Debate on the Class Status of Mandarin Chinese Adjectives & Verbs:
An Empirically-Based Evaluation + A Comparison of Stacking Behaviors

a Senior Thesis

by

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Abstract:

The question of whether Mandarin Chinese adjectives and verbs belong to the same word class or to separate ones is contested by linguists. I have conducted an empirically-based evaluation of the theories advanced by proponents of two competing hypotheses: a unified part of speech account (*Hypothesis 1*) and a separate part of speech one (*Hypothesis 2*).

Hypothesis 1 supporter, Chen-Sheng Luther Liu (2010), proposes a theory that I critique as a theory in general. However, I am most interested in a particular piece of his data that demonstrates how the pro-form *nàgè* 'that-GE' substitutes for and co-reference gradable adjectives and verbs alike. This is crucial evidence that strengthens *Hypothesis 1,* but the usage of *nàgè* is limited (e.g., can only replace things with adversely negative meanings).

Hypothesis 2 supporter, Waltraud Paul (2010), proposes that the marker of modification *de* is required for a prenominal verb because it forms a relative clause whereas it is optional for a prenominal adjective. Paul's theory proves that *absolute* adjectives cannot form relative clauses and, unlike verb-noun constructions that 'always' form compounds, some adjective-noun constructions form phrases. However, the test she uses to prove that adjective-noun constructions form phrases is not reliable, as judged by some native Chinese speakers, and some verb phrase-noun constructions without *de* are indeed phrasal.

Hypothesis 2 supporter, Shi-Zhe Huang (2006, 2015, 2017), proposes that simple adjectives are of semantic type *e* because anything functioning as an argument in a sentence is of this type (Chierchia 1998). Huang's theory proves that, unlike verbs (type <e,t>), simple adjectives cannot function predicatively in their bare forms and it explains why prenominal verbs require *de*, while simple adjectives do not. Although she acknowledges instances where verbs phrases and adjectives are re-analyzed as type *e* and <e,t>, respectively, she does not consider the ramifications of this data to a *Hypothesis 2* stance.

Following the evaluation, I have contributed to this debate by comparing adjective and verb-phrase stacking in Mandarin Chinese. I discovered that the number of differences between their behaviors in this syntactic construction is greater than their similarities, which supports *Hypothesis 2* (e.g., prenominal adjective ordering without *de* is restricted (Sproat & Shih 1987:471) whereas ordering of predicate-positioned verb phrases is relatively free (Chao 1968:326)). However, I suggest that the ordering of adjective stacking may be freer in some cases based on the type of nominal that is modified (e.g., *chǒu dà gēshǒu* 'ugly big singer' & *dà chǒu gēshǒu* 'big ugly singer (approved by native speaker, Carey Zhang)). More importantly, if prenominal verbs are proven to form verb phrases instead of relative clauses, then C.-T. James Huang (2016)'s evidence for the existence of an adjunct-complement dichotomy in the nominal domain identifies shared stacking behaviors among adjectives and verbs (e.g., the complement must be closest to the head noun in order to combine with it before the relative clause does (Huang 2016:434)), which supports *Hypothesis 1.*

1.0 Introduction

Former work done in the field of Mandarin Chinese grammar generally classifies adjectives as a sub-section of the verb part-of-speech, often based on comparisons made between the behaviors of English adjectives and Mandarin ones. In his 1968 book called *A Grammar of Spoken Chinese,* proponent Yuen Ren Chao explains, "In Indo-European languages adjectives often have similar inflections, or at least parallel inflections, to those of nouns, and are thus more like nouns than verbs. Adjectives in Chinese, on the other hand, function readily as predicatives..." (p. 676). I suppose an example of the inflectional similarities between English adjectives and nouns is when the verb 'to fear' is transformed into the adjective 'fearful' and the noun 'fearfulness.' Chao's main piece of evidence for the similarity between adjectives and intransitive, stative verbs in Chinese is that adjectives, such as the ones in examples (1) & (2), function as predicates without the copula *shì* 是 'to be':

(1) 今儿天凉。
   jīn er tiān liáng
   today weather cold
   'Today the weather is cool.'
(2) 菜很咸。
   cài hěn xián
   dish very salty
   'The dish is very salty.'   (Chao 1968:88)

Linguist James D. McCawley also considers required copula usage with adjectives to be an indicator of an adjective part-of-speech in his 1992 paper (p. 232). Therefore, like Chao, McCawley is a staunch supporter of a Chinese verb part-of-speech which adjectives fall under. Another piece of evidence McCawley (1992:232) uses to assert this stance is based on his adjective part-of-speech criteria that adjectives *directly* modify a nominal whereas verbs do not. At first, this seems to be the case based on example (3) below:

(3) 他是一个好人。
    tā shì yīgè   hǎo   rén
    he is one-CL good person
    'He is a good person.'   (McCawley 1992:233)

However, McCawley (1992:234-235) argues that 好人 *hǎo rén* 'good person' is a compound

rather than a phrasal unit, which means that *hǎo* is not a detachable adjective. First, he claims

that *hǎo* prevents degree expressions and comparative ones from accompanying *hǎo rén,* as

shown in (4a) & (b), respectively:

(4) a. *他是一个很好人。
       **tā shì yīgè   hěn   hǎo   rén*
        he is one-CL very good person
       'He is a very good person.'
    b. *他是一个比你好人。
       **tā shì yīgè   bǐ   nǐ   hǎo   rén*
        he is one-CL than you good person
       'He is a better person than you.'   (McCawley 1992:234)

Second, McCawley (1992:234-235) explains that although an adjective like *hǎo* can modify a

diverse number of bare nouns, a longer, more complex nominal jeopardizes the acceptability of

such expressions, as demonstrated in (5):

(5) a. 一杯好啤酒
       yībēi   hǎo   píjiǔ
       one-CL good beer-liquor
       'a glass of good beer'
    b. ?一杯好葡萄酒
       ?yībēi   hǎo   pútáo jiǔ
        one-CL good grape-liquor
       'a glass of good (grape) wine'
    c. ??一杯好绍兴黄酒
       ??yībēi hǎo shàoxīng   huángjiǔ
       one-CL good Shàoxīng yellow-liquor
       'a cup of good Shàoxīng wine'   (McCawley 1992:235)

He concludes that a word-formation rule rather than a syntactic one is licensing the combinations

of [adjectives + nouns] because the phonological/morphological form of the nominal determines

grammaticality (p. 235).

The account of a verb part-of-speech which adjectives belong to is not unanimously agreed upon, especially with linguists who have conducted recent work in the field. For instance, Paul Waltraud counters in her 2010 paper that absolute adjectives do indeed require a copula to behave predicatively and Linguist Shi-Zhe Huang argues in her 2017 paper that simple adjectives in their bare forms cannot behave as predicates. Consequently, there are two competing hypotheses: a unified part of speech account (*Hypothesis 1*) and a separate parts of speech account (*Hypothesis 2*). *Table 1* below identifies proponents of each hypothesis including their respective approaches to the topic:

Table 1 Proponents of Hypothesis 1 & 2[2]

Hypothesis 1	Hypothesis 2

Yuen Ren Chao (1968)
   grammar-based approach
	Waltraud Paul (2010)
	   syntactic, descriptive approach

James D. McCawley (1992)
   syntactic approach
	Shi-Zhe Huang (2006, 2017)
	   formal theory from a semantic
	   perspective

Chen-Sheng Luther Liu (2010, 2018)
   formal theory from a syntactic
   perspective	

My first objective is to conduct an evaluation of the theories of proponents for each hypothesis. I will not focus on Chao (1968) or McCawley (1992) in support of *Hypothesis 1* because linguists including, but not limited to, Paul and Huang have engaged with their supporting data, acknowledging some aspects and critiquing others with counter-evidence. Linguist Chen-Sheng Luther Liu's work, on the other hand, has not been analyzed in the scope of *Hypothesis 1* because his theory is not directly related to the debate. However, in his 2010 paper,

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[2] Although Chao and McCawley state support of *Hypothesis 1* and Paul states support of *Hypothesis 2,* nowhere in either Chen-Sheng Luther Liu's papers or Shi-Zhe Huang's is support of a stance explicitly made. Nevertheless, there is a working assumption that Liu & Huang hold positions in this debate.

