A Unified Analysis to Surpass Comparative and Experiential Aspect

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Abstract

This study compares two constructions in Cantonese which shares similar features in their syntax and semantics. Previous works observe that comparatives often appear after experiential aspect in the verbal domain historically. This study builds upon this observation and argues that the similarities between two constructions, comparatives and experientials, are of formal nature and that the similarities originate from the semantics of these constructions. This formal account means that there is a deep connection between the two constructions and therefore explains the pattern observed by typologists (Stassen, 1985; Ansaldo, 2010). The homomorphic approach also means a simpler syntax-semantics that applies to both event-denoting ('verbs') and property-denoting ('adjectives') predicates.

Keywords: *Comparatives, experiential aspect, cross-categorial behavior*

1 Introduction

English has both comparative construction (1-a) and experiential perfect (1-b) sentence, which are marked by different morphemes.

(1) a. Mary is taller than Peter. (Comparative)
     b. Mary had been to England. (Experiential perfect)

Cantonese has these two constructions too, only that it uses the same morpheme *gwo3* to mark both.

(2) *Mary gou1 gwo3 Peter*
     Mary tall   PASS Peter

'Mary is taller than Peter.'

(3) *Mary heoi3 gwo3 jing1gwok6*
     Mary go   EXP England
     'Mary has been to England.'
     (lit: 'Mary went to England.') [1]

As a lexical verb, *gwo3* means 'to cross' or 'to surpass'. In (2), *gwo3* shows the standard of comparison (henceforth *standard* or *std*) in a comparative sentence. In (3), it shows that the event of 'going to England' has taken place at any point in the past. The correlation pattern between these two constructions, surpass-comparative (2) and experiential aspect marking (3), is reported to be common in typology literature (Ansaldo, 2010; Stassen, 1985) and is therefore not mere coincidence. The aim of this study is to provide a formal account to this well-observed correlation.

This study builds on the notion of scale structure (Kennedy & McNally, 2005) that is primarily applied to adjectives and/or property-denoting predicates. Since scale structure is non-temporal by nature, this paper posits that verbal predicates can be conceptualized and formalized as scales measured by time, i.e. a 'temporal scale'. Under this view, both comparative and experiential sentences can be treated on a par as scalar predicates specified with a degree along the scale.

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[1] The transcription convention follows the Linguistics Society of Hong Kong *JyutPing* system. The numbers show the lexical tones. Abbreviations: CL: classifiers; EXP: experiential aspect; PASS: surpass comparative marker; SFP: sentence final particle

In terms of broader implication, this study differs from the typological works in that it makes no prediction on the diachronic development. I argue that it avoids the assumption that one domain (e.g. adjectives) is more functional than another (e.g. verb), which does not appear to be well supported. Moreover, this study also suggests a deep semantic connection between comparatives and transitive verbs (represented algebraically in this study). By formulating it with semantics, this study differs from grammaticalization approaches and explains the connection between the surpass comparative and experiential marker from a formal perspective, rather than a historical one.

The remainder of this paper is organized as follows: Section 2 discusses previous work on issues related to both comparative and experiential sentences. Section 3 gives the hypothesis that *gwo3* marks the degree in relation to the predicate and it allows the morpheme to apply to both adjectival and verbal domains. The hypothesis is then tested with observations in the similarities between the two constructions in light of their syntax with question formation (section 4), specificity (section 5) and quantification *saai3* (section 6). Section 7 discusses a related comparative construction and clarifies that it is compatible with the current analysis. Section 8 discusses the implication and argues that this study demonstrates an example of homomorphism across different domains in the syntax-semantics interface.

2 Related Works

2.1 Typological Connection between Surpass and Experiential Marking

Studies on typology observe that the comparative marker SURPASS is often related to verbal use of the experiential marking across languages.

In Stassen (1985)'s survey on comparatives in over a hundred languages, he makes the generalizations that '(i)f a language has an Exceed Comparative, then its basic word order is SVO.'(Stassen, 1985, p.54)[2] Ansaldo (2010) surveys several South-

ern Sinitic languages (which includes Cantonese) and unrelated languages in Southeast Asia (e.g. Thai, Lao and Vietnamese) and argues with Stassen that the use of surpass comparative predicts the SVO basic word order in a language[3]. Ansaldo makes a parallel comparison between resultative verb construction (V-RVC) and comparatives in (4), where V-RVC includes the cluster of a lexical verb and *gwo3*.

(4)   [V_{ADJ}-gwo3 NP_{STD}] $\approx$ [V-RVC NP_{OBJ}].

