

Dimension-denoting classifiers in Taiwanese compound adjectives

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Abstract This paper analyzes Taiwanese A-CL sequences as compound adjectives by treating the classifier inside such sequences as a dimension provider and the adjective as involving an ordering function. Combined with the assumption that classifiers occurring as the CL of A-CL compound adjectives should be divided into single-dimension denoting and multi-dimension denoting elements, the analysis provides a rationale for why the adjectives permitted in A-CL compound adjectives have the interesting and otherwise perplexing property of being so limited in number.

Keywords Adjectives · Classifiers · Taiwanese A-CL sequences · Compound adjectives · Dimension providers · Ordering functions · Single-dimension denoting classifiers · Multi-dimension denoting classifiers

Abbreviations

| | |
|-----|--|
| A | Adjective; |
| CL | Classifier; |
| DE | Marker for modifying phrases like genitive phrases, relative clauses, and noun complement clauses in Mandarin Chinese; |
| E | Marker for modifying phrases in Taiwanese; |
| KA | Disposal or extent marker; |
| NS | Nominal suffix <i>-a</i> ; |
| SFP | Sentence final particle |

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1 Introduction

Empirically, this paper starts with investigating a contrast between languages such as Mandarin Chinese and English on the one hand, and Taiwanese on the other. While adjectives such as *da* ‘big’ and *xiao* ‘small’ cannot measure certain nouns in the former type of languages, those adjectives can measure the same nouns with the support of classifiers in Taiwanese, as the contrast below illustrates. (The symbol ? in *so?* ‘rope’ represents the glottal stop).

- (1) a. *Zhe-tiao shengzi hen da/xiao. (Mandarin Chinese)
 This-CL rope very big/small
 ‘*This rope is very big/small.’
- b. *This rope is very big/small. (English)
- (2) a. *Tsit-tiao so?-a tsin tua/se. (Taiwanese)
 This-CL rope-NS very big/small
 ‘*This rope is very big/small.’
- b. Tsit-tiao so?-a tsin tua/se-tiao. (Taiwanese)
 This-CL rope-NS very big-/small-CL
 ‘This rope is very thick/thin.’

Furthermore, as the contrast between (3a) and (3b) indicates, the counterparts with the presence of classifiers are also judged to be more natural when the adjectives *tua* ‘big’ and *se* ‘small’ measure other nouns that can also be measured by the same adjectives in other languages.¹

- (3) a. ??Tsit-king tshu tsin tua. (Taiwanese)
 This-CL house very big
 ‘This house is very big.’
- b. Tsit-king tshu tsn tua-king. (Taiwanese)
 This-CL house very big-CL
 ‘This house is very big.’

In addition, the number of adjectives that can occur as the adjective component of the adjective-classifier (henceforth A-CL) sequence is highly limited. Aside from *tua* ‘big’ and *se* ‘small’, only four other adjectives (i.e., *tshim* ‘deep’, *tshen* ‘shallow’, *ing* ‘long’ and *khua* ‘wide’) can occur as the A of the A-CL sequence, as shown by (4a–d), respectively.

¹ As one anonymous reviewer points out, example (3a) might be acceptable for those over fifty years of age, especially when the degree adverb *tsin* ‘very’ is read in a high falling tone. I have consulted 13 informants (five of whom are over seventy, two in their fifties, four in their forties, and the other two younger than forty), and they all agree that (3a), with the degree adverb *tsin* ‘very’ being read in a high falling tone, is acceptable when the speaker is astonished at the huge size of the house (i.e., in a context where the dimension can be pragmatically specified). However, when used in an abstract context, (3a) is not as natural and is even considered ungrammatical for most of them.

- (4) a. Tsit-king tshu kha tua-/se-king.
This-CL house more big-/small-CL
'This house is bigger/smaller in the size.'
- b. Tsit-king tshu kha tshim-/tshen-king.
This-CL house more deep-/shallow-CL
'The depth of this house is greater/less.'
- c. Tsit-king tshu kha tng-king.
This-CL house more long-CL
'The length of this house is greater.'
- d. Tsit-king tshu kha khua-king.
This-CL house more wide-CL
'The width of this house is greater.'

The main themes that I will advocate include: (A) I take the Taiwanese A-CL sequence as a compound adjective with the A component as head by treating the CL as a dimension provider and the A as an ordering function.² (B) Classifiers that can occur as the CL of the A-CL compound adjective can be divided into the single-dimension denoting and the multi-dimension denoting one, depending on the number of the salient physical features they carry.

The structure of this paper is as follows. In Sect. 2, I shall discuss the morphological, syntactic, and semantic characteristics of the Taiwanese A-CL compound adjective, with special attention to the types of classifiers that can occur as the CL of the A-CL compound adjective. In Sect. 3, I then treat the CL of the A-CL compound adjective as a (single-/multi-)dimension denoting classifier while the A is an ordering function. Section 4 will be devoted to the empirical and theoretical consequences of the study. Finally, Sect. 5 concludes.

2 The syntactic, morphological and semantic properties of the A-CL string

This section begins with a detailed study on the morphological, semantic, and syntactic properties of the Taiwanese A-CL string, and ends by clarifying the questions raised by this kind of sequence. First, according to Chao (1968, pp. 361–362) and Li and Thompson (1981, p. 46), in Mandarin Chinese and Chinese dialects like Taiwanese, polysyllabic units are considered compounds if they have one of the following characteristics: (A) (At least) one of the components is a bound morpheme other than an affix, (B) they have certain properties of a single word (e.g.,

² According to Cresswell (1977), Hellan (1981) and Pinkal (1983), an adjectival scale has three crucial parameters: (A) a set of degrees, which represent measure values, (B) a dimension, which indicates the kind of measurement (e.g., volume or height), and (C) an ordering relation. For example, the adjective *tall* denotes a relation between individuals and degrees, which is represented by a denotation like (i), where $\mathbf{tall}(x)$ represents the degree value of x 's height (e.g., d'), and d represents the contextually dependent standard degree of human height.

(i) $[[\mathbf{tall}]] = \lambda d \lambda x. \mathbf{tall}(x) \geq d$

The symbol \geq here denotes an ordering function that orders d' and d toward the upper end of the scale (i.e., dimension) of height provided by the adjective *tall*.

kai-guan ‘open-close’ with the meaning of ‘switch’), and (C) they are not expandable in structure. As (5a–c) illustrate, the Taiwanese A-CL sequence displays all of these three features:

- (5) a. Tsit-tiao so?-a tsin tua-tiao.
This-CL rope-NS very big-CL
‘This rope is very thick.’
- b. *Tsit-tiao so?-a tsin tua-e tiao.
This-CL rope-NS very big-E CL
- c. *Tsit-tiao so?-a tsin tua lng-tiao.
This-some rope-NS very big two-CL

As (5a) indicates, the A-CL sequence *tua-tiao* ‘big-CL’ not only contains a non-affix-like bound morpheme *tiao* ‘CL’ (i.e., the classifier) but also conveys the meaning of a single word (i.e., ‘thick’). Additionally, this kind of sequence, as shown in (5b, c), is not expandable in structure. For these reasons, I analyze the Taiwanese A-CL sequence as a compound word.

