　　(Gerner 2013: 450-451)

Excessives. The excessive construction in Nuosu Yi is exemplified in (19). It is formed through adding the excessive morpheme *kɔ³³* behind a PA.

(19)　a³³ zi⁵⁵　　　a³⁴zɹ³³　kɔ³³.
　　　Ayi　　　　tall　　too
　　　'Ayi is too tall.'

Just like the intensifier-*dzɹ³³*-, *kɔ³³* can also combine with non-gradable predicates to form an excessive construction. For example, *ndo³³* 'to drink' in (20) can be modified by *kɔ³³*.

(20)　tshŋ³³　　　ndʑɹ³³　　　ndo³³　　　　kɔ³³.
　　　he　　　　wine　　　　drink　　　　too
　　　'He drinks too much.'

Superlatives. The superlative structure in Nuosu Yi, exemplified in (21), is formed by adding the exhaustion particle *sa⁵⁵* behind a PA.

(21)　i³³ti³⁴　　　a³³dzɹ³⁴ gu³³　　　phu³³ dzo³³　　　　sa⁵⁵.
　　　clothing　　that　　CL　　　expensive　　　　EXH
　　　'That garment is the most expensive.'

Like the intensifier-*dzɹ³³*- and the excessive morpheme *kɔ³³*, the particle *sa⁵⁵* can also appear with non-gradable verbs such as *huɯ²¹* 'to read' in (22a) and *dʑuɯ³³* 'to eat' in (22b) and gives rise to a universal interpretation (22a) or a completive reading (22b).

(22)　a.　　tsho³³　　hi⁵⁵　zɔ⁵⁵ su³³　dzɹ³³kuɯ³⁴　thuɯ²¹zɹ³³　huɯ²¹　　　sa⁵⁵.
　　　　　　people　　8　　CL-DET　together　　book　　read　　　EXH
　　　　　　'The eight people are all reading books.'
　　　b.　　a³³ zi⁵⁵　　　　sɹ²¹m̥i³³　tshi³³　　　ma³³　　dʑuɯ³³　sa⁵⁵　o³⁴.
　　　　　　Ayi　　　　　nut　　10　　　　CL　　eat　　EXH　SFP
　　　　　　'Ayi completely ate up ten nuts.'　　　　　　　　(Gerner 2007: 52)

2.2 Gradation structures for EAs

Compared with PAs, EAs have a very limited distribution. They only appear in three gradation structures: (i) differential comparatives, (ii) degree questions/exclamatives, and (iii) equatives.

Differential Comparatives. As we have seen earlier, EA *zɹ²¹* can form its own comparative construction distinct from that of PA *a³⁴zɹ³³*, as shown in (23) (repeated from (5b)).

(23)　a³³ zi⁵⁵　　　a⁵⁵ kɔ³³　　　zɹ²¹　　　　　a²¹ tshŋ³³.
　　　Ayi　　　　Aguo　　　as.tall.as.EA　　exceed
　　　'Ayi is taller than Aguo.'

Different from the example (12) which does not allow a differential measure phrase, (23) allows a differential measure phrase to name the difference between the two objects under comparison, as shown in (24).

(24) a³³ zi⁵⁵   ŋi²¹ko³³vɛ³³   a⁵⁵ kɔ³³   zɿ²¹   a²¹ tshŋ³³.
      Ayi   2 cm   Aguo   as.tall.as   exceed
      'Ayi is 2cm taller than Aguo.'

Degree questions (Exclamatives). Moreover, unlike PAs, EAs can form degree questions by adding the *WH*-word *khɯ²¹* 'how' in front of them. (25) is ambiguous between an exclamative reading and an interrogative reading.[6]

(25) a³³ zi⁵⁵   (ko²¹ po³³)   khɯ²¹   zɿ³⁴
      Ayi   body   how   as.tall.as
      a. 'How tall is Ayi?' (Degree question)
      b. 'How tall Ayi is!'   (Exclamative)

According to our informants, the two readings of (25) can be identified by different intonations. With a rising intonation, (25) is interpreted as a degree question, while with a falling intonation, (25) is interpreted as an exclamative.

Equatives (*exactly as Adj. as*). Finally, like any transitive verb (ex. *hɛ³³vu³³* 'to like' in (14)), EA *zɿ²¹* can be prefixed with the reciprocal morpheme *dzɿ³³*. (26) below means that Ayi is exactly as tall as Aguo. The sentence is false if Ayi is taller than Aguo, different from the situation in (3).

(26) a³³ zi⁵⁵   si³³ ni²¹   a⁵⁵ kɔ³³   dzɿ³³   zɿ²¹.
      Ayi   and   Aguo   RECL   as.tall.as
      'Ayi and Aguo are as tall as each other.'

2.3 Summary

Table 3 below summarizes all the gradation structures of PAs and EAs we have seen in this section. An empirical generalization that emerges from the table seems to be that EAs are licensed in gradation structures that are associated with measure phrases—differential comparatives that make use of measure phrases to express the difference between two objects under comparison, and degree questions whose answers are measure phrases.[7] PAs, on the other hand, are licensed elsewhere. If this observation is on the right track, then what underlies such a distribution of adjectives in Nuosu Yi?

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[6] In (25), *zɿ³⁴* undergoes a tonal change from 21 to 34 due to a general tone sandhi rule in Nuosu Yi that says when two 21 tones are adjacent to each other, the second one changes to 34.

[7] We put aside the equative construction of EAs like (26), because it is formed based on the transitive property of EAs.