Liu examines a shared pro-form between adjectives and verbs in support of his theory, which inadvertently strengthens *Hypothesis 1*. I am also choosing Paul (2010) as a representative of *Hypothesis 2* in this evaluation because she directly challenges Chao (1968) & McCawley (1992) with evidence that makes her theory convincing. Nevertheless, the tests she uses to assert her arguments are not consistently reliable and she acknowledges certain pieces of data that behave contrary to her theory. This demonstrates how the behavior of adjectives and verbs is so variable and diverse, to the point where it is difficult to identify a clear winner among the hypotheses. The other *Hypothesis 2* representative I have chosen is Huang (2006, 2017) whose semantic-based theory substantiates observations that Paul made in her paper.

My method of evaluation is empirically-based because in order to test the explanatory power of each theory, I need to determine what linguistic phenomena and data the at-issue theory can and cannot reliably account for. Even though the ideal outcome is to find evidence that overwhelmingly supports one hypothesis over the other, the more practical yet equally-valuable goal is to investigate what areas Mandarin Chinese adjectives and verbs converge and diverge in behavior. Therefore, observations in the form of native-speaker grammaticality judgements and pattern recognition are necessary to know where a theory reinforces and undermines its respective hypothesis.

My other objective is to conduct a comparison of the stacking[3] behaviors of Mandarin Chinese adjectives and verbs. Analyzing this syntactic phenomenon within the scope of this debate is relatively novel and may help tip the scale in favor of one hypothesis. If not, it will at least further clarify the outlines of adjective-verb convergence and divergence.

The evaluation proceeds as follows: in Section 2, I introduce Liu's theory of a polarity-

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[3] Stacking is when lexical elements are serialized in a single clause (e.g., "The large, round, white snowman.")

like positive morpheme with covert and overt forms (section 2.1) and discuss the strengths of the theory in support of *Hypothesis 1* (section 2.2) as well as the theory's shortcomings, both related to the debate and to the theory itself (section 2.3). In Section 3, I introduce Paul's theory of a *de-less* [adjective + noun] noun phrase (section 3.1) and discuss the strengths of the theory in support of *Hypothesis 2* (section 3.2) as well as the theory's shortcomings (section 3.3). In Section 4, I introduce Huang's theory of simple adjectives as semantic type *e* and of general type shifter *de* as type $<<e,t>,e>$, followed by a discussion of the strengths of the theory in support of *Hypothesis 2* (section 4.2) as well as specific missed opportunities (section 4.3). In section 5, I introduce the ordering rules of adjectives stacks in contrast to those for verb-phrase stacks (section 5.1), followed by an exploration of adjunct-complement ordering in the nominal domain (section 5.2). Finally, takeaways from the evaluation and the stacking analysis are recapitulated in Section 6.

2.0 Chen-Sheng Luther Liu (2010, 2018)
2.1 Theory of a Polarity-like Positive Morpheme with Covert & Overt Forms

In his 2010 paper, linguist Chen-Sheng Luther Liu proposes that Mandarin Chinese has a polarity-like positive morpheme appearing in two different forms: a covert one (POS) and *hěn*, the overt one which is not used to express the degree adverb 'very.' Liu explains that both allomorphs θ-bind the degree argument of a gradable adjective in the predicate position.

In *Government Binding Theory*, θ-criterion states that every argument possesses one and only one θ-role (Chomsky 1981). Based on this criterion, Liu applies theta-roles to events; for example, the intransitive verb *sleep* in the sentence, "John slept," bears two arguments: *John* and the 'sleeping' event. The former is assigned the θ-role *theme* (i.e., the entity that receives the action of the verb) while the latter is θ-bound by the past-tense operator so that the lexical verb *sleep* only denotes 'each of the sleeping events that took place in the past' rather than denoting all sleeping events regardless of time (Liu 2010:1048).

According to Liu (2010:1048), the gradable adjective *tall* also carries two arguments: a *theme* one and a referential degree one. Take a look at this adjective's usage in the sentence below, as shown in (6):

(6) John is as tall as Bill is.   (Liu 2010:1049)
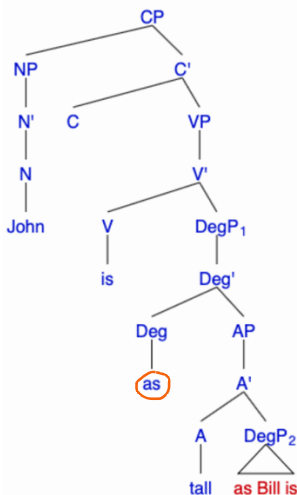
Similar to the 'sleeping' event argument, the referential degree one must be θ-bound by a degree phrase's head (i.e., *as*) so that the lexical adjective *tall* only denotes 'a property along a scalar dimension of degrees' rather than denoting all the degrees of 'tallness' (Liu 2010:1048).

Returning back to Liu's theory, he claims that the covert version of the positive morpheme (POS) must be licensed in a focus-sensitive domain. We will consider two such domains. The first one possesses a contrastive focus, as shown in sentence (7):

(7) 张三高，李四矮。
[*Zhāngsān* [FocP Op [Foc⁰ [+operator] [DegP *gāo*ᵢ-pos [AP [A tᵢ]]]]]],
 Zhāngsān tall-POS
[*Lǐsì* [FocP Op [Foc⁰ [+operator] [DegP *ǎi*-pos [AP [A tᵢ]]]]]]
 Lǐsì short-POS
'Zhāngsān is tall, Lǐsì is short.' (Liu 2010:1040)
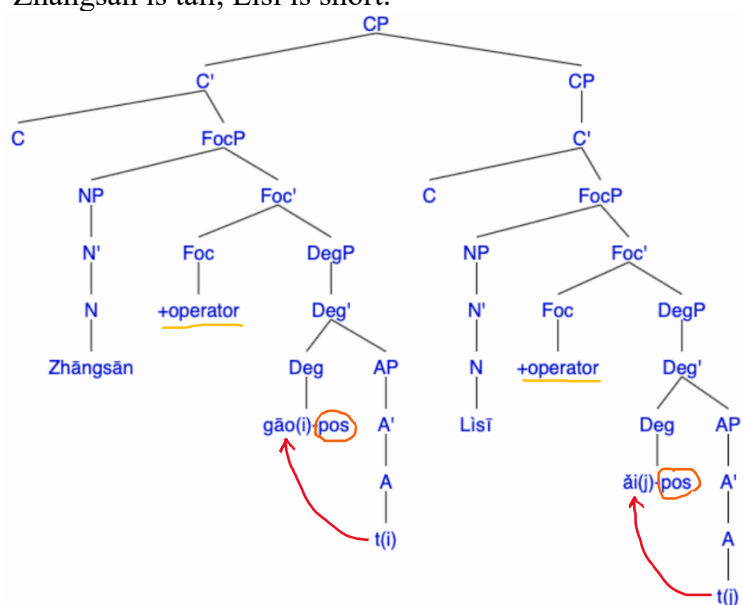
As stated by Liu (2010:1040), contrastive focus is a type of 'predicate-accessible operator[-wh] domain' where the head of a focus phrase (i.e., Foc) carries a 'predicate-accessible operator[-wh] feature' (i.e., +operator), which licenses the occurrence of POS in a degree phrase's head position (Deg). Consequently, POS coerces *gāo* 高 'tall' and *ǎi* 矮 'short' to raise into their respective degree head positions in order to θ-bind them and so that they convey a degree meaning.