Ansaldo (2010) argues that the comparative *gwo3* is more fundamental and the aspectual use develops upon the former, contra Stassen (1985). This presents an apparent contradiction, since both theories rely on one construction being employed to extend its use to another. While acknowledging the correlations, the present study aims to show a descriptively adequate theory need not make explicit prediction on historical development to account for the cross-linguistic correlation between the two constructions. Instead of positing one grammaticalization cline for all languages, this study proposes that surpass comparative and experiential perfect are linked semantically through the common meaning of the morpheme *gwo3* and that there is not necessarily a specific order in their historical development. Hence, both grammaticalization directions are possible, and it is possible that a language has one of the two constructions without the other.

Focusing on the lexical semantics of *gwo3* and its cognates in Sinitic languages, Chappell (2001) argues for a reclassification of the experiential aspect marker to an evidential marker. By evidential, she means the 'speaker's commitment to the truth of the proposition', which means that whenever the marker is used, it shows the strength of assertion by the speaker. Her data cover eight Sinitic languages (including Cantonese) and include *gwo3* in verbal environments denoting both spatial relation (e.g. *haang1 gwo3 tiu4 kiu4* 'to go pass a bridge'[4] and temporal use, such as *heoi3 gwo3 mei5gwok3* 'went to the USA'. This extension from spatial scale to temporal scale is ubiquitous from a cross-linguistic perspective, as Chappell (2001) points out.

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[2]It does not concern Stassen that Mandarin, for example, demonstrates a counterexample to his generalization, since he stresses that the generalization should not be taken as absolute universals. Also, Mandarin does have the surpass comparative, in addition to the more common *bi*-comparative and transitive comparative.

[3]Note that the prediction does not go the other way.

[4]Chappell (2001)'s examples are in Shanghainese. Cantonese examples here are adapted by the author.

Another interesting point raised by Chappell (2001) is the discontinuity effect in *gwo3*, where the verbal predicate proposition marked by *gwo3* must not be concurrent with the reference time (à la Reichenbach (1947)), as shown in (5).

(5) *jau5 jan4 hai2dou6 sik6 (gwo3) jin1*
     have person at.place ingest EXP smoke
     'Someone smoked here.' [5]

Without *gwo3*, the smoker in (5) would be still in sight. With *gwo3*, (5) is infelicitous if the smoking is still ongoing. It is important to note that whether the smoker is in present is not crucial. Suppose a smoker, Alan, has finished a cigarette, and Bill walks into the room and utters (5) with *gwo3*, the utterance would be felicitous. This fact about *gwo3* indicates that the progression of the event has exceeded a certain referential point, which can be measured in time.

To sum up, the co-occurrence of surpass comparative and experiential aspect is a well-attested pattern. Some researchers treat the pattern as a historical development within a language where one construction grammaticalizes and becomes another one. Some view it in light of genetic relation between languages. This study attempts to provide a formal account to the pattern without resorting to historical development. However, it is necessary to stress that the present proposal is compatible with the previous historical accounts.

2.2 Formal Generative Analysis of Chinese Comparatives

Since comparatives most often associates with adjectives[6], the generative literature argues that there is a functional projection *Degree Phrase* dominating the lexical AdjP (Cresswell, 1976; von Stechow, 1984; Kennedy & McNally, 2005).

The surpass comparative in Cantonese has not received a lot attention in the literature. Mok (1998)

is the only work that discusses the construction directly. Briefly speaking, Mok adopts a VP structure and claims that whenever *gwo3* is affixed to the V^0 (spelled out by lexical adjectives), the sentence denotes a comparative. This is problematic in two ways. First, syntactic tests, such as A-not-A question formation (6), do not prove that property-denoting predicates must be verbs. Since modals like *ho2ji5* 'can' may also be used in A-not-A questions, the fact that property-denoting predicates are also found in A-not-A questions can only be interpreted that it is the main predicate.

(6) *Mary gou1 m4 gou1 gaa3 ?*
     Mary tall Neg tall SFP
     'Is Mary tall?'

Second, it is unclear what mechanism governs or licenses the existence of affixal *gwo3* in Mok's formulation. This is crucial in his account, because it distinguishes whether a sentence denotes a positive adjective with a measure phrase (as in 'Peter is *5 feet tall*'), or an implicit comparative, such as 'Peter is *5 feet taller*'. This study will provide some evidence supporting the affixal analysis.