Table 3. The gradation structures in Nuosu Yi

Construction	PAs	EAs
Comparatives	(7) a^{33}zi^{55} a^{55}kɔ^{33} tɕo^{34} a^{21}tshŋ^{33} mu^{33} a^{34}zŋ^{33}. Ayi Aguo toward exceed ADVL PA 'Ayi is taller than Aguo.'	(23) a^{33} zi^{55} a^{55} kɔ^{33} zŋ^{21} a^{21} tshŋ^{33}. Ayi Aguo EA exceed 'Ayi is taller than Aguo.'
Differential Comparatives	*	(24) a^{33} zi^{55} ŋi^{21}ko^{33}vɛ^{33} a^{55}kɔ^{33} zŋ^{21} a^{21}tshŋ^{33}. Ayi 2 cm Aguo EA exceed 'Ayi is 2cm taller than Aguo.'
Equatives (exactly as…as)	(13) a^{33} zi^{55} si^{33}ni^{21} a^{55} kɔ^{33} dzŋ^{33} su^{34} mu^{3} ndza^{55}. Ayi and Aguo RECL resemble ADVL PA 'Ayi and Aguo are as pretty as each other.'	(26) a^{33} zi^{55} si^{33} ni^{21} a^{55}kɔ^{33} dzŋ^{33} zŋ^{34}. Ayi and Aguo RECL EA 'Ayi and Aguo are as tall as each other.'
Exclamatives	(15) a^{33} zi^{55} khɯ^{21} mu^{33} ndza^{55}! Ayi how ADVL PA 'How pretty Ayi is!'	(25) a^{33} zi^{55} (ko^{21} po^{33}) khɯ^{21} zŋ^{34}! Ayi body how EA 'How tall Ayi is!'
Degree Questions	*	(25) a^{33} zi^{55} (ko^{21} po^{33}) khɯ^{21} zŋ^{34}? Ayi body how EA 'How tall is Ayi?'
Intensification	(17) a^{33} zi^{55} a^{34} zŋ^{33}-dzŋ^{33}- a^{34} zŋ^{33}. Ayi PA-very-PA 'Ayi is very tall.'	*
Excessives	(19) a^{33} zi^{55} a^{34}zŋ^{33} kɔ^{33}. Ayi PA too 'Ayi is too tall.'	*
Superlatives	(21) i^{33}ti^{34} a^{33}dzŋ^{34} gu^{33} phu^{33} dzo^{33} sa^{55}. clothing that CL PA EXH 'That garment is the most expensive.'	*
MPs [8]	*	*

Relatedly, another interesting observation that stems from the description above is that degree morphology in Nuosu Yi seems to be cross-categorial in nature. For instance, the comparative and the equative constructions of PAs are essentially based on the adverbial clause headed by the adverbializer *mu^{33}*, which is compatible with gradable and non-gradable predicates. The same can be said about other degree morphemes such as the exclamative marker *khɯ^{21} mu^{33}*, the intensification marker (*-dzŋ^{33}-*), the excessive marker *kɔ^{33}*, and the superlative marker (*sa^{55}*). Given this observation, it seems reasonable to conclude that the degree morphology in Nuosu Yi is distinct from that in English in that the former targets both gradable and non-gradable predicates.

Before proceeding to our analysis of PAs and EAs, in the next section we take a detour to consider a well-known distinction between two modes of comparison in English: explicit vs. implicit comparison (Kennedy 2007, 2011). We show that the comparative constructions of PAs and EAs in (7) and (23) do not show the contrasts between these two modes of comparison, and cannot be analyzed along the same lines.

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[8] Neither PAs nor EAs in Nuosu Yi can directly combine with measure phrases. However, this is not an idiosyncratic phenomenon. Schwarzschild (2005) points out that there are many languages that do not allow for measure phrases directly combining with an adjective (ex. Spanish and Russian).

3. Two modes of comparison: explicit vs implicit comparison

Kennedy (2007) observes that the comparatives in (27) exemplify two different types of comparison, which he calls explicit and implicit comparison.

(27)   a.   John is taller than Mary.   (Explicit comparison)
         b.   Compared to Mary, John is tall.   (Implicit comparison)

Their distinction can be seen by considering the following four tests: (i) (non-)acceptability in crisp judgment contexts; (ii) (non-)acceptability with minimum standard predicates; and (iii) (non-)acceptability with differential measure phrases, and (iv) negative implicatures to the positive form.

Crisp judgment contexts: Kennedy observes that (28a) and (28b) differ in the acceptability in crisp judgement contexts where John and Mary's heights only differ by a very small amount. In such a context, only (28a) is felicitous.

(28)   Context: John is 171cm; Mary is 170 cm.
        a.   John is taller than Mary.   (Explicit comparison)
        b.   ??Compared to Mary, John is tall   (Implicit comparison)

Adjectives with minimum standards: Kennedy also observes that only comparatives of explicit comparison are compatible with adjectives with an inherent minimum standard (e.g., *bent*).

(29)   Context: There are two fishing rods, A and B. Both of them are bent, but A is more bent than B.
        a.   A is more bent than B   (Explicit comparison)
        b.   ??Compared to B, A is bent.   (Implicit comparison)

The availability of differentials: He also points out that only comparatives of explicit comparison can introduce differentials.

(30)   Context: John is 172cm; Mary is 170 cm.
        a.   John is 2 cm taller than Mary.   (Explicit comparison)
        b.   *Compared to Mary, John is 2 cm tall.   (Implicit comparison)

Negative implicatures to the positive form: Kennedy (2007) showed that implicit comparison like (31b) carries a negative implicature for the subject, that is, John is not really tall. Therefore, in a context where John is indeed tall, (31b) is considered infelicitous.

(31)   Context: John is 6 feet. Mary is 5 feet.
        a.   John is very tall. He is taller than Mary.   (Explicit comparison)
        b.   ??John is very tall. John is tall compared to Mary.   (Implicit comparison)

If we apply the four tests to the comparatives of PAs and EAs in Nuosu Yi (ex. (7) and (23)), we find that except for the test of differentials, they do not show the distinctions described here.

Crisp judgment contexts: Our informants report that both (7) and (23) are felicitous in crisp judgement contexts like (32).