Second, in addition to occurring in attributive positions when optionally accompanied by the modifying marker *e*, the Taiwanese A-CL compound word also occurs in predicate positions (cf. 7a, b), and in such instances clearly shows the syntactic patterning of adjectives in Chinese. For example, an adjective in Chinese must be modified by a degree word and, in predicate position, cannot be followed by a complement NP. (7a, b) and (8) illustrate this (cf. Zhu 1982, p. 55).

- (6) a. Hit-liap tua-liap (e) lingko u tiN bo? (attributive)
That-CL big-CL E apple have sweet not
‘Is that big apple sweet?’
- b. Tua-thang (e) iu kha kui. (attributive)
Big-barrel E oil more expensive
‘The big barrel of oil is more expensive.’
- (7) a. Tsit-liap lingko *(tsin) tua-liap.
This-CL apple very big-CL
‘This apple is very big.’
- b. Tsit-thang tsui *(kha) tua-thang.
This-barrel water more big-barrel
‘This water in this barrel is more.’
- (8) Tsit-liap lingko tsin tua-liap (*lingko).
This-CL apple very big-CL apple

Moreover, like the simple form of Mandarin Chinese adjectives (i.e., neither being modified by a degree adverb nor being in the reduplicated form), the simple form of Taiwanese A-CL compound words can only occur in the following kinds of environments: contrastive focus constructions, (*bol/beh* ‘not/not’) negation sentences,

and sentences ending with the sentence final particle like *o*, as shown by (9a–c), respectively.

- (9) a. Tsit-liap lingko tua-liap, hit-liap se-liap.
This-CL apple big-CL that-CL small-CL
'This apple is big, but that one is small.'
- b. Tsit-liap lingko bo tua-liap/beh se-liap.
This-CL apple not big-CL/not small-CL
'This apple is not big/not small.'
- c. Tsit-liap lingko tua-liap o!
This-CL apple big-CL SFP
'This apple is big!'

Further language-/dialect-specific evidence in support of the assumption that the Taiwanese A-CL compound belongs to the category of adjectives comes from the fact that the A-CL compound behaves the same as the typical Taiwanese adjective in that they both can occur as a predicate by having the word *u* 'have' precede them.³

- (10) a. Tsit-le tsapo gin-a u sui.
This-CL female child-NS have beautiful
'This girl is beautiful.'
- b. Tsit-liap lingko u tua-liap.
This-CL apple have big-CL
'This apple is big.'

Thus, I suggest that the Taiwanese A-CL compound is an adjective that always expresses a state concerning some stative physical property of the noun phrase predicated or modified by it (cf. Cheng et al. 1989, p. 9). In addition, the adjectival status of A-CL compounds further excludes the possibility of analyzing the CL of A-CL compounds as a derivational morpheme because the compound is categorically an adjective rather than a classifier.

Third, as Cheng (1981, p. 100) points out, the 'adjective' of the Taiwanese A-CL compound adjective can undergo reduplication to form an XXY reduplicated form, as (11a, b), taken from Cheng (1981, p. 100), illustrates (cf. Cheng 1997, p. 317).⁴

³ This argument should be understood as follows. A word can be identified as an adjective in Taiwanese if it simultaneously has the following three properties. First, it cannot take a genuine object. Second, when occurring as predicate, it has to be modified by a degree adverb. Third, it can occur as predicate by having the word *u* 'have' precede it if it is not modified by a degree adverb.

⁴ Such a reduplicated pattern for an A-CL compound adjective is also found in Cantonese and Hakka, as Sze-Wing Tang and Ding-Xu Shi pointed out to me.

- (11) a. Yi be tsit-king se-se-king e tshu.
 He buy one-CL small-small-CL E house
 'He bought a fairly tiny house.'
- b. Yi be tsit-king tua-tua-king e piet-tsong.
 He buy one-CL big-big-CL E villa
 'He bought a rather big villa.'

Fourth, although it has sometimes been assumed that only the adjectives *tua* 'big' and *se* 'small' can appear as the A in Taiwanese A-CL compounds, this is actually not correct.⁵ In fact, adjectives like *tshim* 'deep', *tshen* 'shallow', *khua* 'wide', and *tng* 'long' may also form an A-CL compound adjective with an appropriate classifier, as examples (12)–(14) illustrate.⁶

- (12) a. Tsit-king tshu kha tua-/se-king.
 This-CL house more big-/small-CL
 'This house is bigger/smaller in the size.'
- b. Tsit-king tshu kha tshim-/tshen-king.
 This-CL house more deep-/shallow-CL
 'The depth of this house is greater/less.'
- c. Tsit-king tshu kha tng-king.
 This-CL house more long-CL
 'The length of this house is greater.'
- d. Tsit-king tshu kha khua-king.
 This-CL house more wide-CL
 'The width of this house is greater.'

⁵ The actual meaning of the word *se* in Taiwanese is 'thin in the diameter' rather than 'small'. The word with the meaning of 'small' in Taiwanese is *siao*, which pragmatically conveys a derogatory connotation nowadays, for instance *siao gin* 'buzzard'. Therefore, native speakers always use the word *se* 'thin in the diameter', which belongs to the same semantic field as the word *siao* 'small', as the substitute to express the meaning of 'small'.

⁶ As Cheng (1981; 1989, p. 9) argue, classifiers in Taiwanese can also be modified by adjectives like *tse* 'many' and *tsio* 'few'. However, based on the contrast between (i)–(ii) and (iii), I would like to argue that these two 'adjectives' are not adjectives because they are more similar to numerals than adjectives such as *tualse* 'big/small' in usage.

- (i) Yi be kha tse/tsio liap (e) lingko.
 S/He buy more many/few CL E apple
 'S/He bought more/less apples.'
- (ii) Yi be san liap (e) lingko.
 He buy three CL E apple
 'He bought three apples.'
- (iii) Yi be kha tua/se liap *(e) lingko.
 S/He buy more big/small CL E apple
 'The apples that s/he bought are bigger/smaller.'

Chao (1968, p. 581) also argues that *tse* 'many' and *tsio* 'few' should be classified as quantitative determinatives rather than 'pure' adjectives.

- (13) a. Tsit-liao tiba kha tua-/se-liao.
 This-chunk pork more big-/small-chunk
 ‘This chunk of pork is bigger/smaller.’
 b. Tsit-liao tiba kha tng-liao.
 This-chunk pork more long-chunk
 ‘The length of this chunk of pork is greater/less.’
- (14) a. Tsit-tsua (tshu-a) kha tua-/se-tsua.
 This-row tree-NS more big-/small-row
 ‘This row has more/less trees.’
 b. Tsit-tsua (tshu-a) kha tng-tsua.
 This-row tree-NS more long-row
 ‘The length of this row of trees is greater/less.’