Most other works on Chinese comparatives focus on Mandarin. It is generally accepted that Mandarin also has the functional Degree Phrase (DegP), dominating immediately an Adjectival Phrase (Grano & Kennedy, 2012; Xiang, 2005; Erlewine, 2007, 2012; Liu, 2010). However, most of the works listed here did not address surpass comparative, which Mandarin does have. Grano and Kennedy (2012) is the only exception. They extend their proposal for the transitive comparative to the surpass comparative, and provide the following analysis:

(7) $[\![\mu_{comp}]\!] = \lambda g_{\langle e,\langle e,d\rangle\rangle} \lambda d \lambda y \lambda x. g(y)(x) \succeq d$

Grano and Kennedy's comparative morpheme μ takes an adjective g, a degree argument d, and arguments of the comparison standard y and the subject x. Briefly speaking, what it means is that the comparative morpheme μ requires a scale-denoting predicate (i.e. the adjective), a degree compatible with that scale for felicitous measurement and two individuals to associate with the degree in question. Grano and Kennedy's order of merging these arguments reflects the steps in the standard bottom-up

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[5]From Chappell (2001) and Matthews and Yip (1994). The glossing and translation are mine.

[6]Whether or not Cantonese and Mandarin have a distinct category Adjective is beyond the scope of this paper. The term 'adjective' here simply refers to property-denoting predicates, which holds for regular adjectives like 'small' and stative verbs like 'sick'. See (Paul, 2010; Francis & Matthews, 2005) for relevant discussions.

derivation, which can be directly applied to the Cantonese data. Since they deal with the transitive comparative with a measure phrase, such as '4 cm' in 'John is **4 cm** taller than Mary', they included the measure phrase as an obligatory argument, which is optional in the Cantonese surpass comparative[7]. The degree is assumed to be compatible with the scale, in order to rule out infelicitous utterances like 'John is **#4cm** heavier than Mary', where '4cm' cannot measure the scale weight.

It is also interesting that Grano and Kennedy (2012) address the parallelism between little-v and μ in Case-licensing terms. While this study does not discuss Case-licensing in Cantonese, the parallelism is argued to be an effect of the underlying common structure across the events and properties. Building on our discussion about the lexical semantics of *gwo3* in Chappell (2001) that the EXCEED meaning can extend from spatial domain to temporal domain, the next section will formulate a hypothesis as to what exactly makes it possible for *gwo3* to apply to verbs and adjectives and account for the variety of sentence types.

3 Hypothesis

This study hypothesizes:

(8)   The morpheme *gwo3* has the same denotation in experiential perfect and comparatives.

More concretely, hypothesis (8) requires the following characteristics to work: First, *gwo3* is hypothesized to be an affix attached to a functional head that denotes the boundary/degree of a predicate, extending Grano and Kennedy (2012)'s μ for comparatives. We will see this with its syntax in section 4. Second, *gwo3* takes a predicate and degree as its arguments. The predicate can be either a verb or an adjective. The degree is often licensed lexically, either through an individual representing the standard of comparison, or an object of the verb[8]. This will be shown in light of the specificity constraint shown in the NP following *gwo3*.

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[7]See diagram (77) of (Grano & Kennedy, 2012, p.259) for the details of the derivation.

[8]Here the term 'degree' covers not only for property-denoting predicates, but also for event-denoting predicates.

The movement analysis from Adj^0 to Deg^0 has already been argued for in previous studies (Mok, 1998; Grano & Kennedy, 2012), and is generally accepted in other studies. Since Cantonese adjectives do not form the main predicate without a degree marker like *hou2* 'very' in positive assertions (i.e. non-comparative predicates) like (9), this means that semantically they do not assert degree by themselves. Therefore the denotation of Cantonese adjectives should not include d. Also, following the general assumption DegP (see section 2), I assume that the Degree Phrase is more functional than the Adjective Phrase and thus merges later than the predicate in syntax.

(9)   *Peter *(hou2) fei4*
        Peter very   fat
        'Peter is (very) fat.'

The goal of this study is to demonstrate what allows the functional morpheme *gwo3* to show up in both experiential perfect and comparatives. The following sections will discuss the syntactic and semantic characteristics of *gwo3* to test hypothesis (8) with further details.

4 Syntactic similarities

On the surface, we see that surpass comparative (2) and postverbal aspects, which includes experiential perfect (3), share similar word order, as Ansaldo (2010) points out in (4), repeated here as (10):

(10)   [V_{ADJ}-gwo3 NP_{STD}] $\approx$ [V-RVC NP_{OBJ}].