(32) Context: Ayi is 171 cm; Aguo is 170 cm.
   a. a³³ʑi⁵⁵ a⁵⁵kɔ³³   tɕo³⁴ a²¹tshŋ³³ mu³³   a³⁴ʐ̩³³.
       Ayi   Aguo   toward exceed   ADVL   tall.PA
       'Ayi is taller than Aguo.'
   b. a³³ ʑi⁵⁵ a⁵⁵ kɔ³³   ʐ̩²¹   a²¹ tshŋ³³.
       Ayi   Aguo   as.tall.as.EA exceed
       'Ayi is taller than Aguo.'

Adjectives with minimum standards: Because adjectives with minimum standards in Nuosu Yi do not have an EA counterpart, they can only be used in one type of comparative as shown in (33).

(33) Context: There are two fishing rods, A and B. A is more bent than B.
   a. A   B   tɕo³⁴ a²¹tshŋ³³ mu³³   la²¹gu⁵⁵.
       A   B   toward exceed   ADVL   bent.
       'A is more bent than B'
   b. *A   B   la²¹gu⁵⁵   a²¹ tshŋ³³.
        A   B   bent   exceed

The availability of differentials: As we have seen earlier, only the comparative of EAs (ex. (23)) allows for differential measure phrases.

(34) Context: Ayi is 172 cm; Aguo is 170 cm.
   a. *a³³ʑi⁵⁵ ŋi²¹ko³³vɛ³³ a⁵⁵ kɔ³³   tɕo³⁴   a²¹ tshŋ³³ mu³³ a³⁴ ʐ̩³³.
       Ayi   2 cm   Aguo   towards exceed   ADVL tall.PA
   b. a³³ ʑi⁵⁵ ŋi²¹ko³³vɛ³³ a⁵⁵ kɔ³³   ʐ̩²¹   a²¹ tshŋ³³.
       Ayi   2 cm   Aguo   as.tall.as.EA exceed
       'Ayi is 2cm taller than Aguo.'

Negative implicatures to the positive form: Comparatives of EAs and PAs do not carry a negative implicature. In a similar context in (35), both comparatives can be felicitously used.

(35) Context: Ayi is 180 cm; Aguo is 150cm.
   a. a³³ʑi⁵⁵ a³⁴ʐ̩³³-dʐ̩³³-a³⁴ʐ̩³³.   a³³ʑi⁵⁵ a⁵⁵kɔ³³ tɕo³⁴ a²¹tshŋ³³ mu³³ a³⁴ʐ̩³³.
       Ayi   tall-very-tall.PA   Ayi   Aguo   toward exceed   ADVL tall.PA
       'Ayi is very tall. Ayi is taller than Aguo.'
   b. a³³ʑi⁵⁵ a³⁴ʐ̩³³-dʐ̩³³-a³⁴ʐ̩³³.   a³³ ʑi⁵⁵ a⁵⁵ kɔ³³ ʐ̩²¹   a²¹ tshŋ³³.
       Ayi   tall-very-tall   Ayi   Aguo   as.tall.as.EA   exceed
       'Ayi is very tall. Ayi is taller than Aguo.'

Moreover, the two comparatives do not carry a positive implicature either: neither of them implies that the subject carries a positive reading, as shown in (36).

(36) Context: Ayi is 152cm; Aguo is 150cm.

  a. a³³ ʑi⁵⁵ a³⁴-a²¹-ʐʅ³³.   a³³ʑi⁵⁵ a⁵⁵kɔ³³ tɕo³⁴ a²¹tshŋ³³ mu³³ a³⁴ʐʅ³³.
      Ayi NEG-tall   Ayi   Aguo   toward exceed   ADVL tall
      'Ayi is not tall. Ayi is taller than Aguo.'
  b. a³³ ʑi⁵⁵ a³⁴-a²¹-ʐʅ³³.   a³³ ʑi⁵⁵ a⁵⁵ kɔ³³ ʐʅ²¹   a²¹ tshŋ³³.
      Ayi NEG-tall   Ayi   Aguo   as.tall.as.EA exceed
      'Ayi is not tall. Ayi is taller than Aguo.'

We take the above to show that there is no convincing evidence in support of an analysis of the two types of comparatives in Nuosu Yi along the lines of explicit and implicit comparison. In the following section, we propose an analysis that attributes the different distributions of PAs and EAs to the availability of a degree argument in their semantics.

4. Analysis

Our main proposal is that PAs and EAs are semantically distinct: PAs are vague predicates of type <e, t>, and EAs are degree predicates of type <d, <e, t>>.[9] This analysis is built upon two main approaches to the semantics of adjectives in the literature, namely, the delineation approach and the degree-based approach. We briefly review these two approaches (in section 4.1) and we show that analyzing PAs and EAs along these two approaches can provide an explanation for their different distributions in gradation structures.

4.1 The degree-based approach and the delineation approach

There are two competing approaches to the semantics of gradable adjectives, which mainly differ in whether they take degrees as an ontological entity. The degree-based approach, as its name suggests, starts with the assumption that gradable adjectives (e.g., *tall*) are semantically different from non-gradable predicates (e.g., *run*). Gradable adjectives contain a degree argument and denote a relation between individuals and degrees (of type <d, <e, t>>) (Seuren 1973; Cresswell 1976; von Stechow 1984; Heim 2000; a.o.).

(37) a. $[[tall]] = \lambda d\lambda x.$ x is at least tall to d.   <d, et>
      b. $[[run]] = \lambda x.$ x runs.   <e, t>

Within the degree semantics framework, degree morphology functions to quantify over the degree argument of gradable predicates. For example, the comparative like *John is taller than Mary* has the logical form in (38a) where the comparative marker –er quantifies over the degree argument of the adjective *tall* and specifies that there is some degree d to which John is tall but Mary is not, as shown in (38b).

(38) a. The LF of *John is taller than Mary*: [-er than Mary ~~is d₂-tall~~]₁[John is d_1-tall]
      b. $[[John\ is\ taller\ than\ Mary]] = \exists d[tall(d)(John) \land \neg tall(d)(Mary)]$

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[9] In this paper we make use of the following semantic types: type *e* for individuals; type *t* for truth-conditions, type *d* for degrees; type *c* for contexts.