More interestingly, as illustrated in (12a–d)–(14a, b), the classifiers that can form an A-CL compound adjective with adjectives other than *tua* ‘big’ and *se* ‘small’ are so limited in number that only *king* ‘CL’, *liao* ‘chunk’, and *tsua* ‘row’ are allowed. Among these three classifiers, the classifier *king* ‘CL’ can occur with the adjective *tua* ‘big’, *se* ‘small’, *tshim* ‘deep’, *tshen* ‘shallow’, *khua* ‘wide’, and *tng* ‘long’, while the classifiers *tsua* ‘row’ and *liao* ‘chunk’ occur with the adjective *tua* ‘big’, *se* ‘small’ and *tng* ‘long’ to form an A-CL compound adjective. The fact that only six adjectives can occur as the A of A-CL compound adjectives implies that the CL of A-CL compound adjectives should not be analyzed as an agreement marker. An agreement marker, being a type of inflectional morpheme, typically has the freedom to combine with (potentially) all bases of the appropriate category.

Fifth, it has been noted that among the eight types of classifiers categorized by Yang (1991, pp. 203–210), only those carrying some salient physical feature (e.g., shape, size, length, volume, . . . , etc.) that either (A) makes the nouns with which they occur present themselves in a discrete or countable unit (e.g., ‘individual classifiers’), or (B) is itself measurable, can occur as the CL of the A-CL compound adjective (e.g., container classifiers, group classifiers, and measures for verbs of action).⁷ In addition, the salient (physical) feature involved must be associated with a certain semantic range.

Belonging to the former type (A), individual classifiers, as Chao (1968, p. 585) suggests, always occur with individual nouns that refer to entities presenting themselves naturally in discrete and countable units due to their shape or some salient physical feature relating to configuration (cf. Yang 1991, pp. 187, 203–205). For example, the individual noun *so?* ‘rope’, which selects the classifier *tiao* ‘chunk’, looks like a slim but long object with a salient physical feature relating to the thickness in diameter.

⁷ This study of 109 Taiwanese classifiers proposes the following sub-categories: individual classifiers, container classifiers, group classifiers, measures for action verbs, standard classifiers, partitive classifiers, classification classifiers, and temporary classifiers (cf. Chao 1968, pp. 584–620).

- (15) a. Tsit-tiao so?-a kha tua-tiao.
This-CL rope-NS more big-CL
'This rope is thicker.'
- b. Tsit-liap lingko kha tua-liap.
This-CL apple more big-CL
'This apple is bigger.'
- c. Tsit-pun tshe kha tua-pun.
This-CL book more big-CL
'This book is thicker.'
- d. Tsit-ki kun-a kha tua-ki.
This-CL stick-NS more big-CL
'This stick is bigger.'

According to Tai and Wang (1990) and Croft (1994), individual classifiers like *liap* 'pellet, grain, granule, or particle', *pun* 'volume', and *ki* 'stick' do not create units to help count the item denoted by individual nouns, but simply name them (cf. Peyraube 1998; Cheng and Sybesma 1999). Pushing such a view further, I suggest that there exists an abstract agreement relation between an individual classifier and the individual noun with which it occurs. Through this abstract agreement relation, the individual classifier 'inherits' from the individual noun the salient physical feature that makes the individual noun present itself naturally in a discrete or countable unit.^{8,9}

⁸ The individual classifier *ui*, a classifier used for counting the number of people, is the polite or honorific form and is seldom used in colloquial speech. This might be the factor that causes the individual classifier *ui* not to appear in the A-CL compound adjective, as the ungrammaticality of (i) shows.

- (i) *Tsit-*ui* langkhe? kha tua-*ui*.
This-CL visitor more big-CL

⁹ By providing a contrast like that between (i) and (ii), one anonymous reviewer points out that the abstract noun *taitsi* 'affair', as in *tsit-tiao taitsi* 'this-CL affair', can take the compound adjective *tua-tiao* 'big-CL' as a predicate while the abstract noun *seNbiaN* 'life', as in *tsit-tiao seNbiaN* 'this-CL life', cannot.

- (i) Taitsi tua-tiao a!
Affair big-CL SFP
'Big trouble now!'
- (ii) *SeNbiaN tsin tua-tiao.
Life very big-CL

This contrast in grammaticality indeed results from the native speaker's understanding of the abstract noun *taitsi* 'affair' that is further based on how people usually describe the content of an affair. People may 'concretely' describe an affair using a sequence of words. Because verbal descriptions of affairs may differ in length, it is not unreasonable to suggest that *taitsi* 'affair' carries the measurable salient physical feature of length. In addition, metaphorically, a lengthy description of an affair always implies that the affair is not only important but also potentially is cause for much concern. So, (i) is acceptable to native speakers with this metaphorical meaning. However, the abstract noun *seNbiaN* 'life' cannot be described in the same way; therefore, (ii) is unacceptable.

However, in contrast with individual classifiers just discussed, nouns with which the generalized individual classifier *e* or *hang* occurs can regularly be concrete or abstract ones. Furthermore, no salient physical feature shared by all the nouns with which the generalized individual classifier *e* and *hang* can occur is found.¹⁰

- (16) a. tsit-le lang
 one-CL person
 ‘one person’
 b. tsit-le bunte
 one-CL question
 ‘one question’
- (17) a. tsit-hang biNkiaN
 one-CL thing
 ‘an object (a concrete object)’
 b. tsit-hang taitsi
 this-CL affair
 ‘this affair’

In other words, a classifier that can occur as the CL of A-CL compound adjectives requires all the nouns with which it can occur to belong to some specific category with some salient physical feature. For these reasons, it can be suggested that it is impossible for the generalized individual classifier *e* and *hang* to ‘inherit’ through the agreement relation any salient physical feature uniformly shared by the range of nouns with which they can occur. Thus, these two generalized individual classifiers, as expected, cannot occur as the CL of A-CL compound adjectives.¹¹

- (18) a. *Tsit-le haksiN kha tua-e.
 This-CL student more big-CL
 b. *Tsit-hang biNkiaN kha tua-hang.
 This-CL thing more big-CL

At this point, the ungrammaticality of (18a, b) immediately raises the question as to why the individual classifier of the A-CL compound adjective has to be the one

¹⁰ According to Tung (1957), the alternation between *e* and *le* shown by the generalized classifier *e* results from the fact that in Taiwanese (and also in other varieties of Chinese) a syllable of a vowel-initial suffix always obtains an onset from the coda of the preceding syllable.

¹¹ One anonymous reviewer provides examples like (i) and suggests that the generalized individual classifier *e* may in fact be used as the CL component.

- (i) Tsit-le angku tsin tua-e.
 This-CL red-turtle-cake very big-CL
 ‘This red-turtle cake is very big.’

However, only two out of the 13 informants I have consulted accept (i) as being marginal at best. Consequently, I will leave it open as to whether example (i) is acceptable or not.

carrying some measurable salient physical feature (e.g., shape) shared by all the nouns with which the classifier can associate.

The type of classifiers that can occur as the CL of A-CL compound adjectives includes container classifiers, group classifiers, and measures for verbs of action. Container classifiers, as Tai and Wang (1990) and Croft (1994) suggest, are container-denoting nouns used as classifiers to create units of measurement for counting masses of material or liquids (e.g., water, liquor, or soup) that do not have a built-in semantic partitioning (cf. Peyraube 1998; Cheng and Sybesma 1998). A container classifier has a measurable salient physical feature of its own, and is therefore able to occur as the CL of an A-CL compound adjective. For instance, the container *ko* 'kettle', as in (19a), has the appearance of a metal or plastic container with a lid, a handle, and a spout, and the container classifier *te* 'bag' also has a perceptible physical feature¹²:

- (19) a. Tsit-ko kun tsui kha tua-ko.
 This-kettle boiling water more big-kettle
 'The boiling water in this kettle is greater in volume.'
- b. Tsit-te tshik-a kha tua-te.
 This-bag unhusked-rice-NS more big-bag
 'The unhusked rice in this bag is greater in amount.'