The similarity is beyond the surface order, when we look at the structural constraint with regard to question formation. It is often assumed that *gwo3* is a functional head above v (see Soh (2014) for a recent overview). However, data from A-not-A question shows the contrary. Hypothesis (8) claims that *gwo3* is an affix to a functional head and dominates the internal argument. This claim would predict that *gwo3* is not a head by itself and one should not see head movement to higher projection. Assuming that A-not-A question formation in Cantonese involves copying the head to fill a C^0 position, only head elements are expected to show up in the A-not-A sequence. In fact, we see that *gwo3* must remain between the lower copy and the internal argument:

(11) *Mary gou1 (*gwo3) m4 gou1 gwo3 Peter*
      Mary tall PASS   Neg tall PASS Peter
      aa3
      SFP_Q
      'Is Mary taller than Peter?'

Crucially, *gwo3* must not be copied alone and form A-not-A:

(12) **Mary gwo3 m4 gou1 gwo3 Peter aa3*
      Mary PASS Neg tall   PASS Peter SFP_Q
   'Is Mary taller than Peter?'

This indicates that *gwo3* in comparatives is not a syntactic head. The negation for experiential perfect in (13) looks slightly different, but illustrates the same point that *gwo3* should not be analyzed as a syntactic head.

(13) *Mary jau5 mou5 heoi3 gwo3 mei5gwok3*
      Mary have Neg   go   PASS USA
      aa3
      SFP_Q
      'Has Mary been to the USA?'

In Cantonese, negation of eventive predicates uses a different negator *mou5*. Since *gwo3* denotes experience of an event that occurred in the past and is therefore eventive in nature, A-not-A question for *gwo3* usually has *jau5 mou5* 'have not-have', instead of the more common *V-m4-V* pattern. This, however, does not affect our analysis that *gwo3* does not undergo head movement, similar to what has been shown for comparatives.

This affix analysis of *gwo3* can be captured by (14), where *gwo3* never moves to higher head position in experiential perfect or comparatives:

(14)
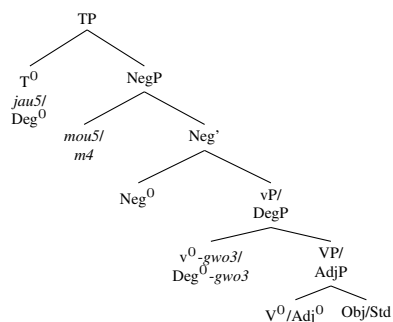
For experiential perfect (13), T^0 is filled by the base-generated *jau5* 'have', hence there is no need to raise a lower head to fill the position. The remaining vP has therefore the v^0–*gwo3*–V^0–(direct) Obj order. For comparatives[9], since the T^0 is not filled, Deg^0 moves cyclically to T^0 via Neg^0 and gives the surface order in (11). It is important to note that a head analysis of *gwo3* would wrongly predict ungrammatical sentences like (12). Therefore, structure (14) shows that *gwo3* must not be a head.

As a side note, Cantonese comparatives allows alternations like (15)[10], where *gwo3* can appear before or after the object *Peter*. Also notice the position of negator *m4*.

(15) a. *keoi5 lek1 m4 gwo3 Peter*
          3sg smart Neg PASS Peter
          'He is not smarter than Peter.'
      b. *keoi5 lek1 Peter m4 gwo3*
          3sg smart Peter Neg PASS
          'He is not smarter than Peter.'

Both examples in (15) are acceptable, and they are interchangeable with only slightly different connotations[11]. However, (17) is much less acceptable than (16). This indicates that the alternation is constrained by the length of the standard of comparison NP.

(16) *keoi5 lek1 m4 gwo3 ngo5 kam6jat6*
      3sg smart Neg PASS 1sg   yesterday
      gin3dou2 go2 go3 naam4jan2
      see   D   CL man
      'He is not smarter than the man I saw yesterday.'

(17) *??keoi5 lek1   ngo5 kam6jat6 gin3dou2*
      3sg   smart 1sg yesterday see
      go2 go3 naam4jan2 m4 gwo3
      D   CL man   Neg PASS
      'He is not smarter than the man I saw yesterday.'

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[9]This study assumes measure phrases to adjoin to the right in DegP, following Grano and Kennedy (2012).

[10]I thank the anonymous review who pointed out this potential problem for the analysis in (14).

[11](15-b), but not (15-a), implicates that the standard *Peter* is smart.