Measure phrases are analyzed as degree expressions: they are either names of degrees (of type *d*) (von Stechow 1984) or degree quantifiers (of type $<<d, t>, t>$) (Schwarzschild 2005). For example, in (39a) the measure phrase *2 cm* is analyzed as a predicate of sets of degrees that span 2 cm on a scale; in (39b) this measure phrase *2 cm* is used as a differential that predicates of the difference between John's height and Mary's height

(39) a. $[[2\ cm]] = \lambda D_{<d,\ t>}\ 2cm(D)$
      b. $[[John\ is\ 2\ cm\ taller\ than\ Mary]] = 2\ cm(\lambda d.[tall(d)(John) \wedge \neg tall(d)(Mary)])$

On the other hand, the delineation approach (McConnell-Ginet 1973; Kamp 1975; Klein 1980, 1982; van Rooij 2011, etc.) assumes that gradable adjectives (e.g., *tall*) have the same semantics as non-gradable predicates (e.g., *run*). They are predicates (of type $<e, t>$).

(40) a. $[[tall]]^c = \lambda x.\ x$ is tall in c $<e, t>$
      b. $[[run]] = \lambda x.\ run(x)$ $<e, t>$

Gradable predicates differ from non-gradable ones in that the domain of the former is inherently ordered (according to some gradable property). A gradable adjective φ in context *c* denotes a function that induces a tripartite structure onto its domain: (i) a positive extension, which contain objects that are φ in *c*; (ii) a negative extension, which contain objects that are not φ in *c*; and (iii) an extension gap, which contain objects that are in the borderline cases (i.e., objects for which it is not clear whether they are φ or not φ), as shown in (41).

(41) a. $[[\varphi(x)]]^c = 1$ iff x is in the positive extension of φ.
      b. $[[\varphi(x)]]^c = 0$ iff x is in the negative extension of φ.
      c. $[[\varphi(x)]]^c$ is undefined if x is in the extension gap of φ.

Depending on context, the extensions can vary. For instance, if we compare John, who is 6 feet tall, to average people, he will be in the positive extension of *tall*, but if we compare him to a NBA basketball player, then John might fall into the negative extension of *tall* (i.e., not tall). The set of individuals that John is compared to is called a *comparison class*, which is supplied by context.

On the delineation approach, degree morphology targets the contextual variable.[10] For example, the comparative *John is taller than Mary* has the semantics in (42), which says there is a context c', with respect to which John counts as tall, but Mary does not. By the Consistency Constraints, which ensures the inherent order on the domain of the adjective is always respected (i.e., if there is a context where John is tall and Mary is not, then there can be no contexts where Mary is tall and John is not), (42) entails that John exceeds Mary in height in all contexts.[11]

(42) $[[John\ is\ taller\ than\ Mary]]^c = \exists c'[[tall]]^{c'}(John) \wedge \neg[[tall]]^{c'}(Mary)$

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[10] In order for the comparative marker to access the context variable, the gradable adjective needs to undergo a type shifting operation from type <e, t> to type <c, <e, t>>.

[11] According to Kennedy (2011:75), the two consistency constraints are:

(a)   For any positive form gradable predicate g and objects in its domain x, y and for any context c, if g(x)(c) is true and g(y)(c) is false, then x exceeds y relative to the scalar concept encoded by g.

(b)   For any positive form gradable predicate g and objects in its domain x, y, if there is a context c such that g(x)(c) is true and g(y)(c) is false, then for any c' such that g(y)(c') is true, g(x)(c') is also true.

Measure phrases on the delineation approach do not denote primitive entities. They are analyzed as predicates of contexts. For example, the differential measure phrase *2 cm* in (43) is a predicate of a set of contexts where John is tall and Mary is not, which is less intuitive than its degree interpretation in (39). [12]

(43) $[[\text{John is } 2\ cm \text{ taller than Mary}]]^c = 2\ cm(\lambda c'[[tall]](c')(\text{John}) \wedge \neg[[tall]](c')(\text{Mary}))$

In this paper, we follow the degree-based approach in assuming that measure phrases are degree expressions, which are only licensed in gradation structures whose semantics are degree-based. With this assumption in mind, we can now turn to our first question: why can EAs, but not PAs, occur in gradation structures with measure phrases (i.e., differential comparatives and degree questions)?

4.2 The semantics of PAs and EAs

We propose that EAs have a degree-based semantics but PAs do not. Their semantics are provided in (44a) and (44b), parallel to (37a) and (40a).

(44)   a. $[[z\jmath^{21}]] = \lambda d\lambda x.\ x$ is (at least) tall to d.   [EA]
           b. $[[a^{34}z\jmath^{33}]]^c = \lambda x.\ x$ counts as tall in c   [PA]
                  $= \lambda x.\ tall_c(x)$

In (44), both the EA and the PA are gradable adjectives. Their semantics differ in the presence-absence of the degree argument. Such a difference constituents the source of their distributions in the gradation structures. That is, assuming that measure phrases are degree expressions, it is predicted that they are only compatible with gradation structures that have a degree semantics.

Let's first look at the semantics of the comparative of the PA $a^{34}z\jmath^{33}$ in (45a) (repeated from (7)). Given the semantics of the adjective in (44b), the comparative has the semantics in (45b), parallel to (42).

(45)   a. $a^{33}z i^{55}$ $a^{55}k\mathfrak{I}^{33}$ $t\varepsilon o^{34}$ $a^{21}tsh\eta^{33}$ mu^{33} $a^{34}z\jmath^{33}$.
                  Ayi   Aguo   toward   exceed   ADVL   tall
                  'Ayi is taller than Aguo.'
           b. $[[(45a)]] = \exists c'[[tall]]^{c'}(\text{Ayi}) \wedge \neg[[tall]]^{c'}(\text{Aguo})$

To derive the semantics of (45b) compositionally, we assume that $a^{21}tsh\eta^{33}$ 'exceed' is a comparative marker that has the semantics in (46). It takes three arguments: (i) an individual argument denoted by the standard of comparison; (ii) a relation between contexts and individuals; and (iii) an individual argument denoted by the subject.