The second domain that we will look at possesses negation. The same thing in sentence (7) is happening in sentence (8), except that the 'predicate-accessible operator[-wh] feature' is overtly identified by the morpheme *bù* 不 'not,' as shown below:

(8) 张三不高。
Zhāngsān [NegP Op [[Neg *bù*[+operator]][DegP *gāo*i-pos [AP[A ti]]]]]
Zhāngsān   not   tall-POS
'Zhangsan is not tall.'   (Liu 2010:1025)
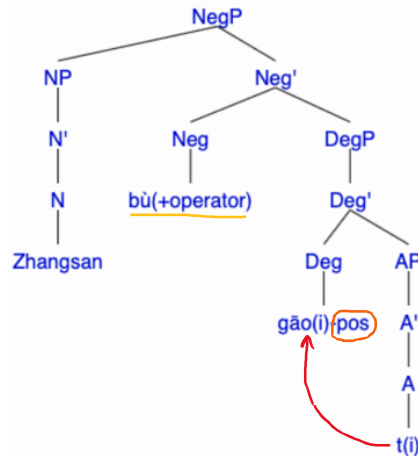
Transitioning now to the overt form of the positive morpheme (HEN), Liu explains that it θ-binds gradable adjectives in elsewhere cases, such as when an adjective is substituted and co-referenced by the predicative pro-form *nàgè* 那个 'that + [general classifier][4].' Take a look at the application of this phenomenon to (7) and (8) in (9) and (10), respectively:

(9) 张三*(很)那个，李四*(很)这个。
Zhāngsān [DegP [Deg *(*hěn*)] [AP [A *nàgè*]]], *Lǐsì* [DegP [Deg *(*hěn*)]] [AP [A *zhègè*]]]
Zhāngsān   HEN   that-GE   Lǐsì   HEN   this-GE
'Zhāngsān is that way (i.e., tall), but Lǐsì is this way (i.e., short).'
(10) 张三不*(很)那个。
Zhāngsān bù *(*hěn*)   *nàgè*
Zhangsan not   HEN that-GE
'Zhangsan is not that way (i.e., tall).'   (Liu 2010:1050)

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[4] general classifier (GE) = although it is not behaving normally in the pro-form *nàgè*, the general classifier usually behaves like a *classifier* that can be used with many nominals, even if a nominal has a more specific classifier.
- classifier (CL) = it is a lexical item that usually precedes nominals and "... name[s] the unit that is already present in the semantic denotation of the noun" (Sybesma 2017:620).
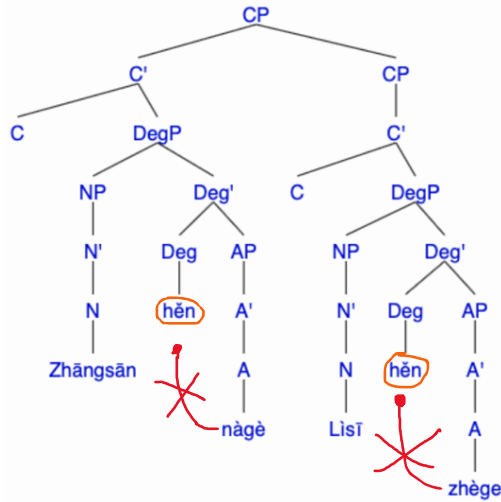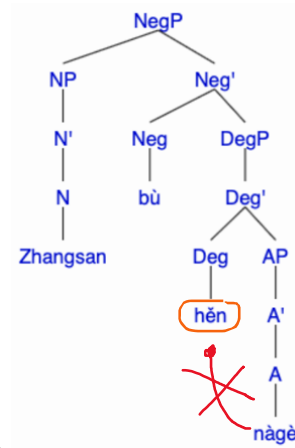
9.   10.

The lexical item *hěn* in (9) and (10) is the overt positive morpheme (HEN) because removing it renders the sentences ungrammatical, which is not the case when an intensifying adverb like *hěn* 'very' is deleted (Liu 2010:1049). Liu also claims on page 1050 that while HEN does θ-bind *nàgè* and the variant form *zhègè* 这个 'this-GE,' it cannot license their movement into Deg positions because these pro-forms are not clearly adjectival (will revisit in section 2.2).

       However, Liu recognizes two linked problems that his 2010 paper cannot address. Firstly, his original theory does not identify any constraint on the distribution of both covert and overt forms of the positive morpheme and therefore is arbitrary and not falsifiable. Secondly, he cannot account for why the following piece of data has a contrastive read because his original theory would not predict the covert positive morpheme to occur in (11) below:

(11)   Q: 他们谁高呢?
        tāmen shéi gāo (*ne*)
        them   who tall (SFP)[5]
        'Which of them is taller?'
      A: 老二高。
        Lǎo Èr gāo
        Lǎo Èr tall
        'Lǎo Èr is taller.'   (Chao 1968:683)

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[5] (SFP) = sentence final particle

So, in his 2018 paper, Liu introduces the rule stated in (12) as a solution to these problems:

(12) Constraint on Multiple Foci (Liu 2018:95)
    In Chinese, a construction with multiple foci requires each of the foci to be 'definite'
    enough.

Since focus-sensitive domains introduce multiple foci, they cannot evade the *constraint* rule. He argues that *shéi* 谁 'who' in (11) is a contrastive focus-sensitive morpheme and therefore, the covert positive morpheme (POS) is used instead of the overt form (HEN) because the latter is not so 'definite' in its semantic meaning compared with other degree adverbs (e.g., *hěnduō* 很多 'a lot').

  This assertion is based on two pieces of data. First, in the comparative construction (i.e., with *bǐ* 比 'than'), the degree adverb *shāowéi* 稍微 'a little' is more 'definite' than the degree adverb *bǐjiào* 比较 'more' because although both have a target of comparison, only the former requires a specified standard of comparison while the latter does not. So, *shāowéi* can appear in a sentence with *bǐ,* as shown in (13a), whereas *bǐjiào* in (13b) cannot:

(13) a. 张三比李四稍微高*(一些)。
      *Zhāngsān bǐ   Lǐsì shāowéi gāo *(yīxiē)*
      Zhāngsān than Lǐsì a-little   tall *(a little)
      'Zhāngsān is a little taller than Lǐsì.'
    b. 张三比李四(*比较) 高。
      *Zhāngsān bǐ   Lǐsì (*bǐjiào) gāo*
      Zhāngsān than Lǐsì (*more) tall   (Liu 2018:81)

In this case, the covert positive morpheme *hěn* is similar to *shāowéi.* The second piece of supporting evidence is shown in (14) where the covert positive morpheme is being used:

(14) *这个箱子重虽重，还好不重，我可以自己搬。
    **zhège xiāngzi zhòng   suī   zhòng háihǎo bù zhòng wǒ kěyǐ zìjǐ bān*
     this-CL box   heavy though heavy not-bad not heavy I   can self carry
    'Although this box is heavy, it is not heavy. So, I can carry it by myself.'   (Liu 2018:97)

Although this sentence is syntactically grammatical, it is semantically ungrammatical because

the proposition that the box is 'not heavy' contradicts the previous proposition that it 'is heavy.'