Likewise, group classifiers with an inherent lexical meaning also create a contour (or shape) that can be regarded as a 'measure unit' by placing together or connecting in a particular way the objects denoted by the noun that occurs with them. For example, the group classifier *tin* 'cluster, flock, group, horde, or school' can be considered a 'measure unit' denoted by a group of people or animals of the same kind which live and feed together. Consequently, it can occur as the CL of an A-CL compound adjective.¹³

¹² Container classifiers can also associate with individual nouns that have a natural partitioning as part of their semantics. Consequently, the noun phrase predicated or modified by an A-CL compound adjective in which the CL is a container classifier may contain an individual noun like *piaN* 'cake', as illustrated in (i).

- (i) Tsit-ap piaN kha tua-ap.
 This-box cake more big-box
 'The cake in this box is greater in size.'

¹³ Among the eighteen group classifiers collected by Yang (1991, pp. 207–208), only *tui* 'couple' and *taN* 'dozen' are not allowed in the A-CL compound adjective, as the ungrammaticality of (i)–(ii) shows.

- (i) *Tsit-tui uaniuN kha tua-tui.
 This-couple Chinese-duck more big-couple
- (ii) *Tsit-taN ianpit kha tua-taN.
 This-dozen pencil more big-dozen

The ungrammaticality of (i) in fact results from the division of labor between the group classifier *siang* 'pair' and *tui* 'couple' in semantics. The group classifier *siang* 'pair', which creates a contour (or shape) of two similar objects that are connected and used together, not only denotes the number 'two' but also 'carries' the physical feature (i.e., being the shape of two similar objects connected and used together) that makes the nouns occurring with it present themselves in a discrete or countable unit. In contrast, the 'group' classifier *tui* 'couple' simply signals the number of entities connected as two. Hence, the

- (20) a. Tsit-tin gin-a kha tua-tin.
This-crowd child-NS more big-array
'The children of this crowd are more.'
- b. Tsit-khun tsha kha tua-khun.
This-bundle timber more big-bundle
'The timbers of this bundle are more.'

As Chao (1968, p. 615) suggests, a measure for action verbs expresses the number of times an action takes place, and is always used together with a numeral to measure the 'quantity' of the quantity argument of a dynamic predicate, for instance a calling event or a walking event, as shown by (21a, b), respectively (cf. Doetjes 1997).

- (21) a. Ong-e kio lng siaN.
Ong-E call two sound
'Ong called twice.'
- b. Ong-e kiang saN po.
Ong-E walk three step
'Ong walked three steps.'

The measures for action verbs that can occur as the CL of an A-CL compound adjective (e.g., *siaN* 'sound', *po* 'step', *tshui* 'mouth', *khang* 'delve', *khi?* 'chip', *tsiam* 'stitch', and *e* 'spank') are all endowed with a full lexical meaning (i.e., some measurable salient physical feature with a semantic range). For example, the

Footnote 13 continued

group classifier *tui* 'couple' can be considered as a standard classifier which is without a semantic range; therefore, it cannot occur as the CL of an A-CL compound adjective. However, as (iii) shows, the group classifier *tui* 'couple' can form an A-CL compound adjective with the adjective *tua* 'big'.

- (iii) Tsit-tui hiNkau kha tua-tui.
This-pair earrings more big-pair
'This pair of earrings is bigger.'

This seems to be a challenge to the claim I just made. However, I would like to argue that example (iii) is only an apparent counterexample to my claim and indeed provides further supporting evidence for the proposal of this paper. As a pair of earrings is composed of two identical objects that are used together, this salient physical feature (i.e., shape) makes *tsit-tui hiNkau* 'one-pair earrings' similar to *tsit-siang e* 'a-pair shoe' in that combinations are comprised of two identical objects that are used together. This contrasts with the pairing of two Chinese ducks, as in (iv), where it is not necessary that the two ducks are identical, and they are not felt to be connected together in the same way as pairs of earrings and shoes:

- (iv) Hia u tsit-tui uaniuN.
There have one-couple Chinese-duck
'There is a pair of Chinese ducks.'

Because of this difference between pairs of earrings and pairs of ducks, the group classifier *tui* 'pair' in (iv) simply functions as a standard classifier in expressing an accepted instance of a quantity (i.e., the quantity of two), and the attempt to use *tui* in an A-CL compound adjective form is ungrammatical, as shown in (i). Likewise, the group classifier *taN* 'dozen', denoting an accepted or approved instance of a quantity (i.e., the quantity of twelve), functions like a standard classifier that is not endowed with a gradable semantic range. Consequently, the group classifier *taN* 'dozen', as in (ii), cannot occur as the CL of an A-CL compound adjective.

measure *siaN* ‘sound’ has the lexical meaning of physical properties of sound, such as pitch, loudness, and timbre. Consequently, these measures for verbs of action, as expected, can occur as the CL of an A-CL compound adjective.

- (22) a. Yi kio tsit siaN kha tua-siaN.
S/He shout this sound more big-sound
‘This shout by her/him is louder.’
b. Yi tsit-po kha tua-po.
S/He this-step more big-step
‘This step by him/her is longer.’

However, in contrast with classifiers carrying some salient physical feature with a semantic range (e.g., shape, size, length, volume, . . . , etc.), the following types of element cannot occur as the CL of an A-CL compound adjective, as illustrated in (23–26):

- (a) standard classifiers that, being conventionalized as a gauge to measure the quantity or the quality denoted by the noun with which they occur, are without any semantic range within which variable amounts or qualities are included,
(b) partitive and classification classifiers that can occur with either abstract or concrete nouns, and
(c) ‘temporary’ classifiers, which, as Chao (1968, p. 603) argues, should not be considered genuine classifiers.¹⁴
- (23) a. *Tsit-tshio? po kha tua-tshio? (standard classifier)
This-meter cloth more big-meter
b. *Tsit-kin biNhun kha tua-kin. (standard classifier)
This-kilogram flour more big-kilogram
- (24) a. *Tsit-tiam-a tsui kha tua-tiam. (partitive classifier)
This-a-little water more big-some
b. *Tsit-sut-a tsui kha tua-sut. (partitive classifier)
This-a-little water more big-a-little
- (25) a. *Tsit-tsiung hongsik kha tua-tsiung. (classification classifier)
This-kind way more big-kind
b. *Tsit-khuan lingko kha tua-khuan. (classification classifier)
This-kind apple more big-kind
- (26) a. *Tsit-pakto tsui kha tua-pakto. (temporary classifier)
This-belly water more big-belly
b. *Tsit-thokha tsui kha tua-thokha. (temporary classifier)
This-ground water more big-ground

¹⁴ Temporary classifiers are nouns used to provide a rather special measure of some mass or material in instances where a more standardized container classifier such as ‘bottle’, ‘jug’, or ‘box’ is not used, for example *yi pakto tsui* ‘a bellyful of water’. Such temporary classifiers can only occur with the numeral *yi* ‘one’, which gets interpreted as ‘whole’, and so pattern differently from more regularized classifiers.