(46) $[[exceed]]^c = \lambda y_e\lambda P_{<c, <e, t>>}\lambda x_e.\exists c'[P(c')(x) \wedge \neg P(c')(y)]$

Because $a^{21}tsh\eta^{33}$ in (46) binds the context variable of the adjective, we assume that there is a type shifting rule that shifts the type of the adjective from $<e, t>$ to $<c, <e, t>>$ (47).

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[12] See von Stechow (1984) for detailed criticism along these lines.

(47)　　Context-Accessing Functional Application
　　　　If a branching node α has as its daughters β and γ, and $[[\beta]]^c$ is of type $<c,…>$ and $[[\gamma]]^c$
　　　　is of type $<…>$, then $[[\alpha]]^c = [[\beta]]^c(\lambda c'.[[\gamma]]^c)$　　　　　　　　(Morzycki 2016)

On the assumption that preposition $t\varepsilon o^{34}$ 'toward' and adverbializer mu^{33} are both semantically vacuous, the compositional semantics of (45a) can be stated as follows:

(48)　　$[[Ayi\ Aguo\ toward\ exceed\ ADVL\ tall]]^c = [[exceed]]^c([[Aguo]]^c)(\lambda c'.[[a^{34}z\mathfrak{l}^{33}]]^{c'})([[Ayi]]^c)$
　　　　　　　　　　　　　　　　　$= \exists c'[tall_{c'}(Ayi) \wedge \neg tall_{c'}(Aguo)]$

　　　The comparative of the EA has a very similar semantics as that of (45). The only difference lies in that the comparative marker in (49) quantifiers over the degree argument of the EA.

(49)　　a.　　$a^{33}\ zi^{55}$　　　　$a^{55}\ k\mathfrak{o}^{33}$　　　　$z\mathfrak{l}^{21}$　　　　$a^{21}\ tsh\mathfrak{l}^{33}$.
　　　　　　　Ayi　　　　　　　Aguo　　　　　as.tall.as　　exceed
　　　　　　　'Ayi is taller than Aguo.'
　　　　b.　　$[[(49a)]] = \exists d[tall(d)(Ayi) \wedge \neg tall(d)(Aguo)]$

In order to derive the semantics in (49b), it is also necessary for $a^{21}tsh\mathfrak{l}^{33}$ 'exceed' to take a degree semantics like in (50),

(50)　　$[[exceed]]^c = \lambda P_{<d,\ <e,\ t>}\lambda y_e\lambda x_e.\exists d[P(d)(x) \wedge \neg P(d)(y)]$

　　　Given that measure phrases are predicates of sets of degrees (Schwarzschild 2005), it follows straightforwardly that differential measure phrases are only acceptable in comparatives that have a degree-based semantics, as shown in (51).

(51)　　a.　　$a^{33}\ zi^{55}$　　$\eta i^{21}ko^{33}v\varepsilon^{33}$　　　　$a^{55}\ k\mathfrak{o}^{33}$　　　　$z\mathfrak{l}^{21}$　　　　$a^{21}\ tsh\mathfrak{l}^{33}$.
　　　　　　　Ayi　　　2 cm　　　　　　　Aguo　　　　　as.tall.as　　exceed
　　　　　　　'Ayi is 2cm taller than Aguo.'
　　　　b.　　$[[(51a)]] = 2cm(\lambda d[tall(d)(Ayi) \wedge \neg tall(d)(Aguo)])$

　　　With the different semantics of PAs and EAs, we can also provide an explanation for why the exclamative of PAs does not allow for a question reading, as shown in the following example (repeated from (15) and (25)).

(52)　　a.　　$a^{33}\ zi^{55}$　　　　khw^{21}　　　　mu^{33}　　　　ndz$\mathfrak{a}^{55}$.　　　[PA]
　　　　　　　Ayi　　　　　　　how　　　　　ADVL　　　　pretty
　　　　　　　*'How pretty is Ayi?'　　　(*Degree question)
　　　　　　　'How pretty Ayi is!'　　　(Exclamative)
　　　　b.　　$a^{33}\ zi^{55}$　　　　(ko^{21} po^{33})　　khw^{21}　　　　z$\mathfrak{l}^{34}$.　　　[EA]
　　　　　　　Ayi　　　　　　　body　　　　　how　　　　　as.tall.as
　　　　　　　(i) 'How tall is Ayi?'　(Degree question)
　　　　　　　(ii) 'How tall Ayi is!' (Exclamative)

The degree question '*how tall is Ayi?*' denotes the set of degrees to which Ayi is tall, i.e., the set of all fragment answers to this question such as 5 feet 4 inches, 5 feet 3 inches, 5 feet 2 inches, etc. (Zhang and Ling 2021). Assuming that measure phrases are degree denoting expressions, it then follows that only EAs with degree semantics can be used to form a degree question. The semantic representation of the degree question in (52) is as follows.

(53) $[[(52b)]] = \lambda d.\ height(Ayi)(d)$

On the other hand, both (52a) and (52b) can be interpreted as exclamatives, as their semantics do not rely on degree denoting measure phrases. Here we adopt Rett's (2011) view that exclamatives express a violation of the speaker's expectation. This analysis can be cast in the degree-based framework or a non-degree based one, as shown below.

(54)   The degree-based approach:
         a. [[*How tall Ayi is!*]] = Ayi is tall to d, which violates the speaker's expectation.
         The inherent-based approach:
         b. [[*How tall Ayi is!*]]^c = Ayi is tall in c, which violates the speaker's expectation.