Looking now at (15), its grammaticality is based on the interpretation of the added element *hěn* as functioning as a degree intensifier rather than the positive morpheme:

(15) 这个箱子重虽重，还好不很重，我可以自己搬。
   zhège xiāngzi zhòng suī   zhòng háihǎo bù hěn zhòng wǒ kěyǐ zìjǐ bān
   this-CL box   heavy though heavy not-bad not very heavy I   can self carry
   'Although this box is heavy, it is not very heavy. So, I can carry it by myself.'

Therefore, Liu concludes that the positive morpheme (HEN) is prohibited due to the multiple foci introduced by the sentence's contrastive focus.

Implementing the *Constraint of Multiple Foci* rule is Liu (2018)'s attempt to reconcile the contrastive read in (11) with his theory of a polarity-like positive morpheme as well his attempt to identify a constraint on the distribution of the morpheme's covert and overt forms.

2.2 Strengths of Liu's Theory

I have identified two ways in which Liu's theory supports *Hypothesis 1*. The first is that the pro-form *nàgè* can also substitute for and co-reference a verb phrase, as shown in (16):

(16) a. 小心！那条狗会咬人哦。
      xiǎoxīn   nà tiáo gǒu huì [VP *yǎo rén*]   *ó*
        care   that-CL dog will   bite people SFP
      'Be careful! That dog bites.'
      b. 小心！那条狗*(会)那个哦。
      *xiǎoxīn nà tiáo gǒu *(huì)* [VP *nàgè*]   *ó*
        care that-CL dog   will   that-GE SFP
      'Be careful! That dog does that (i.e., bites).'   (Liu 2010:1050)

Similar to how the overt positive morpheme *hěn* θ-binds the degree argument of gradable adjectives, the modal verb *huì* 会 'will' (i.e., tense) θ-binds the event argument of *yǎo rén* 咬人 'bite people,' narrowing its denotation from all 'biting-people' events to each of the future ones. Another reason why *huì* in (16b) is needed to make the sentence grammatical is because it marks *nàgè* as a pro-verb, rather than a pro-adjective (Liu 2010:1048, 1050).

The second way Liu's theory supports *Hypothesis 1* is that *nàgè* substitutes for both

simple and complex gradable adjectives (will revisit in section 4.2), as demonstrated in (17) &

(18), respectively:

(17) a. 他 *(很) 糊塗。
       tā *(*hěn*)[6]   *hútú*
       he *(HEN) muddle-headed
       'He is muddle-headed.'   SIMPLE ADJECTIVE
      b. 他*(很) 那个。
       tā *(*hěn*) *nà-gè*
       he *(HEN) that-GE   (my creation approved by native
       'He is muddle-headed.'   speaker Shi-Zhe Huang)

(18) a. 他(*是) 糊裡 糊塗 的。   COMPLEX ADJECTIVE
       tā (*shì*)   *húlǐ hútú   de*
       he (*is) muddled-headed DE   (my creation informed
       'He is muddled-headed.'   by Huang (2017:3))
      b. 他 很 那个。
       tā hěn nà-gè
       he very that-GE   (my creation approved
       'He is that way (i.e., muddled-headed).'   by Shi-Zhe Huang)

These two pieces of data complement well-known evidence that gradable adjectives, like verbs,

do not need the copula *shì* 是 'to be' to function as predicates, as shown in (19) & (20),

respectively:

(19) 那个女孩非常漂亮。
       nàgè   nǔhái fēicháng piàoliang   GRADABLE ADJECTIVE
       that-CL girl extremely beautiful
       'That girl is extremely beautiful.'   (Liu 2010:1010)
(20) 那个女孩昨天死了。
       nàgè   nǔhái zuótiān   sǐ   le   INTRANSITIVE STATIVE
       that-CL girl yesterday die-(PTM)[7]   VERB
       'That girl died yesterday.'   (my creation approved
                                          by Shi-Zhe Huang)

Furthermore, both verbs, as shown in (21), and gradable adjectives, as shown in (22), can fill

conjunct positions in a *yòu...yòu* 又...又 'not only __, but also __' coordination construction.

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[6] The overt form of the positive morpheme (HEN) is obligatory in a simple declarative sentence like (17a).
[7] (PTM) = past-tense marker

These positions are only reserved for predicates since *yòu* 'again' is an adverb:

(21) 张三又挑水又打水。
Zhāngsān yòu **tiāo shuǐ** *yòu* **dǎ shuǐ**
Zhāngsān <u>again</u> **raise water** <u>again</u> **hit water**
'Zhangsan not only carries water with a pole on his shoulder but also fetches water.'

(22) 张三又小气又很那个真是令人受不了。 (Liu 2018:98)
Zhāngsān yòu xiǎoqì yòu **hěn nàgè** *zhēn shi lìng rén shòubùliǎo*
Zhāngsān <u>again</u> **stingy** <u>again</u> **very that-GE** really is cause people intolerable
'Zhāngsān is not only stingy but is also so much so (e.g., rude), which makes him really intolerable.'

In (22), the gradable adjective *xiǎoqì* 小气 'stingy' (i.e., due to the covert positive morpheme POS) and the overt positive morpheme *hěn* with the pro-form *nàgè* are functioning as predicates just like the verb phrases in (21). Therefore, the argument that gradable adjectives and intransitive, stative verbs share characteristics and display parallel behaviors is enforced in these ways by Liu's data.

2.3 Shortcomings of Liu's Theory

I have identified three drawbacks of Liu's theory. First, it predicts (9) & (10), replicated below in (23) & (24), to be grammatical but native Mandarin Chinese speaker and linguist Shi-Zhe Huang judges them to be ungrammatical:

(23) *张三(很)那个，李四(很)这个。
**Zhāngsān* (*hěn*) *nàgè, Lǐsì* (*hěn*) *zhègè*
*Zhāngsān (HEN) that-GE Lǐsì (HEN) this-GE
 Intended: 'Zhāngsān is that way (i.e., tall), but Lǐsì is this way (i.e., short).'
(24) *张三不(*很)那个。
Zhāngsān bù* (hěn*) *nàgè*
 Zhāngsān not (*HEN) that-GE
'Zhāngsān is not that way (i.e., tall).'

One issue is that the pro-form *nàgè* can only substitute for predicates with adversatively negative meanings, but *gāo* 'tall' and *ǎi* 'short' are neutral. Another issue is that the variant form of the pro-form *zhègè* 'this-GE' is ungrammatical in (23) and therefore it is difficult to use the pro-

14

form in such contrastive constructions. A final issue applying specifically to (24) is that *hěn* as an overt positive morpheme (i.e., not a degree intensifier) does not appear in negation construction, as demonstrated below:

(25) 他弟弟很奸诈, 可是他自己一点儿不那个。 (Chao 1968:659)
tā dìdì hěn jiānzhà, kěshì tā zìjǐ yīdiǎn er bù nàgè
his younger-brother very crafty, but he himself a little not that-GE
'His younger brother is very crafty, but he himself is not that way at all.'