Finally, it can be noted that the Taiwanese A-CL compound adjective is a gradable adjective whose scale may in principle be totally open or closed, in the sense of Kennedy and McNally (2005). When it is an adjective with a totally closed scale structure, it cannot be modified by a proportional degree adverb like *phuaN* ‘half’, hence (27) is unacceptable:

- (27) **Si-ge?* *phuaN* *tua-ge?*.
 Four month half big month

In such an instance, none of the four temporal-length denoting degree values contained in the scale (or dimension) denoted by the standard classifier *ge?* ‘month’ (28, 29, 30, and 31 days) can be the mean value, hence *phuaN* ‘half’ may not be applied to such an A-CL. In other instances, due to the nature of the classifier in A-CL compounds, the A-CL compound patterns like an adjective with a genuinely open scale (e.g., 2b and 3b).

The patterning of A-CL compounds described thus far now raises the following questions, which any study of the morphological, syntactic, and semantic characteristics of such compounds needs to address:

- (a) What kind of function does the CL play in A-CL compound adjectives?
- (b) What kind of function does the A play in A-CL compound adjectives?
- (c) What makes the range of adjectives that can occur as the A of the A-CL compound adjective so limited?
- (d) How can the selection restriction between the A and the CL of the A-CL compound adjective be explained?

3 The proposal

I will begin the formal analysis of A-CL compound adjectives by treating the CL in such sequences as a dimension provider and the A inside as an ordering function, and then point out that classifiers that can occur as the CL of A-CL compound adjectives can be further divided into single-dimension denoting and multi-dimension denoting classifiers, depending on the number of salient physical features they carry.

3.1 The dimension-denoting classifiers

As pointed out in Sect. 2, the classifier in Taiwanese A-CL compound adjectives, being neither a derivational morpheme nor an agreement marker, must carry some salient physical feature with a semantic range. The salient physical property carried by the classifier either comes from its own semantic content or results from an abstract agreement relation between the classifier and the noun with which it occurs.

Behind these empirical facts is the question of why the ‘classifier’ of A-CL compound adjectives must carry some salient physical property (A) that makes the noun with which it occurs present itself in a discrete or countable unit (e.g., individual classifiers) or (B) that is itself measurable (e.g., container classifiers). In the following, I shall argue that examples in (28) provide an important clue to the answer of this question.

- (28) a. *Zhe-tiao shengzi hen da/xiao.
 This-CL rope very big/small
 ‘*This rope is big/small.’
- b. *yi-tiao da/xiao de shengzi
 one-CL big/small DE rope
 ‘*a big/small rope’

According to Cresswell (1977), Hellan (1981), and Pinkal (1983), a gradable adjective can predicate or modify a noun phrase only if it can provide a dimension (i.e., measurement) by which the relevant property of the noun phrase can be measured. For example, in (28a, b) the adjective *da* ‘big’ and *xiao* ‘small’ fail to provide a dimension compatible with the gradable property of the noun phrase *zhe-tiao shengzi* ‘this-CL rope’; therefore, (28a, b) are ungrammatical. More significantly, the ungrammaticality of (28a, b), compared with the grammaticality of (29a, b), provides a clue as to why (29a, b) are grammatical. Namely, the occurrence of the classifier *tiao* ‘a classifier for rope’ in the A-CL compound adjective *tua/se-tiao* ‘big-/small-CL’ makes the Taiwanese compound adjective *tua/se-tiao* ‘big-/small-CL’ an adjective with a dimension compatible with the relevant measurable property of the noun phrase *tsit-tiao so?-a* ‘this-CL rope-NS’.

- (29) a. Tsit-tiao so?-a tsin tua/se-tiao.
 This-CL rope-NS very big-/small-CL
 ‘This rope is thick/thin in the diameter.’
- b. tsit-tiao tua/se-tiao e so?-a
 one-CL big-/small-CL E rope-NS
 ‘a rope with a thick/thin diameter’

The function that the classifier *tiao* ‘a classifier for rope’ plays here leads us to suggest that the classifier *tiao* ‘a classifier for rope’ provides a dimension by which the noun phrase *tsit-tiao so?-a* ‘this-CL rope-NS’ is measured. To put it more concretely, the classifier *tiao* ‘a classifier for rope’ inherits the salient physical feature (i.e., the thickness of diameter) through its agreement with the individual noun that denotes a long and slim entity. And this salient physical feature is provided as the dimension by which the noun phrase *tsit-tiao so?-a* ‘this-CL rope-NS’ is measured. The way that the classifier *tiao* ‘a classifier for rope’ functions here further reminds us of the dimensional parameter of the scale structure of gradable adjectives (e.g., height or weight).

As Cresswell (1977), Hellan (1981), and Pinkal (1983) suggest, an adjectival scale has three crucial parameters, each of which must be specified in the lexical entry of any particular gradable adjective: (A) a set of degrees, which represent measure values, (B) a dimension, which indicates the kind of measurement (e.g., volume or height), and (C) an ordering relation. For instance, the adjective *tall* denotes a relation between individuals and degrees, which is represented by a denotation like (30), where **tall**(*x*) represents the degree value of *x*'s height (e.g., *d'*), and *d* represents the contextually dependent standard degree of human height (cf. von Stechow 1984; Kennedy and McNally 2005).

$$(30) \quad [[\text{tall}]] = \lambda d \lambda x. \mathbf{tall}(x) \geq d$$

The symbol \geq here denotes an ordering function that orders *d'* and *d* toward the upper end of the scale (i.e., dimension) of height provided by the adjective *tall*.

Having this as a preliminary, I suggest that the classifier *tiao* 'a classifier for rope' in the A-CL compound adjective *tua-/se-tiao* 'big-/small-CL' simply functions to provide the dimension (i.e., scale) of thickness of diameter by which the relevant property of the noun phrase is measured (i.e., the thickness of *tsit-tiao so?-a* 'this-CL rope-NS').

However, one natural question immediately arises if one treats the CL of the A-CL compound adjective as a dimension provider: What function does the A of the A-CL compound adjective perform? I will argue that examples (29a, b) provide another important clue to solving this problem. As the meanings of *tua-tiao* 'big-CL' and that of *se-tiao* 'small-CL' show, the A-CL compound adjective *tua-tiao* 'big-CL' (i.e., thick in diameter) and *se-tiao* 'small-CL' (i.e., thin in diameter) form an antonymous pair just as the adjective *tall* and *short* do. Given this, I suggest that the adjective *tua* 'big' in the A-CL compound adjective *tua-tiao* 'big-CL' denotes an ordering function that places the sets of points (i.e., degree values) on the upper end of the scale (i.e., dimension) provided by the classifier, while the adjective *se* 'small' in the A-CL compound adjective *se-tiao* 'small-CL' denotes an ordering function that places the set of points on the lower end of the same scale. That is, the adjectives *tua* 'big' and *se* 'small' in the A-CL compound adjective, probably being the most neutral adjectives that are not marked with a dimension, simply introduce the opposite ordering relations. Or, as discussed in Rullmann (1995), the compound adjective *tua-tiao* 'big-CL' and *se-tiao* 'small-CL' have the same domains but different ranges, and map identical arguments onto complementary regions of the same scale.