(54a) says that Ayi is tall to some degree *d*, which exceeds the speaker's expectation, while (54b) says that Ayi counts tall in context *c*, which violates the speaker's expectation.
     To summarize, in this section we propose different semantics for PAs and EAs, and we argue that this semantic distinction essentially underlies the different distributions of PAs and EAs in the gradation structures in Nuosu Yi. Given that PAs do not have a degree argument, the various modifiers that modifies PAs do not target the degree argument, and they are predicted to be able to modify non-gradable predicates that share the same semantics of PAs (i.e., both are of type <e, t>). As we have seen in section 2, this prediction is borne out. In the following section, we briefly explain how the semantics of the modifiers of PAs come about when it combines with gradable and non-gradable predicates.

5. Modifiers of PAs

The modifiers of PAs can be divided into two types. The first type is marked by the adverbializer *mu³³*, including the adverbial [*Y tɕo³⁴ a²¹tshɤ³³ mu³³*] in the comparative, *dʑɿ³³ su³⁴ mu³³* in the equative construction, and the exclamative marker *khɯ²¹ mu³³*; the second type includes the intensification marker *-dʑɿ³³-*, the excessive marker *kɔ³³*, and the superlative marker *sa⁵⁵*.

mu³³-adverbials *mu³³*-adverbials can appear in front of PAs and non-gradable verbs, as shown in (55) (repeated from 7 and 8a).

(55)   a.   a³³ʑi⁵⁵   [a⁵⁵kɔ³³   tɕo³⁴   a²¹tshɤ³³   mu³³]   a³⁴ʐɿ³³.
            Ayi   Aguo   toward   exceed   ADVL   tall.PA
            'Ayi is taller than Aguo.'
       b.   a³³ʑi⁵⁵   li³³   [dʐo²¹ dʑi³³   mu³³] do²¹   hi²¹.
            Ayi   TOP   natural   ADVL words   speak
            'Ayi speaks naturally.'

Given our analysis of the comparative in section 4.2, we propose that when a mu^{33}-adverbial precedes a PA, it quantifies over the contextual variable of the gradable adjective as in (56a); when it precedes a non-gradable verb, it modifies the event argument of the verb, as in (56b).

(56) a. $[[Aguo\ toward\ exceed\ ADVL]]^c = \lambda P_{<e,\ <c,\ t>>}\lambda x_e \exists c'[tall(c')(x) \wedge \neg tall(c')\ (Aguo)]$
      b. $[[natural\ ADVL]] = \lambda P_{<e,\ <v,\ t>>}\lambda x_e \lambda e_v[P(x)(e) \wedge natural(e)]$

The superlative marker the superlative construction uses the particle sa^{55}. This particle can combine with either PA $phu^{33}\ dzo^{33}$ 'expensive' in (57) (repeated from (21)) or non-gradable verbs like hu^{21} 'to read' or dzu^{33} 'to eat' in (58) (repeated from (22)). When sa^{55} combines with a PA, the sentence receives a superlative interpretation. When it combines with a non-gradable verb, the sentence receives a universal interpretation (58b) or a completive interpretation (58c).

(57) i³³ti³⁴   a³³dzʅ³⁴   gu³³   a³⁴ zʅ³³   sa⁵⁵
      clothing   that   CL   big   EXH
      'That garment is the biggest.'

(58) a.   tsho³³   hi⁵⁵   zɔ⁵⁵   su³³   dzʅ³³kɯ³⁴   thɯ²¹zʅ³³   hɯ²¹   sa⁵⁵.
            people   8   CL-DET   together   book   read   EXH
            'The eight people are all reading books.'   (Gerner 2013:13)
      b.   a³³ zi⁵⁵   sʅ²¹m̥i³³ tshi³³   ma³³   dzɯ³³   sa⁵⁵   o³⁴.
            Ayi   nut   10   CL   eat   EXH   SFP
            'Ayi completely ate up ten nuts.   (Gerner 2007:52)

Gerner (2007) attempts to provide a unified semantics for sa^{55} in all these contexts. He argues that it is a universal quantifier of objects, events and contexts.[13] In (58a), sa^{55} quantifies over objects. It denotes a proper subset relation between two sets of objects denoted by the NP (i.e., *the eight people*) and the VP (i.e., *read books*). On this analysis, (58a) is interpreted in a similar way to the English sentence *all the eight people are reading books*. In (58b), sa^{55} quantifies over events. It denotes a proper subset relation between the set of events of eating ten nuts and the set of events whose agent is Ayi. Hence (58b) means: every event of eating ten nuts is an event done by Ayi, thus yielding the completive interpretation. When sa^{55} combines with the gradable adjective in (57), it quantifies over comparison classes.[14] It indicates that the garment under discussion counts as expensive with respect to any comparison class, hence yielding the superlative reading.

The intensification marker. Like the exhaustion particle sa^{55}, the intensification infix $-dzʅ^{33}-$ can modify PAs, as shown in (59) (repeated from 17), non-gradable verbs and nouns as shown in (60) (repeated from 18).

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[13] Gerner (2007)'s analysis is more complicated than being presented here. He also discusses different domain types of objects, events and states, which is not directly relevant to our discussion here.

[14] Gerner (2007) opts for a non-degree-based analysis of the adjective in Nuosu Yi, as he argues: from the perspective of this paper, the degree approach is also unattractive, because there is no obvious way to define the reference type of states in relation to the position or range of degrees they have on a scale of degrees (Gerner 2007:42).

(59) a³³ zi⁵⁵ a³⁴ ʐ̩³³ -dʑ̩³³- a³⁴ ʐ̩³³.
      Ayi   tall-very-tall
      'Ayi is very tall.'