In (25), *bù* 不 'not' licenses both the degree adverb and negative polarity item *yīdiǎn er* 一点儿 'a little,' and the pro-form *nàgè*. Therefore, we can infer that *hěn* makes (24) ungrammatical because *bù* is sufficient to license the pro-form.

The limitations of what types of adjectives *nàgè* can co-reference (i.e., only ones with negative meanings) and what contexts it can appear in (i.e., not contrastive focus ones like (23)) poses challenges to *Hypothesis 1*. An additional yet related and equally important limitation is that *nàgè* cannot co-reference *absolute* (i.e., not gradable/scalar) adjectives like *fāngxíng* 方形 'square,' as shown in (26):

(26) a. 这个盘子是方的。
zhège pánzi shì fāng de
this-CL plate is square DE
'This plate is square.' (Paul 2010:118)
b. *这个盘子是那个。
zhège pánzi shì nàgè
this-CL plate is that-GE (my creation approved
Intended: 'This plate is that way (i.e., square).' by Shi-Zhe Huang)

The second drawback of Liu's theory concerns the two allomorphs of the polarity-like positive morpheme. Typically, when there exists an overt form of a lexical item, the language with this form rejects a covert form, and vice versa. For example, the English iota operator is a mark placed in front of a variable in a quantifier and it gives an expression denoting the entity a definite description (i.e., *the* in a nominal reading) (Russell 1905). It has no covert counterpart as

shown in (27):

> (27) a. The girl saw the boy.
> b. *Girl saw boy.

However, in Mandarin Chinese, definiteness in a nominal reading is covertly marked (will revisit

in section 4.1), as shown in (28), and there is no overt counterpart:

> (28) 女孩看见了男孩。
> *nǚhái kànjiàn le nánhái*
> girl   see   LE boy
> 'The girl saw the boy.'   (Huang 2006:349)

The last drawback of his theory deals with the *Constraint on Multiple Foci* because the

requirement for each focus in a multiple foci construction to be 'definite enough' is vague.

Although the term *definite* is normally defined as a semantic feature of noun phrases that selects

a specific referent and is marked by determiners like *the* and *that,* I am guessing that *definite* in

this rule deals with the size of the domain of comparison (i.e., a smaller domain ensures a more

specific, target comparison and therefore is more 'definite'). This type of phenomenon occurs in

English sentences with degree adverbs modifying *tall* and *taller,* as shown in (29):

> (29) a. Tim is (very) tall.
> b. Tim is (*a lot) tall.
> c. Tim is (*very) taller.
> d. Tim is (a lot) taller.   (my creations)

The lexical form of the English word 'taller' is comparative, but its meaning is absolute, unlike

its gradable counterpart 'tall.' This explains why a degree intensifier that does not have an

explicit standard of comparison (i.e., 'very') can modify (a) but not (c) while one that requires an

explicit standard of comparison (i.e., 'a lot') cannot modify (b) but can modify (d).

      The *Constraint on Multiple Foci,* however, is used to justify Liu's complex mechanism

for an overt and covert positive morpheme, which misses the fundamental big picture. In her

chapter in the 2017 *Encyclopedia of Chinese Language and Linguistics,* linguist Shi-Zhe Huang

produces a more convincing account, namely that, "... the positive meaning of a bare gradable adjective under contrastive reading entails comparative reading" (p. 16). In English, this is overtly marked through inflection (i.e., [-er]), whereas in Mandarin Chinese, it is not. However, take a look at what happens if the comparative meaning of *gāo* 'taller' in (11) is re-imagined as having a positive meaning, as shown in (30):

(30) Q: 他们谁高?
      tāmen shéi gāo
      them   who tall
      'Which of them is tall?'
      (Imagine this being a question asked by a volleyball scouting agent looking for tall players)
    A: 老二高。
      Lǎo Èr gāo   (Huang 2017:16)
      Lǎo Èr tall
      'Lǎo Èr is tall.'
      (Implying she might be the next Láng Píng, the legendary Chinese volleyball player and coach)

Huang (2017) explains that "Being tall makes one necessarily taller than someone who is short, or who is not short," (p. 16). In other words, the comparative reading is part of the lexical item's intensional meaning and is accessed in a contrastive context.

So, the shortcomings of Liu's theory are as follows: 1) it overgeneralizes the application of *nàgè* to contexts where its usage is ungrammatical (i.e., gradable adjectives without adversely negative meanings and contrastive focus sentences with the pro-form's variant z*hègè* 'this-GE'); 2) it is contrary to the logic of recognizing only an overt or covert form in a language rather than both; 3) the constraint on the distribution of the positive morpheme's two allomorphs (i.e., *Constraint on Multiple Foci*) does not explain and account for cross-linguist patterns.

3   Waltraud Paul (2010)
3.1 Theory of a *De* 的-less [Adjective + Noun] Noun Phrase

In her 2010 paper, linguist Waltraud Paul proposes that verbs in adnominal modifier positions require the modification marker *de* 的, as shown in (31), whereas *de* is optional when

the adnominal modifier is either a gradable or an absolute adjective, as shown in (32) & (33), respectively:

(31) 担忧 *(的)人
    dānyōu *(de*) *rén*   VERB PHRASE
    worry   *(DE) person
    'persons who worry'   (Paul 2010:123)

(32) 一个聪明(的)人
    yīgè   *cōngmíng* (*de*)   *rén*   GRADABLE ADJ.
    one-CL intelligent (DE) person
    'an intelligent person'

(33) 一个方形(的)盘子   ABSOLUTE ADJ.
    yīgè fāngxíng (*de*) *pánzi*
    one-CL square (DE) plate   (Paul 2010:122)
    'a square plate'

She argues that if gradable adjectives like *cōngmíng* 聪明 'intelligent' were truly similar to intransitive, stative verbs like *dānyōu* 担忧 'worry,' we would expect *de* to be obligatory with *cōngmíng* and ungrammatical with absolute adjectives like *fāngxíng* 方形 'square.' However, the optionality of *de* in (32) and (33) challenges this assumption.

Furthermore, Paul demonstrates how certain *de*-less [A N] (i.e., adjective + noun) constructions like (32) and (33) are phrases rather than compounds by testing whether the bare nominal can be removed from a noun phrase, as shown in (34) and (35):

(34) *阿梅 不想吃红花, 黄的还可以。   COMPOUND
    Amēi bù xiǎng chī [$_{N^0}$ *hóng huā*] [$_{NP}$ *huáng de* Ø] *hái kěyǐ*
    *Amēi not want eat   red-flower   yellow DE   still ok
    Intended: 'Amei doesn't want to take safflower [as medicine],   (Paul 2010:131)
               yellow ones are still ok.'

(35) 我觉得黄衬衫比红的好看。   PHRASAL
    wǒ juédé [$_{NP}$ *huáng chènshān*]   *bǐ*   [$_{NP}$ *hóng -de* Ø] *hǎokàn*
    I think   yellow   shirt compared:to   red-DE   pretty
    'I think that yellow shirts are prettier than red ones.'   (Paul 2010:132)

This test is based on the *Lexical Integrity Hypothesis,* which states that "... the internal structure of compounds, i.e., of words, is inaccessible to syntactic rules" (Paul 2010:130). In (34), the

noun in the compound *hóng huā* 红花 'red-flower' cannot be elided in the subsequent noun phrase (NP) whereas in (35), the noun in the phrase *huáng chènshān* 黄衬衫 'yellow shirt' can be elided.