Assuming this, I analyze the Taiwanese A-CL sequence as a compound adjective with a morphological structure [_A [A]-[CL]] in which the head A functions as an ordering function and the CL as a dimension provider. Because the relatedness between the meaning of a Chinese compound and those of its components can vary from 'close' to 'nonexistent', I suggest that the head A of the Taiwanese A-CL compound adjective inherits the salient physical property of the CL (cf. Chao 1968, pp. 361–362; Li and Thompson 1981, p. 46). Thus, the 'agreement' relation between an NP in subject position and an A-CL compound adjective in predicate position (such as in 29, 31, etc.) results in the hierarchically highest dimension provider

contained in the subject being able to ‘see’ the salient physical feature carried by the A-CL compound.¹⁵

With the same reasoning, I suggest that a container classifier in an A-CL compound adjective also functions to provide a dimension by which the relevant property of the noun phrase predicated on is measured. For example, the container classifier *thang* ‘barrel’ in (31a, b) creates a cylinder-like or cube-like measure unit for helping measure the amount of water that does not have a built-in semantic partitioning.

- (31) a. Tsit-thang tsui kha tua-thang.
This-barrel water more big-barrel
‘The water of this barrel is more.’
b. Tsit-thang tsui kha se-thang.
This-barrel water more small-barrel
‘The water of this barrel is less.’

In more precise terms, the container classifier *thang* ‘barrel’ of the A-CL compound adjective *tua-thang* ‘big-barrel’ denotes a dimension about the size of a cylinder or cube, and this cylinder-/cube-like measure unit, as Chao (1968, p. 603) suggests, is used directly to measure its internal capacity. Suppose that the larger a container is, the more material it can contain, hence the dimension provided by a container classifier such as *thang* ‘barrel’ can be understood as one measuring the volume of the contained material.

Likewise, it is the semantic content of measures for action verbs that provides a dimension by which the quantity denoted by the argument of the relevant eventive predicate is measured. As I have pointed out, measures for verbs of action that can occur as the CL of an A-CL compound adjective all have a full lexical meaning. For example, the measure for verbs of vocal action *siaN* ‘sound’ denote a simple sound (e.g., a musical note) that may be completely described by specifying the following three perceptual characteristics: pitch, loudness (or intensity), and quality (or timbre). These characteristics correspond exactly to the three physical features: frequency, amplitude, and harmonic constitution, or waveform, respectively. So, in (32a), the classifier *siaN* ‘sound’ of the A-CL compound adjective *tua-siaN* ‘big-sound’, having a full lexical meaning of pitch, loudness, and timbre of sound, functions to provide a dimension of pitch, loudness, or timbre by which the quantity

¹⁵ The ‘agreement’ relation between the subject NP and the predicative A-CL compound adjective, as one anonymous reviewer reminds me, might not have to be always syntactically present as evidenced in the following example.

- (i) Yi kio ka tsin tua-siaN.
S/He shout KA very big-sound
‘S/He shouted loudly.’

However, ‘not syntactically present’ does not imply ‘not syntactically exist’. For instance, although the nominative case marker on *those students* in (ii) is not syntactically present, no one would say that *those students* is not the subject.

- (ii) Those students walk to school.

of the shouting event (i.e., sound) is measured, while the adjective *tua* ‘big’ and *se* ‘small’ simply introduce opposite ordering relations.

- (32) a. Yi kio tsit siaN tsiok tua-siaN.
S/He shout one sound so big-sound
‘S/He had a full-mouthed shout.’
b. Yi kio tsit siaN tsiok se-siaN.
S/He shout one sound so small-sound
‘S/He had a quiet-voice shout.’

One anonymous reviewer reminds me of examples like (33a), where the NP *angku* ‘red-turtle (cake)’ is embedded inside the extended NP *tsit-ap angku* ‘this-CL red-turtle (cake)’. Although the NP *angku* ‘red-turtle (cake)’ is compatible with the classifier *te* ‘a classifier for a round or elliptical object with small thickness’, the hierarchically higher (container) classifier *ap* ‘box’ carries a dimension feature (i.e., the size of a box-like sphere) incompatible with that carried by the predicative A-CL compound adjective *tua-te* ‘big-CL’ (i.e., the size of a round or elliptical sphere with small thickness). Given this, the reviewer raises the question as to how an ‘agreement’ relation can penetrate through the structurally higher NP to see the ‘compatible’ properties of the embedded NP *angku* ‘red-turtle (cake)’.¹⁶

- (33) a. [_{NP} Tsit-ap [_{NP} angku]] kha tua-te.
This-CL red-turtle-cake more big-CL
‘This box of red-turtle cakes contains bigger red-turtle cakes.’
b. ?*Tsit-ap angku tsin tua-te.
This-CL red-turtle-cake very big-CL
‘This box of red-turtle cakes contains very big red-turtle cakes.’

As the contrast between (33a) and (33b) indicates, the crux of the matter here is that the semantics (or pragmatics) of comparatives plays a crucial role in determining whether the ‘agreement’ relation can penetrate through a structurally higher extended NP (i.e., a hierarchically higher dimension-provider) with an incompatible dimension feature to ‘see’ the compatible dimension feature carried by the structurally inner NP (i.e., the hierarchically lower dimension-provider). For example, (34), in which the comparison sense is highlighted, allows the dimension being compared to be either the size of red-turtle cakes in the two boxes referred to, or the

¹⁶ The original example provided by the reviewer is (i), where the classifier *e* occurs as the CL of the A-CL compound adjective *tua-e* ‘big-CL’.

- (i) Tsit-ap angku kha tua-e.
This-CL red-turtle-cake more big-CL
‘This box of red-turtle cakes contains bigger cakes.’

Since (i) sounds marginal or even unacceptable to all of my informants, in order to make it sound more natural, I modify (i) as (33a) by using the classifier *te* ‘a classifier for a round or elliptical object with small thickness’ to replace the classifier *e* ‘CL’. Additionally, for ease of explanation, I simply use NP rather than CIP or DP to describe the syntactic structure of *angku* ‘red-turtle (cake)’ and *tsit-ap angku* ‘this-CL red-turtle (cake)’, but this does not affect the argument here.

internal capacities of the two boxes. Consequently, in (34) either the compound adjective *tua-ap* ‘big-CL’ or *tua-te* ‘big-CL’ can occur as the predicate.¹⁷

- (34) Tsit-ap angku pi hit-ap kha tua-ap/-te.
 This-CL red-turtle-cake compare that-CL more big-CL/-CL
 ‘This box of red-turtle cakes contains more red-turtle cakes than
 that box does./This box of red-turtle cakes contains bigger red-turtle
 cakes than that box does.’

However, as (33b) shows, if there is no reference to any comparison, the ‘agreement’ relation loses its ability to penetrate the hierarchically higher dimension provider (i.e., *ap* ‘CL’) and ‘see’ the compatible dimension feature carried by the hierarchically lower dimension provider, namely the individual noun *angku* ‘red-turtle cake’. Thus, it is critically the semantics (or pragmatics) of comparatives that makes the ‘agreement’ relation able to penetrate through a hierarchically higher dimension provider (that has a dimension feature incompatible with the dimension feature carried by the predicative A-CL compound adjective) to ‘see’ the compatible dimension feature carried by the hierarchically lower dimension provider. Example (33a) can be analyzed as a form reduced from (35) by deleting a comparative phrase *pi hit-ap angku* ‘compare that-CL red-turtle cake’ from the sentence.