(60) a. a³³ zi⁵⁵   ŋo³³-dʑ̩³³- ŋo³³.
          Ayi   cry-very-cry
          'Ayi is crying bitterly.'   (Gerner 2013: 450)
      b. tshη²¹ khɯ³³ a³³dʑ̩³⁴ ma³³   khɯ³³-dʑ̩³³- khɯ³³   ma³³ ŋɯ³³.
          his   dog   this   CL   dog-very-dog   CL   COP
          'His dog is really a good dog.'   (Gerner 2013: 450)

Beltrama and Bochnak (2015) observed similar intensifiers in Italian and Washo—*issimo* and
šèmu, both of which, like the infix *-dʑ̩³³-* in Nuosu Yi, are cross-categorial, being able to modify
gradable and non-gradable predicates alike. Beltrama and Bochnak (2015: 861) propose that *issimo*
and *šèmu* universally quantify over the contextual variable of gradable and non-gradable predicates.
For gradable adjectives, the relevant contextual variable is the comparison class, and for non-
gradable predicates, the relevant variable is the amount of "pragmatic slack" allowed by the
context (Lasersohn 1999). They propose that the two intensifiers have the semantics in (61).

(61) $[[mod]]^{w, g, c} = \lambda P_c \lambda x \forall c'[c'R\ c \rightarrow P(x)\ in\ c']$

In (61) P_c can be either a gradable or non-gradable predicate. R is a relation that holds between c
and c' such that c' is just like c except for the values they assign to the relevant contextual variable
that affects the interpretation of P_c. Beltrama and Bochnak's (2015) analysis can be easily extended
to the intensification marker *-dʑ̩³³-* in Nuosu Yi. In a similar vein, (59) means: Ayi counts as tall
not only in the current utterance context but also in contexts where a higher standard is introduced
(e.g., basketball players). (60a) says: Ayi is considered as crying even under the most stringent
context for what crying is. (60b) says: his dog is considered a dog even under the most stringent
context for what a dog is.

The excessive marker the excessive construction in Nuosu Yi is marked by *kɔ³³*, which modifies
PAs and non-gradable verbs, as shown in (62) (repeated from 19) and (63) (repeated from 20).

(62) a³³ zi⁵⁵   a³⁴ʐ̩³³ kɔ³³.
      Ayi   tall   too
      'Ayi is too tall.'

(63) tshη³³ ndʑ̩³³ ndo³³ kɔ³³.
      he   wine   drink too
      'He drinks too much.'

We can model the meaning of *kɔ³³* after that of *too* in English with an adaptation to contexts and
events. Let us consider the meaning of *too* first. According to the standard degree-based analysis
(von Stechow 1984; Heim 2000; Meier 2003), *too* is a degree expression that compares the actual
degree with a modalized one. For instance, the sentence '*Ayi is too tall*' describes a comparison
between the degree to which Ayi is tall with the degree to which Ayi would have been tall if she

had met the requirement (e.g., in order to join a gymnastic team, Ayi has to be under 5 feet 4. However, Ayi is 5 feet 6).

We propose that ko^{33} in (62) denotes a proper subset relation between two sets of contexts (comparison classes), i.e., the set of contexts relative to which Ayi counts as tall and the set of contexts relative to which Ayi would count as tall had she met the relevant requirement. That is, for any two objects A and B, if A is taller than B, that means there are more contexts relative to which A is tall than those relative to which B is tall. When ko^{33} modifies a non-gradable verb like ndo^{33} 'drink' in (63), ko^{33} denotes a proper subset relation between two sets of events, i.e., the set of drinking events that has been done in the actual world and the set of drinking events that would have been done had the relevant requirement been met (e.g., the requirement is for everyone to drink no more than one bottle; but the person under discussion drank 3 bottles).

To summarize, in this section we briefly looked at the semantics of the modifiers of PAs in Nuosu Yi. We showed that, unlike English degree modifiers which target the degree argument of gradable adjectives, the modifiers of PAs quantifiers over either the contextual variable of gradable adjectives or the event argument of non-gradable predicates.

6. A decompositional analysis of PAs and EAs

So far we have not talked about the semantic relation between PAs and EAs. Their morphological similarity hints at a possible semantic connection between them. In this section, we attempt a decompositional analysis that spells out the possible semantic connection between PAs and EAs.

Kennedy (1997) argues for an alternative degree-based semantics for gradable adjectives, in which gradable adjectives do not introduce a degree argument, but denote a measure function from individuals to degrees, as shown in (64).

(64)   a. $[[tall]] = \lambda d\lambda x.$ x is at least tall to d.   <d, et>
       b. $[[tall]] = \lambda x.$ x's height   <e, d>

Given the semantics in (64b), gradable adjectives must combine with some degree morphology to become a predicate of individuals. Take the sentence *Ayi is tall* for example. It is assumed that there is null degree morpheme POS, which composes with the rest of the sentence and yields the truth-condition in (65b)—Ayi is at least as tall as some contextually supplied standard d_c.

(65)   LF of *Ayi is tall*: Ayi is POS tall.
       a. $[[POS]]^c = \lambda P_{<e, d>}\lambda x.$ P(x) $\geq d_c$
       b. $[[Ayi\ POS\ tall]]^c = $ Ayi'height $\geq d_c$

PAs and EAs share the same root. One possibility would be that this root denotes a measure function like the one in (64b). It has to either combine with the prefix a^{33}- (or a^{34}-) to become a PA, or adopt an invariant [21] tone to become an EA. In the former case, the prefix is semantically parallel to POS in (65a), whose function is to specify that the value of x exceeds some contextually supplied variable d_s, as shown in (66).

(66)   **PA**: $[[a^{34}z\eta^{33}]]^c = \lambda x.$ x's height $\geq d_c$

$[[a^{34}]]^c = \lambda P_{<e, d>}\lambda x.$ P(x) $\geq d_c$ $[[z\eta^{33}]] = \lambda x.$ x's height

The [21] tone in EAs is semantically parallel to MEAS in Svenonius and Kennedy (2006). MEAS introduces a degree argument for adjectives by turning them from a measure function into a relation, as shown in (67).