4.1 Strengths of Paul's Theory

I have identified two ways in which Paul's theory supports *Hypothesis 2*. The first is it successfully challenges the account that adjectives forming relative clauses in adnominal modifier positions just like verbs, as shown in (36) & (37) below:

(36) 一个喜欢笑的人
[DP *yīgè* [IP t_i *xǐhuān xiào*] *de   rén*_i]
   one-CL   like laugh DE person
'a person who likes laughing'   PREDICATE PHRASE

(37) 一个聪明的人
[DP *yīgè* [IP t_i *cōngmíng*] *de   rén*_i]   GRADABLE ADJECTIVE
   one-CL   intelligent DE person
'an intelligent person'   (Paul 2010:117)

Since verbs are intrinsically predicative, they form relative clauses and are followed by *de* when functioning as adnominal modifiers. Therefore, *Hypothesis 1* proponents argue that gradable adjectives also form relative clauses because they are predicative without the copula *shì* 'to be.' However, absolute adjectives cannot form relative clauses because they require *shì* to behave predicatively, but adding the copula in adnominal modification like (38) is ungrammatical:

(38) a. 这个盘子*(是)方的。
       *zhège   pánzi *(shì) fāng de*
       this-CL plate *(is) square DE
       'This plate is square.'   (Paul 2010:118)
    b. 一个(*是)方形 的 盘子
       *yīgè   (*shì)* fāngxíng *de pánzi*   ABSOLUTE ADJECTIVE
       one-CL (*is)   square DE plate
       'a square plate'   (Paul 2010:122)

Paul's account of verbs requiring *de* in contrast to the optionality of *de* with gradable and

absolute adjectives alike further proves that such adjectives are not predicative and therefore, do not form relative clauses.

The second way Paul's theory supports *Hypothesis 2* is that her data of *de*-less adjective + noun [A N] phrasal constructions follows Chao (1968)'s distinction between compounds and phrases. One criterion for being a compound is that part of the item in question must be a bound form and hence the parts are inseparable from each other (Huang 1984:63). Examples (39) - (41) are all [A N] constructions but (39) and (40) are compounds because either one or both of the lexical items that make up the constructions are bound (B), respectively:

(39) 洋灰
  yáng huī   [A N] COMPOUND
  foreign dust (BF)
  'cement'
(40) 国际法
   guójì fǎ   [A N] COMPOUND
  international law (BB)
(41) 好书
  hǎo shū
  good book (FF)   [A N] PHRASE   (Chao 1968:278)

However, since both lexical items in (41) are free (F), it is a phrase similar to *huáng chènshān* 'yellow shirt' in (35). Another criterion for being a compound, particularly a verb + object one [V O], is that the internal structure has no explicit syntactic head (i.e., exocentric), which is adhered to in (42) & (43) below:

(42) 綁腿
  bǎng tuǐ
  tie leg   ACTION [V O] COMPOUND
  'legging'   (Huang 1984:62)
(43) 当差
  dāng chāi   STATIVE [V O] COMPOUND
  be mission (FF)[8]
  'to be at orders – messenger, servant'   (Chao 1968:419)

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[8] Although *dāng chāi* 当差 'be mission' is composed of two free morphemes, it is a compound due to exocentricity.

According to Huang (1984:63), these [V O] nominals violate the endocentricity principle that is applied to all phrase structures and which states that whole construction must have the same syntactic function as the head (e.g., *bǎng* 綁 'tie' is a verb head, so *bǎng tuǐ* 'tie leg' should be a verb phrase). This may explain why all of the examples I saw in section 5.4.3.2. *Restricted and idiomatic V-O* of Chao (1968:306-308) seem to be nominal.

Another convincing reason why the limited *de*-less modification structures involve only adjectival adnominal modifiers is that "... when a modifier, as opposed to a governing verb, precedes a determinative expression, a *de* is required" (Chao 1968:305), as shown in (44):

(44) a. 逮着了那隻老虎
      dǎi zhe le   nà   zhī lǎohǔ
      catch-PTM that single tiger   GOVERNING VERB
      'caught that tiger'
      b. 逮着了的那隻老虎
      dǎi zhe le   de nà   zhī lǎohǔ
      catch-PTM DE that single tiger   MODIFIER
      'the tiger which was caught'   (Chao 1968:305)

Therefore, evidence of adjectival adnominal modifiers forming both phrases and compounds in contrast to verbal adnominal modifiers forming only compounds strengthens *Hypothesis 2*.

4.3 Shortcomings of Paul's Theory

I have identified two drawbacks of Paul's theory. First, there are instances where the behavior of compounds contradicts the *Lexical Integrity Hypothesis* (LIH). For example, native Mandarin Chinese speaker JiangXue Han judged the omission of the nominal *chá* 茶 'tea' in (45) to be grammatical even though *lǜ-chá* 绿茶 'green tea' is a compound:

(45) 我喜欢绿茶，红的也可以。
      wǒ xǐhuān [$_{N^0}$ *lǜ-chá*] [$_{N^0}$ *hóng -de Ø*] *yě   kěyǐ*
       I   like   green-tea   red-DE also possible   ((Paul 2010:131) but changed
      Intended: 'I like green tea, but black is also ok.'   to grammatical)

Another example comes from Huang (1984:64) where verb-object [V O] compounds like (46a) can be separated in certain positions like (46b):

(46)　a. 他很担心这件事。
　　　　tā hěn dānxīn zhèjiàn shì　　　　COMPOUND
　　　　he very worry　this matter
　　　　'He is very worried about this matter.'
　　　b. 他担了三年的心。
　　　　tā　dānle　sān nián　de　xīn
　　　　he carry-LE three year DE heart　　PHRASE
　　　　'He worried for three years.'
　　　　(Lit. 'He wor- ed three years -ry.')　　　　　　　　　(Huang 1984:64)

The compound *dānxīn* 担心 'worry' in (a) is not separated and it is followed by the object *zhèjiàn shì* 这件事 'this matter,' which would be ungrammatical if it were phrasal.[9] However, *dānxīn* in (b) behaves more like a phrase, therefore defying the LIH. Huang concludes that such [V O] sequences must be recognized as having dual status, either as words or as idiom phrases.

The second drawback of Paul's theory concerns *de*-less verb phrase + noun constructions [VP N], which an anonymous reviewer of her paper pointed out. She conducted a small survey and three out of the seven examples were judged unanimously to be grammatical whereas the other four diverged in acceptability (Paul 2010:123-124). Although it is unclear whether these constructions are compounds or phrases, I argue that one of the unanimously-accepted examples is a phrase because the lexical item *tóupiào* 投票 'vote' can be inserted, as shown in (47b):

(47)　a. 报名日期
　　　　bào　míng rìqí
　　　　report name date
　　　　'registration deadline'　　　　　　　　　　　　　　　(Paul 2010:124)
　　　b. 报名投票日期
　　　　[VP *bào　míng tóupiào*] *rìqí*
　　　　　　report name　vote　date

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[9] To learn more, please refer the *Phrase Structure Condition* in Huang (1984:54).

'registration deadline to vote' (approved by Shi-Zhe Huang)

Notice that *tóupiào* is modifying the VP rather than the larger noun phrase (NP). It is worth investigating in future research whether the other constructions form phrases or compounds.