Structure (14) straightforwardly handles the example (15-a), with Adj^0 cyclically moves first to Deg^0 then T^0. For (15-b), one can posit that phonetically-light NPs can raise to a higher focus position, which might explain the connotation difference in footnote-11. Alternatively, one can posit a spell-out rule akin to heavy-NP shift.

The point here is that the contrast in (15) does not necessary constitute counter-examples to the affixal analysis of *gwo3* in (14). The choice between the two solutions depends largely on how one wants to accounts for the NP-shift phenomenon and is beyond the scope of the current study.

Assuming that A-not-A questions often rely on movement to spell out higher functional head positions (T^0 or C^0), the Cantonese facts above have shown that *gwo3* never undergoes head movement and should not be treated as a functional head. More importantly, this section has shown the common syntactic constraints shared by the verbal and adjectival uses that employ *gwo3* to denote a generalized degree of scales or events.

5 Specificity of Object/Standard

Beside the syntactic similarity, both uses of *gwo3* show similarity in that they require their referential arguments to be specific. Generic nouns are also allowed in the same position. This means the two constructions are also similar semantically. This section will focus on referential arguments and briefly discuss generic nouns at the end.

Mok (1998) and Tang (1996) both observe that the NP following *gwo3* must be specific. In verbal predicates (18), the NP *jat1 go3 sing4si4* 'a city' is ambiguous. (18) can either mean everyone went to a different city, or everyone went to one particular city. By switching the perfective marker *zo2* with *gwo3* in (19), the ambiguity is no longer there and the speaker must be talking about one particular city.

(18)   *keoi5dei6 dou1 heoi3 zo2 jat1 go3*
        3pl   all go   Perf one CL
        sing4si4
        city
        'They all went to a city.' (specific or non-specific)

(19)   *keoi5dei6 dou1 heoi3 gwo3 jat1 go3*
        3pl   all go   EXP one CL
        sing4si4
        city
        'They all went to a city.' (specific only)

The contrast can be shown by a follow-up sentence '... but not all the cities were nice'. Since 'all' pragmatically presupposes, though not logically, a plural set of cities, the follow-up is much less acceptable when it combines with (19) than with (18). This indicates that it is possible to talk about multiple cities only in (18), but not in (19). (19) appears to yield an invited inference the NP refers only to one specific city.

Comparatives show the same restriction:

(20)   *keoi5dei6 dou1 gou1 gwo3 jat1 go3*
        3pl   all tall PASS one CL
        hok6saang1
        student
        'They are all taller than a student.' (specific only)

Similar to the experiential perfect, one can refer back to *jat1 go3 hok6saang1* in a follow-up sentence (21). The sentence is only felicitous with the singular classifier *go3*, but not plural classifier *baan1*[12].

(21)   ... *go2 {go3/*baan1} hok6saang1 gei2*
        ... that CL_{sg}/CL_{pl} student fairly
        gou1
        tall
        '... that student is / *those students are fairly tall.'

This contrast indicates that *jat1 go3 hok6saang1* in (20) does not allow the free-choice any interpretation and must be specific. A thorough discussion on how to interpret these NPs after *gwo3* is beyond this study, but the data above is sufficient to show that NPs after *gwo3*, regardless of their co-occurrence with verbal or adjectival predicates, are subject to the same specificity constraint.

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[12]An anonymous reviewer disagrees with the judgment that *baan1* in (21) is infelicitous. The unacceptability of (21) is based on its co-occurrence with (20), where *go2 baan1 hok6saang1* 'those students' refer back to the standard of comparison *jat1 go3 hok6saang1* in (20). In isolation without (20), I fully agree that (21) is acceptable with both classifiers.

In addition to specific referents, the NP following *gwo3* can also denote generic nouns[13].

(22) *keoi5 sik6 gwo3 wo1ngau4*
      3sg   eat EXP snail
      'S/he has had snails/ escargot.'

(23) *keoi5 laan5 gwo3 zyu1*
      3sg   lazy PASS pig
      'S/he is lazier than pigs.'

In these cases, the NPs 'snail' and 'pig' do not refer to specific entities. Rather, they refer to the entire kind. This shows another parallelism between verbal and adjectival uses of *gwo3*. Both cases require some sort of contextual standard: one would be considered to have tried snails if s/he had a bite or a taste (and not necessarily an entire serving); and (23) is considered true even if we do not have conclusive evidence that the person is lazier than every pig, as long as one assumes pigs in general are lazy (which is often assumed in Cantonese culture). Once the subject surpasses such a contextual standard, the *gwo3* sentences are considered true. A detailed discussion on the relation between generic nouns and contextual standard is beyond the limit of this paper. The point here is that both verbal and adjectival *gwo3* display the same pattern.