(67)   **EA**: $[[ʐ̩^{33→21}]] = \lambda d \lambda x.\ tall(x) \geq d$

$[[ʐ̩^{33}]] = \lambda x.\ x\text{'s height}$ $[[\sigma^{t→21}]] = \lambda P_{<e,\ d>}\lambda d \lambda x.\ P(x) \geq d$

Svenonius and Kennedy (2006) observe that dimensional adjectives in Northern Norwegian demonstrate some peculiar behavior that non-dimensional adjectives do not have: they can combine with measure phrases and form a particular type of degree question. Svenonius and Kennedy (2006) attribute this phenomenon to the presence of MEAS, a null degree head that lexically selects for dimensional adjectives and introduces a degree argument. Grano and Kennedy (2012) argue that MEAS can also be used to explain a type of comparative construction in Mandarin, i.e., transitive differential comparatives, which is only available to dimensional adjectives. Assuming the presence of MEAS, we suggest that it is phonetically realized as an invariant tone in EAs in Nuosu Yi.

7. Cross-linguistic comparison and conclusion

In this paper, we have provided a description of syntactic distributions of two forms of dimensional adjectives in Nuosu Yi, PAs and EAs. We attributed their distinct distributions to their different semantics: PAs are context-sensitive vague predicates that do not introduce a degree argument, whereas EAs are degree predicates.

Recently, there has been growing literature on the cross-linguistic variation of the syntax and semantics of adjectives. Bochnak (2015) has convincingly shown that in Washo, an indigenous American language, all gradable adjectives lack the degree argument, so no dedicated degree morphology can be found in this language to bind the degree argument of adjectives. For instance, the comparative construction in this language has the form of conjoined comparison. There is no overt comparative morphology present in this structure.

(68) t'é:liwhu   delkáykayiʔ   k'éʔi
        t'e:liwhu   de-Pil-kaykay-iʔ   k'-eʔ-I
        man   NMLZ-ATTR-tall-ATTR   3-COP-IPFV
        daʔmóʔmoʔ   delkáykayiʔé:s   k'áʔaš
        daʔmoʔmoʔ   de-ʔil-kaykay-iʔ-e:s   k'-eʔ-aʔ-š
        woman   NMLZ-ATTR-tall-ATTR-NEG   3-COP-AOR-SR
        'The man is taller than the woman.'
        literally: 'The man is tall, the woman is not tall.'

Moreover, the comparative structure in Washo patterns with implicit comparison in English (ex. Compared to Mary, John is tall) in the four tests discussed in section 3. PAs in Nuosu Yi are parallel to adjectives in Washo in not introducing a degree argument, yet the comparative structure of PAs does not pattern with implicit comparison (section 3). There arises the question of whether

degree-less adjectives necessarily imply the implicit mode of comparison? Our study of PAs in Nuosu Yi suggests a negative answer to this question.

Bogal-Allbritten (2008, 2010, 2013) worked on another indigenous American language, Navajo, and observed that gradable adjectives in this language can bear two different aspect markers—an absolute aspect (AA) and a comparative aspect (CA). Depending on which aspect marker is in use, different structures are used. For AA-marked adjectives, degree modifiers must appear in a subordinate clause introduced by the subordinator =*go*, glossed as SUB in (69a). For CA-marked adjectives, degree modifiers must directly proceed the adjective without the subordinator = *go*, as shown in (69b) and (69c).

(69)   a.   shimá   [shí = gi 'át'ée = go]   nizhóní   (Absolute Aspect)
              my.mother   me = at 3SUBJ.be = SUB   3SUBJ.pretty$_{AA}$
              'My mother is as pretty as I am.'

       b.   shimá   [shí = gi]   'ániłnééz   (Comparative Aspect)
              my.mother   me = at   3SUBJ.tall$_{CA}$
              'My mother is as tall as I am.'

       c.   *shimá   [shí = gi 'át'ée = go]   'ániłnééz   (Comparative Aspect)
              my.mother   me = at 3SUBJ.be = SUB   3SUBJ.tall$_{CA}$

In Nuosu Yi, degree constructions of PAs and those of EAs also differ in whether they require an adverbializer *mu³³*. However, PAs and EAs differ from AA-marked and CA-marked adjectives in Navajo in that the latter do not have different distributions in gradation structures, i.e., both can be used to form all types of degree constructions but in a syntactically different way. This fact motivates Bogal-Allbritten (2013) to propose that AA-marked and CA-marked adjectives both introduce a degree argument in their semantics (of type <d, <e, t>>), but only CA-marked adjectives can introduce a degree argument in syntax. PAs and EAs in Nuosu Yi cannot be analyzed similarly as CA-marked and AA-marked adjectives in Navajo, because PAs and EAs do differ in distribution.

Nuosu Yi is not the only language whose dimensional adjectives can have two different forms. It is reported that in some neighboring languages such as Weixi Lisu (Li 2015) and Lalo Yi (Bu 2021), some dimensional adjectives need to take different forms in different types of equative constructions, as shown in the Lalo Yi example (70).

(70)   a.   a³³ zi³³   a⁵⁵mu¹³   a³¹ ɕy³¹   ʔmu⁵⁵   mu³¹.
             Ayi   Amu   STND   tall   EVID
             'Ayi is as tall as Amu.'   (Bu 2021: 122)

       b.   a³³ zi³³   a⁵⁵mu¹¹³   ʔmu³³-sɿ³¹   dzu⁵⁵   mu³¹.
             Ayi   Amu   as.tall.as-NMLZ   have   EVID
             'Ayi is as tall as Amu.'   (Bu 2021: 130)

The adjective *ʔmu⁵⁵* can be used in the equative construction with the standard marker *a³¹ɕy³¹*, and the adjective *ʔmu³³* can be used in the equative construction with the nominalizer *sɿ³¹*. Bu (2021) observes that there are nine such adjectives in Lalo Yi, all of which fall into the category of dimensional adjectives. It is still curious why dimensional adjectives have these morphosyntactic variations that non-dimensional adjectives cannot have. We will leave this question to future study.

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