Ping Ling *et al.* (1993) also discusses how these types of constructions possess both a compound and a phrasal reading. Their rationale is based on a condition where the meaning of the whole is not compositional of its parts, which is called *idiomaticity*: a compound possess a higher degree of *idiomaticity* whereas a phrase possess a lower one. Although this criterion is debated[10], Ping Ling *et al.* (1993:100) connect it to the semantic distinction of *referential specificity*, as demonstrated in (48) below:

(48) a. 洗衣粉
    xǐ - *yī* - *fěn*
    wash-clothes-powder
    'detergent'
  b. 洗衣粉
    xǐ   *yī*   *fěn*
    wash clothes powder
    'The powder which is used in washing clothes'
  c. *洗衣的粉
    **xǐ* - *yī* - *de*- *fěn*
    *wash-clothes-DE-powder
    Intended: 'detergent'
  d. 洗衣的粉
    xǐ   *yī*   *de*   *fěn*
    wash clothes DE powder
    'The powder which is used to wash clothes.' (Li *et. al* 1993:101)

The noun *fěn* 粉 'powder' in compound reading (a) has no referential content or semantic accessibility without its modifier, while *fěn* in phrasal reading (b) does regardless of modifier presence. This is why adding *de* to the compound reading is ungrammatical in (c) while adding it to the phrasal reading is grammatical in (d). This weakens *Hypothesis 2* because now we see that

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[10] Huang (1984:63) points out idioms that form phrases rather than morphemes exist, like the expression '*kick the bucket.*' Therefore, *idiomaticity* is argued to not be sufficient criteria for compoundhood.

23

adjectives and verb phrases can modify *de*-less noun phrases (NP).

So, the issues with Paul's theory include evidence of compounds composed of adjectives and verbs behaving contrary to the *Lexical Integrity Hypothesis* as well as limited consideration for the phrasal status of [VP N] constructions.

5 Shi-Zhe Huang (2006, 2015, 2017)
5.1 Theory of Simple Adjectives (type *e*) & General Type Shifter *de* (type <<e,t>,e>)

In her 2006 paper, linguist Shi-Zhe Huang proposes that in their bare forms, nominals and simple adjectives are of semantic type *e*, which means they denote kinds of things (e.g., blue and orange are kinds of colors). The category of *simple adjectives* (SA) includes items ranging from *gāo* 高 'tall' (i.e., monosyllabic, gradable) to *gòngtóng* 共同 'common' (i.e., disyllabic, absolute). On the other hand, the category of *derived adjectives* (DA) are of semantic type <e,t> and are derived from SAs through a number of processes as shown in (49) – (51):

(49) 小 → 小小　　　　　　　X → XX
　　　xiǎo → *xiǎoxiǎo*　　　*REDUPLICATION*
　　　'small' → 'smallish'
(50) 臭 → 臭哄哄　　　　　　X → X 哄哄
　　　chòu → *chòu-hōnghōng*　*LIVELY SUFFIXES*
　　　'stinky' → 'rampantly stinky'
(51) 凉 → 冰凉　　　　　　　X → YX
　　　liáng → *bīngliáng*　　*PREFIX-LIKE INTENSIERS*
　　　'cold' → 'ice-cold'　　　　　　　　　　　　　　(Huang 2017:3)

Traditionally, linguists use a more complex ontology for event semantics. In (52), for instance, notice that the 2nd order predicate in (b) takes the 1st order one in (a) as its input, the 3rd order predicate in (c) takes the 2nd order one as its input, and so on:

(52)　a. 1st-order predicate = 'green'
　　　　　　　　　　{green}　　　　　　　　　　(type *e*)
　　　b. 2nd-order predicate = 'Green is a color,'
　　　　　　　　　　[[**color**]](green)　　　　　　(type <e,t>)
　　　c. 3rd-order predicate = 'A color is needed in the room,'
　　　　　　　　[[**needed in the room**]]([[**color**]])　(type <<e,t>,e>)

However, Chierchia (1998) diverges from this method by introducing a much simpler *general type theory* which states that anything functioning as an argument in a sentence belongs to type *e*. Huang (2006:349) provides evidence that both nouns and SAs, as shown in (53) & (54) respectively, follow this criterion by occupying subject positions in their bare forms (i.e., without determiners):

(53) 女孩看见了男孩。
nǔhái kànjiàn le nánhái
 girl   see   PTM boy   BARE NOMINAL
 'The girl saw the boy.'

(54) 勤奋是一个美德。
qínfèn shì yīgè   měidé   BARE SA
 diligent is one-CL beautiful virtue
 'Diligence is a beautiful virtue.'   (Huang 2006:349)

In her 2015 conference presentation, Huang considers *de* to be a 'general type-shifter,' meaning that it facilitates intersection between an adnominal modifier and a bare nominal by ensuring that they are of the same semantic type, as shown in (55):

(55) a. [XP$_{<e,t>}$ *(*de*$_{<<e,t>,e>}$) YP$_e$]
     b. [XP$_e$ (*de*) YP$_e$]
     c. [XP$_{<e,t>}$ (*de*) YP$_{<e,t>}$]   (Huang 2015:5)

Since XP is of type <e,t> (i.e., a predicate) and YP is of type *e* in (a), *de* is obligatory because its job is to transform XP from <e,t> to *e*. However, *de* is optional in (b) and (c) because both XP and YP are already type matched. So, if an SA modified a bare noun, the structure would look similar to (b) since both are of type *e*, according to Chierchia (1998) and Huang (2017:9).

5.2 Strengths of Huang's Theory

        I have identified two ways in which Huang's theory supports *Hypothesis 2*. The first is that it demonstrates how adjectives do not uniformly behave like verbs. In other words, derived adjectives (DAs) do behave like verbs because both are of type <e,t> whereas simple adjectives

(SAs) do not because they are of type *e.* The rule in (56) is an example of this behavior

divergence:

(56) Complementary distribution of SAs and DAs in the Predicate Position
a. SA bare forms <u>cannot</u> appear in the predicate position, assuming normal intonation
b. DA bare forms <u>can</u> appear in the predicate position (Huang 2017:9)

As mentioned before, *Hypothesis 1* argues that gradable SAs are similar to verbs because they do

not require the copula *shì* 'to be' to function predicatively. However, (56) justifies why gradable

SAs typically need an adverbial intensifier (or an overt positive morpheme, according to Liu

(2010)) in simple declarative sentences (i.e., not focus-sensitive domains), such as (57a),

whereas things of type <e,t> including the DA in (b) and the verb in (c) do not:

(57) a. 张三*(很)聪明。
Zhāngsān*(*hěn*) *cōngmíng* GRADABLE SA
Zhāngsān *(very) intelligent (my creation informed
'Zhāngsān is intelligent.' by Paul (2010:117))
b. 张三(很)糊裡糊涂的。
Zhāngsān (*hěn*) *húlǐ hútú de* DA
Zhāngsān (very) muddled-headed DE (my creation informed
'Zhāngsān is (very) muddled-headed. by Huang (2017:3))
c. 张三(很)担心。
Zhāngsān (*hěn*) *dānxīn* VERB
Zhāngsān (very) worry (my creation informed
'Zhāngsān worries (a lot).' by Paul (2010:123)

The second way Huang's theory supports *Hypothesis 2* is that the account of *de* as a generalized

type shifter of type <<e,t>,t> justifies its requirement for adnominal modifiers of type <e,t> (i.e.,

DAs and verbs) and its optionality for things of type *e* (i.e., SAs), as shown in (58):

(58) Complementary distribution of SAs and DAs in the Modifier Position
a. SA bare forms <u>can</u> appear in the modifier position as in [SA (*de*) N]
b. DA bare forms <u>cannot</u> appear in the modifier position as in [DA *(*de*) N] (Huang 2017:9)

5.3 Missed Opportunities of Huang's Theory

There are two missed opportunities of Huang's theory, both of which she recognized in

26

her literature but did not consider within the scope of her theory. First, verbs and verb phrases

can be re-analyzed as nominals (i.e., type *e*) based on evidence that they are grammatical in a

conjunction construction where *hé* 和 'and' can only take type *e* conjuncts, as shown in (59):

(59) 打排球和游泳对身体有好处。
    dǎ   páiqiú   hé yóuyǒng duì shēntǐ yǒu hǎochù
    play volleyball and   swim   to   health have advantage
    'Playing volleyball and swimming are good for (one's) health.'   (Huang 2006:351)

The second missed opportunity of her theory concerns gradable SAs transforming into type

$<e,t>$. Examples of this phenomenon have already been covered in sections 2.2 & 2.3, namely

that only predicate conjuncts are allowed in a *yòu... yòu* construction, as shown in (60) & (61).