- (35) Tsit-ap angku pi hit-ap angku
 This-CL red-turtle-cake compare that-CL red-turtle-cake
 kha tua-te.
 more big-CL
 ‘This box of red-turtle cakes contains bigger red-turtle cakes than
 that box does.’

Hence, it can be said that it is neither the whole NP nor the head noun that agrees with the classifier. Instead, it is the dimension feature carried by the hierarchically highest dimension provider contained in the subject NP that agrees with the dimension feature carried by the predicative A-CL compound adjective, unless a sense of comparison is involved.¹⁸

Thus far, classifiers that I have discussed all provide a single dimension (or scale) by which the relevant property of the noun phrase predicated or modified is measured. Before turning to the implications of my proposal, I shall discuss some cases of A-CL compound adjectives in which the classifier might provide more than one dimension.

¹⁷ Here the notion of ‘comparison’ is limited to explicit comparison rather than implicit comparison denoted by gradable adjectives that occur in the non-comparative form (cf. Kennedy 2007).

¹⁸ One anonymous reviewer insists on judging that example (33b) is not unacceptable to her/him. One way out of this dilemma is to assume dialectal variations in Taiwanese. For those who accept (33b), the agreement relation should be a loose type of agreement in terms of semantics, not a formal type of agreement.

3.2 The multi-dimension-denoting classifiers

As I have pointed out in Sect. 2, only classifiers such as *king* ‘CL’, *liao* ‘chunk’, and *tsua* ‘row’ can occur with adjectives other than *tua* ‘big’ and *se* ‘small’ to form an A-CL compound adjective, for example *tshim* ‘deep’, *tshen* ‘shallow’, *khua* ‘wide’, or *tng* ‘long’, as illustrated by examples in (12)–(14), which are repeated as (36)–(38).

- (36) a. Tsit-king tshu kha tua-/se-king.
This-CL house more big-/small-CL
‘This house is bigger/smaller in the size.’
b. Tsit-king tshu kha tshim-/tshen-king.
This-CL house more deep-/shallow-CL
‘The depth of this house is greater/less.’
c. Tsit-king tshu kha tng-king.
This-CL house more long-CL
‘The length of this house is greater.’
- (37) a. Tsit-liao tiba kha tua-/se-liao.
This-chunk pork more big-/small-chunk
‘This chunk of pork is bigger/smaller in the dimension of volume.’
b. Tsit-liao tiba kha tng-liao.
This-chunk pork more long-chunk
‘The length of this chunk of pork is greater/less.’
- (38) a. Tsit-tsua (tshiu-a) kha tua-/se-tsua.
This-row tree-NS more big-/small-row
‘This row has more/less trees.’
b. Tsit-tsua (tshiu-a) kha tng-tsua.
This-row tree-NS more long-row
‘The length of this row of trees is greater/less.’

The individual classifier *king* ‘CL’, as noted earlier, always occurs with an individual noun denoting a building with a space measured by multiplying length, width, and depth, for example rooms, churches, cottages, or huts. Thus, the noun occurring with the individual classifier *king* ‘CL’ is endowed with the following three physical features: a length, a width, and a depth. As I suggest, by means of an agreement relation between the individual classifier *king* ‘CL’ and the individual noun that occurs with it, the classifier *king* ‘CL’ inherits all these three physical features and specifies a three dimensional space. However, it is still possible for a speaker to focus one of these three measurable features for some pragmatic purpose.

When no special focus of any of the three length, width, or depth features is present, and a speaker uses the classifier *king* ‘CL’ to simply denote a three dimensional space, the adjectives *tua* ‘big’ or *se* ‘small’ will be used as the ordering function to order the degree values (i.e., points) by the size of the three dimensional space.

However, if the speaker wants to specify one of the three physical features (i.e., the length, the width, or the depth) on purpose, s/he must use an adjective that can indicate the specified dimension. First, if the speaker wants to indicate the length as the dimension specified, s/he can use the adjective *tng* 'long', not only to help specify the length as the salient dimension, but also to order the points towards the upper end of the scale of length. In other words, the adjective *tng* 'long' of the compound adjective *tng-king* 'long-CL' differs from the adjective *tua* 'big' or *se* 'small' of the compound adjective *tua/se-king* 'big-/small-CL' in that the adjective *tng* 'long' functions not only as a dimension specifier but also as an ordering function. Second, suppose the speaker wants to specify the width of the three dimensional space, s/he can use the adjective *khua* 'wide', not only to highlight the width as the salient physical feature among the three possible dimension-denoting features provided by the classifier *king* 'CL', but also to order the degree points towards the upper end of the scale of width. Third, whenever the speaker wants to indicate the depth as the specified dimension from the three physical features carried by the classifier *king* 'CL', s/he can employ the adjective *tshim* 'deep', which not only highlights the depth feature as the specified dimension but also orders the degree points towards the upper end of the scale of depth.

Likewise, the individual classifier *liao* 'chunk', as in (37a, b), occurs as another instance of a multi-dimension denoting classifier in an A-CL compound adjective. The individual noun occurring with the individual classifier *liao* 'chunk' is a (soft) long entity with a round, elliptical, or rectangular section, and the length of such a (soft) long entity sometimes is saliently specified. If the speaker does not want to specify the length of a (soft) long entity on purpose, the adjective *tua* 'big' or *se* 'small' is simply used as the ordering function to order the degree points by the dimension provided by the classifier *liao* 'chunk'. However, if the speaker wants to accentuate the length of a (soft) long entity as the specified dimension, then s/he can use the adjective *tng* 'long' to specify the length dimension. The same also obtains in (38a, b), which contain the classifier *tsua* 'row'.

The discussion above results in the conclusion that classifiers occurring as the CL of Taiwanese A-CL compound adjectives can be divided into two types, depending on the number of dimensions they can provide: single-dimension denoting and multi-dimension denoting classifiers. Only the adjective *tua* 'big', which functions to order totally the degree values (or points) towards the upper end of the scale denoted by the classifier, or the adjective *se* 'small', which has the same function but orders the points towards the lower end of the same scale, can occur as the A of A-CL compound adjectives in cases involving a single-dimension denoting classifier. However, in examples containing a multi-dimension denoting classifier, adjectives such as *tng* 'long', *khua* 'wide', *tshim* 'deep', or *tshen* 'shallow' are allowed to form an A-CL compound adjective with an appropriate classifier and used not only to pick out as the specified dimension from the possible physical features carried by the classifier but also order the degree values (or points) along the scale denoted by the classifier. Consequently, treating the A of the A-CL compound adjective as an ordering function and dividing classifiers that can occur as the CL of A-CL compound adjectives into two types help us to understand the puzzle of why adjectives allowed in the A-CL compound adjectives appear to be so limited.

4 Further implications

Beyond the substantive findings that help us to understand the morphological, syntactic, and semantic nature of Taiwanese A-CL compound adjectives, this study has four further empirical and theoretical consequences, as described below.