Recall that section 4 has shown *gwo3* is affixed to the v^0/Deg^0. This allows us to relate the specificity constraint imposed by *gwo3*. Based on the contrast between (18) and (19), it is clear that *gwo3* is the source of this constraint. Structurally, the head always selects a predicate and an individual, but only when this v^0/Deg^0 is affixed with *gwo3*, the individual must be specific. This supports hypothesis (8) that *gwo3* has the same effect on the selection of the NP, be it an object in experiential perfect or the standard in comparatives.

6   Quantification with *saai3*

The relation between the *gwo3*-affixed head and its internal argument can be further demonstrated by the quantification with *saai3* 'all' in example (24), where the books are construed as a known set.

(24) *keoi5dei6 tai2 (gwo3) saai3 di1   syu1*
      3pl   see PASS SAAI CL$_{pl}$ book

'They read all the books.'

The occurrence of *gwo3* in (24) affects the interpretation. Without *gwo3*, (24) is true if and only if all the books are read cover to cover. If we include *gwo3*, (24) is true even if each of the books is only briefly read (while the cover-to-cover reading is still valid). It shows that *gwo3* licenses an implicit degree that is contextual[14].

Tang (1996) analyzes *saai3* as a marker of distribution. That is, *saai3* marks distributive plural sets of either events or internal arguments, but not subjects. This locality effect is supported by the contrast between unaccusative *zau2* 'leave' in (25) and unergative *haam3* 'cry' in (26). Since the surface subject with unaccusatives is raised from internal to the VP and the one with unergatives is base-generated in the subject position, the unacceptability of (26) shows that the subject of (26) is never an internal argument. Tang (1996) does not provide a syntactic representation of *saai3*. This study assumes that *saai3* is an operator at Spec-VP immediately dominated by *v*P, which is compatible to our V^0-to-v^0 head movement analysis.

(25) *keoi5dei6 zau2 saai3*
      3pl   leave SAAI
   'They all left.'

(26) **keoi5dei6 haam3 saai3*
      3pl   cry   SAAI
      Intended: 'They all cried.'

The contrast in grammaticality and the distributive meaning in (25) show that the event or its internal argument is restricted under the scope of *saai3*. This observation demonstrates that the argument taken by the *gwo3*-affixed head (e.g., *saai3 di1 syu1* in (24)) must also be interpreted within the scope of this *gwo3*-affixed head. With *gwo3*, which can take an implicit degree argument, the distributive NP 'the books' is allowed to be partially read. Without *gwo3*, the verbal predicate 'read all the books' would have to be interpreted such that every single member in the set of the books must be completely read. The partial tree (27) shows that the op-

erator *saai3* makes sure that the event or the object NP are distributive (and not collective). When the *gwo3*-affixed head then takes this distributive argument, the event is interpreted as plurality of 'reading the book' and hence the sentence denotes the situation that every member of the books has been read, but not necessarily cover to cover. In essense, the partial-reading interpretation is allowed because *gwo3* requires a degree argument, which can be implicit and does not necessarily require completion.

(27)
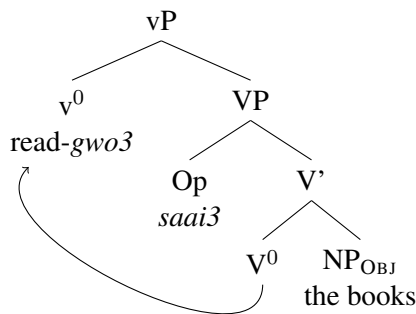
Similarly, *saai3* with surpass comparative shows distribution over the internal argument, i.e. the standard.

(28)   *Mary jau5cin2 gwo3 saai3 keoi5dei6*
        Mary rich   PASS SAAI 3pl
        'Mary is richer than *every one of them*.'

Sentence (28) describes the situation where Mary is richer than everyone in the group. Mary does not necessarily have more money than the group combined, as long as she is richer compared to each individual (the collective reading in this case happens to subsume the distributive one). This shows that the *saai3*-standard is distributive and not collective. With *saai3* forcing the distributive reading, we can see that the *gwo3*-affixed head takes each member in its argument NP separately and makes the comparison. The structure is shown in (29).

In sum, the interaction with *saai3* shows that *gwo3* takes the VP or AdjP as its argument and the internal argument must be interpreted under the scope of the *gwo3*-associated head in both verbal and adjectival domains.

(29)
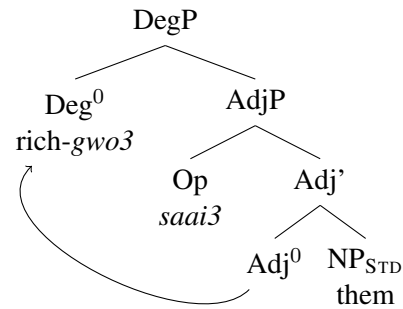
7   Bare comparatives

Cantonese has another comparative construction that does not require standard of comparison (30). This section shows that this is compatible with the current proposal and provides indirect support for the analysis of *gwo3* comparative.

(30)   *Mary gou1 (Peter) (jat1) di1*
        Mary tall   Peter   one   bit
        'Mary is a bit taller (than Peter).' (Standard is optional)

Notice that *(jat1) di1* '(a) bit; little' represents the measure phrase, i.e. how much Mary is taller than Peter, and the measure phrase must appear after the standard, but never before it (31), whereas a *gwo3*-comparative requires a standard (32).

(31)   *Mary gou1 di1 (*Peter)*
        Mary tall   bit Peter
        'Mary is taller.'

(32)   *Mary gou1 gwo3 *(Peter)*
        Mary tall   PASS Peter
        'Mary is taller than Peter.' (required STD)

This shows that *di* is actually a measure phrase, rather than a functional marker for comparative. On the one hand, it means that sentences like (31) are not a counterexample to the current proposal for Cantonese *gwo3* comparatives. On the other, it mean that *gwo3* is the reason why an overt standard of comparison must be overt in surpass comparatives. As a consequence, that non-*gwo3* comparatives, such as (30), do not require a specified standard of comparison, which is separate from the measure phrase, is actually expected.

8 Implications

8.1 Homomorphic theory to scalar predicates

As the data show that *gwo3* can in fact be interpreted with the same syntax and semantics in both event-denoting and property-denoting predicates, this means that the cross-categorial behaviors of *gwo3* can be explained with a homomorphic approach. That is, the semantics across categories can be structured in the same way.

In a broader sense, the current analysis shows the benefit of a simpler syntax-semantics mapping mechanism in language. With the homomorphic approach, the need for category-specific syntax-semantics is reduced, because the behaviors in different categories (V and Adj in our case) can be captured under the same syntax-semantics structure. Therefore, such an approach is desirable for any explanatory theories for human language.

The benefit of a simpler syntax-semantics is not only for theoretical simplicity. With a simpler syntax-semantics mapping, language learners' would only need one set of mapping rules, rather than multiple sets, to handle verbs and adjectives. This will in turn explain more easily why such complicated structures can be mastered by children at a young age despite its very complex structure. For this reason, such an approach will be superior to theories with category-specific syntax with regard to its explanatory power for language learnability as well.

Remaining issues with the proposal include, for instance, the literature does not handle events the same way as degrees or properties. Works on event structure or event semantics (Dowty, 1977; Parsons, 1990; Ramchand, 2008; Champollion, 2014) takes event as a variable, instead of taking a specific point in the progress of event as a variable, while the syntax-semantics of adjectives and comparatives takes degree (rather than an entire scale containing sets of degrees) as a variable, as seen in (Grano & Kennedy, 2012) and other studies. The current study cannot provide any elaborate answer to this, but would note that recent studies have found commonalities across categories in English, such as the measurement of predicates in various constructions (Wellwood, Hacquard, & Pancheva, 2012; Champollion, 2010; Krifka, 1998). Therefore, the homomorphism suggested here is not entirely novel.

8.2 'Aspects' in Cantonese

This close-up study on *gwo3* demonstrates an alternative for the analysis of (viewpoint) Aspect in the verbal domain. The literature has in general assumed that postverbal elements like *zo2*, *gwo3* and progressive *gan2* correspond to Asp(ect) head in syntax, based on the Mandarin literature (see Soh (2014) for an overview). The problem with this usual Aspect-analysis to *gwo3* is that it relies on movement to resolve the discrepancy between the theory (that the head-initial Asp^0 dominates vP) and the empirical data (that aspect markers always follow immediately after the first syllable of the verbal predicate). This study has argued that *gwo3* should be analyzed in-situ (within vP) rather than by any kind of movement (e.g., movement to Asp^0 or affix lowering). The current proposal differ substantially from Sybesma (1997, 2004) in that *gwo3* here is an affix, rather than a head. It is unclear whether the same analysis of experiential *gwo3* can be transferred to perfective *zo2* (similar to Mandarin *le*) or progressive *gan2*. This can only be left for future studies.