First, as was pointed out in Sect. 2, the nouns with which the generalized individual classifiers *e* and *hang* can associate may be both concrete and abstract ones, and no salient physical feature shared by all such nouns can be found. Given this, no salient physical feature can be ‘inherited’ by the generalized individual classifier through the agreement relation in A-CL compound adjectives. Consequently, it is predicted that a generalized individual classifier cannot occur as the CL of A-CL compound adjectives, and such a prediction is borne out in the ungrammaticality of (39a, b).

- (39) a. *Tsit-le haksiN kha tua-e.
 This-CL student more big-CL
 b. *Tsit-hang biNkiaN kha tua-hang.
 This-CL thing more big-CL

Second, the assumption that the CL of A-CL compound adjectives functions as a dimension provider also helps us provide an answer to the question of why standard classifiers such as ‘meter’, ‘kilogram’, etc. are not allowed in A-CL compound adjectives, as shown by the examples in (40).

- (40) a. *Tsit-tshio? po kha tua-tshio?.
 This-meter cloth more big-meter
 b. *Tsit-kin biNhun kha tua-kin.
 This-kilogram flour more big-kilogram

As I have argued, an A-CL compound adjective is a gradable one with a totally opened or closed scale, as illustrated by (41a, b), respectively.

- (41) a. Tsit-liap lingko tsiok tua-liap.
 This-CL apple very big-CL
 ‘This apple is very big.’
 b. SaN-ge? pi si-ge? kha tua-ge?.
 Three-month compare four-month more big-month
 ‘March is longer than April.’

Namely, the dimension provided by the CL of the A-CL compound adjective must be a gradable one; that is, an A-CL compound adjective must be one with a semantic range within which variable amounts or qualities are included. This range may be with or without limits. However, standard classifiers (e.g., *tshio?* ‘meter’ and *kin* ‘kilogram’), being measure units that denote an accepted or approved example of quantity or quality against which others are judged, measured, or compared, are conventionalized as a gauge to measure the quantity or the quality denoted by the noun with which they occur. Hence, they are without any semantic range within which variable amounts or qualities are included. Because of this,

standard classifiers, (except for *ge?* ‘month’, which ranges over periods of a different number of days: 28, 29, 30, 31) cannot occur as the CL of A-CL compound adjectives. If they were to be used, the ordering function denoted by the A of the A-CL compound adjectives would become inactive.

Third, the analysis presented here further expects that if a noun can occur with two or more different classifiers, it should be possible for these different classifiers to co-occur in sentences with A-CL compounds as predicates. This expectation is borne out in examples (42a, b), and the classifier that occurs in the subject NP is different from the classifier that occurs in the predicative A-CL compound.

- (42) a. Tsit-tsia? tshia kha tua-tai.
 This-CL car more big-CL
 ‘This car is bigger.’
 b. Tsit-tai tshia kha tua-tsia?.
 This-CL car more small-CL
 ‘This car is smaller.’

Fourth, the analysis also correctly predicts that in various instances an adjective cannot naturally occur in an A-CL compound form, and must instead occur as a simple non-compounded adjective. Specifically, where the dimension of an adjective cannot be provided by an appropriate classifier (as with adjectives such as *sui* ‘beautiful’ and *tshoNbiN* ‘intelligent’), the adjective cannot occur as a compound adjective, and must appear in a ‘regular’ classifier-less form, either modified by a degree adverb, followed by a sentence final particle, or reduplicated, as (43a–c) illustrate, respectively.

- (43) a. Tsit-le gin-a *(tsiok) tshoNbiN.
 This-CL child very intelligent
 ‘This child is very intelligent.’
 b. Tsit-le tsabo gin-a sui *(o)!
 This-CL female child-NS beautiful SFP
 ‘This girl is beautiful!’
 c. Hit-le tsabo gin-a tshiN ka suisuisui,
 That-CL female child-NS dress KA beautiful-beautiful-beautiful
 beh khi toui?
 want go where
 ‘That girl dresses up as being so beautiful. Where is she going to?’

However, if the dimension of an adjective can be provided by an appropriate classifier, then it is actually more natural for such an adjective to occur in an A-CL compound form than as a bare adjective in predicate position (modified by the degree adverb *tsin* ‘very’, which regularly occurs with other adjectives in such a position), as shown by the contrast below.

- (44) a. Tsit-king tshu tsin tua-/se-king.
 This-CL house very big-/small-CL
 ‘This house is very big/small.’

- b. ??Tsit-king tshu tsin tua/se.
 This-CL house very big/small
 ‘This house is very big/small.’

Compared with (44a), (44b) sounds unnatural and is acceptable only when the degree adverb *tsin* ‘very’ is pronounced with a high falling tone in special contexts where the dimension of the adjective can be pragmatically specified (e.g., when the speaker is astonished at the huge size of the house). In connection with such ‘special’ licensing of the non-compounded adjectival form, if the dimension of an adjective can indeed be easily retrieved from a context, it will actually be more natural for a non-compounded adjectival form to occur. Such contextual licensing seems to readily occur in comparatives, as illustrated in (45a).

- (45) a. Yi-e thao kha tua.
 S/He-E head more big
 ‘Her/His head is bigger in the size.’
 b. Yi-e thao kha tua-liap.
 S/He-E head more big-CL
 ‘Her/His head is bigger in the size.’

Functionally, it appears that the comparative sense of (45a, b) provides (or implies that there is contextually present) enough information for the speech participants to retrieve the dimension (i.e., the size of the head) by which the two heads are compared. Consequently, (45a) sounds quite natural or even more natural than (45b) in colloquial speech.

It can further be added that even if an A-CL compound adjective has a legitimate non-compounded counterpart, the latter will generally have a low frequency of occurrence. For example, the A-CL compound adjective *tua-tiao* ‘big-CL’, in (46a) has a possible non-compounded counterpart—the adjective *tsho* ‘thick’, as shown in (46b), but the latter occurs less frequently in colloquial speech than the compounded form.

- (46) a. Tsit-tiao so?-a kha tua-tiao.
 This-CL rope more big-CL
 ‘This rope is thicker (in the diameter).’
 b. Tsit-tiao so?-a kha tsho.
 This-CL rope more thick
 ‘This rope is thicker (in the diameter).’

Summarizing the variation found, a non-compounded adjectival form may occur more naturally than an A-CL compound only under the following conditions: First, when the dimension of a particular adjective cannot be denoted by an appropriate classifier. Second, when the dimension of an adjective can be easily retrieved from the context.

5 Concluding remarks

We began this paper with the attempt to answer the question of why common adjectives such as ‘big’/da and ‘small’/xiao cannot measure certain nouns in Mandarin Chinese and English while they can measure the same nouns with the support of classifiers in Taiwanese. We have analyzed Taiwanese A-CL sequences as compound adjectives by treating the classifier inside such sequences as a dimension provider, and the adjective as involving an ordering function. Combined with the assumption that classifiers occurring as the CL of A-CL compound adjectives should be divided into single-dimension denoting and multi-dimension denoting elements, the analysis has provided a rationale for why the adjectives permitted in A-CL compound adjectives have the interesting and otherwise perplexing property of being so limited in number.

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