9 Conclusion

This study investigates the morpheme *gwo3* in two constructions: the surpass-comparative and the experiential perfect, and argues that *gwo3* should be analyzed with the same syntax and semantics, based on evidence from syntax (question formation) and semantics (specificity and quantification). The homomorphic approach of *gwo3* applies to both event-denoting ('verbs') and property-denoting ('adjectives') predicates. In a broad sense, this approach is argued to be a simpler and more explanatory theory than category-specific theories. Focusing on the study of Cantonese or other Sinitic languages, this study argues against the general Aspect analysis and suggests a non-movement account for *gwo3*, which has potential to be extended to other aspect markers.

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References

Ansaldo, U. (2010). *Surpass comparatives in sinitic and beyond: typology and grammaticalization.*

Champollion, L. (2010). *Parts of a whole: Distributivity as a bridge between aspect and measurement* (Unpublished doctoral dissertation). University of Pennsylvania.

Champollion, L. (2014). *The interaction of compositional semantics and event semantics.* Retrieved from `http://ling.auf.net/lingbuzz/002118`

Chappell, H. (2001). The experiential perfect as an evidential marker in sinitic languages.

Cresswell, M. (1976). The semantics of degree. In B. Partee (Ed.), *Montague grammar* (pp. 261–292). Academic Press – New York.

Dowty, D. R. (1977). Toward a semantic analysis of verb aspect and the english imperfective progressive. *Linguistics and Philosophy*, *1*, 45–77.

Erlewine, M. Y. (2007). A new syntax-semantics for the mandarin bi comparative. *University of Chicago MA thesis.*

Erlewine, M. Y. (2012). Share to compare: The mandarin b comparative. In *the proceedings of the 29th west coast conference on formal linguistics* (pp. 54–62).

Francis, E. J., & Matthews, S. (2005). A multidimensional approach to the category in cantonese. *Journal of Linguistics*, *41*(02), 269-305.

Grano, T., & Kennedy, C. (2012). Mandarin transitive comparatives and the grammar of measurement. *Journal of East Asian Linguistics*, *21*, 219-266. doi: DOI10.1007/s10831-012-9090-Y

Kennedy, C., & McNally, L. (2005). Scale structure, degree modification, and the semantics of gradable predicates. *Language*, 345–381.

Krifka, M. (1998). The origins of telicity. *Events and grammar*, *197*, 235.

Liu, C.-M. L. (2010). Mandarin chinese as an exceed-type language. In *North american conference on chinese lingui* (p. 271).

Matthews, S., & Yip, V. (1994). *Cantonese: A comprehensive grammar*. Routledge.

Mok, S.-S. (1998). *Cantonese exceed comparatives* (Unpublished doctoral dissertation). University of California, San Diego.

Parsons, T. (1990). *Events in the semantics of English*. MIT Press.

Paul, W. (2010). Adjectives in mandarin chinese: The rehabilitation of a much ostracized category. *Adjectives: Formal analyses in syntax and semantics, ed. Patricia Cabredo Hofherr and Ora Matushansky*, 115–151.

Ramchand, G. (2008). *Verb meaning and the lexicon: A first-phase syntax*. Cambridge University Press.

Reichenbach, H. (1947). *Element of symbolic logic*. London: Macmillan.

Soh, H. L. (2014). Aspect. In C.-T. J. Huang, Y.-H. A. Li, & A. Simpson (Eds.), *The handbook of Chinese linguistics* (pp. 126–155). Wiley.

Stassen, L. (1985). *Comparison and universal grammar*. Blackwell Oxford.

von Stechow, A. (1984). Comparing semantic theories of comparison. *Journal of semantics*, *3*(1), 1–77.

Sybesma, R. (1997). Why Chinese verb-le is a resultative predicate. *Journal of East Asian Linguistics*, *6*(3), 215–261.

Sybesma, R. (2004). Exploring Cantonese tense. *Linguistics in the Netherlands*, *21*(1), 169–180.

Tang, S.-W. (1996). A role of lexical quantifiers. *Studies in the Linguistic Sciences*, *26*, 307–323.

Wellwood, A., Hacquard, V., & Pancheva, R. (2012). Measuring and comparing individuals and events. *Journal of Semantics*, *29(2)*.

Xiang, M. (2005). *Some topics in comparative constructions* (Unpublished doctoral dissertation). Michigan State University.