Furthermore, a positive gradable SA in a contrastive context entails a comparative reading (i.e.,

can appear in its bare form in a predicate position), as shown in (62):

(60) 张三又小气又很那个真是令人受不了。
    *Zhāngsān <u>yòu</u> **xiǎoqì** <u>yòu</u> **hěn**   **nàgè** zhēn shi lìng rén shòubùliǎo*
    Zhāngsān <u>again</u> **stingy** <u>again</u> **very that-GE** really is cause people intolerable
    'Zhāngsān is not only stingy but is also so much so (e.g., rude), which makes him really
     intolerable.'
(61) 张三又佻水又打水。   (Liu
    2018:98)
    Zhāngsān <u>*yòu*</u> **tiāo** **shuǐ** <u>*yòu*</u> **dǎ** **shuǐ**
    Zhāngsān <u>again</u> **raise water** <u>again</u> **hit water**
    'Zhangsan not only carries water with a pole on his shoulder but also fetches water.'
(62) Q: 他们谁高?
      tāmen shéi gāo
      them   who tall
      'Which of them is tall?'
      (Imagine this being a question asked by a volleyball scouting agent looking for tall players)
    A: 老二高。
      Lǎo Èr gāo   (Huang 2017:16)
      Lǎo Èr tall
      'Lǎo Èr is tall.'
      (Implying she might be the next Láng Píng, the legendary Chinese volleyball player and coach)

Consequently, these two pieces of data seriously challenge *Hypothesis 2* because it is not so easy

to distinguish adjectives and verbs as separate based on semantic types if both categories can

function as type *e* and <e,t>.

6 Comparison of Adjective & Verb-Phrase Stacking
6.1 Similarities & Differences

In their 1987 paper, linguists Richard Sproat & Chilin Shih describe syntactic and

semantic characteristics of prenominal adjective stacking in Mandarin Chinese, and Chao

(1968:326-342) introduces the behaviors of *verbal expressions in series* (i.e., V-V stacked series

in the predicate position). One clear similarity among adjective and verb-phrase stacking is that

the occurrence of more than two adjectives or verbs in a string is rare, as shown in (63) & (64):

(63) 小瘦(??黑)胳膊
      [NP xiǎo shòu (??hēi) gēbó]
         small skinny black arm   (Paul 2010:133)
(64) 写信对他拜年
      [IC *xiě xìn*] [IC *duì tā   bàinián   *]
      write letter   to him wish-Happy New Year
      'write a letter to give New Year's greetings to him'   (Chao 1968:329)

Paul (2010:133) explains that adding the adjective *hēi* 黑 'black' in (63) creates questionable

grammaticality because the more modifiers that are added to a noun phrase (NP), the harder is to

form a 'natural, plausible classification' (will revisit at the end of this section). Although there

are technically three verbal expressions in (64) (i.e., *xiě xìn* 写信 'write letter,' *duì tā* 对他 'to

him,' & *bàinián* 拜年 'wish Happy New Year'), Chao (1968) demonstrates how the phrase can

be re-analyzed as two verbal expressions by breaking it up into its *immediate constituents*

(ICs).[11] The complex form of the V-V series is like a coordinate structure.

Yet, there are stacks of 3+ adjectives and verb expressions which are difficult to account for:

(65) 细长白头毛
      xì cháng   bái máo
      fine long white hair   (Chao 1968:690)

_____

[11] Immediate constituents (ICs) are the elements that make up the most basic layer of a complex form. For instance, the ICs of a sentence are its subject & predicate, and the ICs of a word are its root & suffix (Chao 1968-4-5).

(66) 告假坐飛机回國省親

　　　gào kiǎ zuò fēi jī　 huí guó xǐng qīn　　　　　　　　　　(Chao 1968:329)

　　　take leave sit fly plane return home visit parent

　　　'take a leave to take a plane to return to his country to visit his parents'

For example (65), Chao (1968) explains, "... the order can be partially explained by taking into account... the nature of the qualities... because whiteness is considered inherent in the hair, length is incidental, and fineness even more fortuitous" (p. 689-690). By contrast, such ordering is potentially less clear in (63). Example (66) is also different from (64) because there is no one way of breaking it up into its ICs, although Chao (1968:329) does propose the following method: [IC *gào kiǎ*] + [IC (*zuò fēi jī huí*) + *xǐng qīn*] (i.e., V$_1$ + (V$_2$V$_3$ + V$_4$)). So, prenominal adjective and V-V series stacking are normally composed of two elements, but there are rare instances in both cases where 3+ elements compose a stack.

However, there are four differences between adjectival and verbal iterations (i.e., stacks). First, prenominal adjectival ordering without the modification marker *de* 的 is restricted whereas verb phrase ordering in predicate positions is relatively free. In *Table 2*, for instance, ordering in (a) examples is grammatical while the reverse ordering in (b) examples is not:

Table 2 *Restrictive Ordering of De-less Prenominal Adjectives*[12]

Quality-Color	Quality-Shape	Size-Color	Size-Shape
a. 好红盘子	a. 好圆盘子	a. 小红盘子	a. 小圆盘子
hǎo hóng pánzi	*hǎo yuán pánzi*	*xiǎo hóng pánzi*	*xiǎo yuán pánzi*
good red plate	good round plate	small red plate	small round plate
b. *红好盘子	b. *圆好盘子	b. *红小盘子	b. *圆小盘子
*hóng dà qiú	**yuán hǎo pánzi*	**hóng xiǎo pánzi*	**yuán xiǎo pánzi*
red good plate	round good plate	red small plate	round small plate

By contrast, flipping the order of the verbal expressions is grammatical for example (67):

(67) a. 他天儿写信会客。

　　　　　tā tiān er　 xiě xìn　　 huì kè

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[12] Sproat, R. & Shih, C. (1987), "Prenominal Adjectival Ordering in English and Mandarin", *in: North East Linguistics Society 18*(3), 471.

he everyday write letter meet guests
'He writes letters and receives callers every day.'
　　　　b. 他天儿会客写信。
　　　　　 tā　tiān er　　huì kè　　 xiě xìn
　　　　　 he everyday meet guests write letter
　　　　　 'He receives callers and writes letters every day.'　　　　　　(Chao 1968:326)

The second difference is that although prenominal adjectival stacking with the modification

marker *de* is not restricted, reversing the order does not change the truth conditions of the

proposition whereas it does with V-V series, as shown in (68) & (69), respectively:

　　(68)　a. 好的圆的盘子
　　　　　 hǎo-de　yuán-de pánzi
　　　　　 good-DE round-DE plate
　　　　　 'nice round plate'
　　　　 b. 圆的好的盘子
　　　　　 yuán-de hǎo-de pánzi
　　　　　 round-DE good-DE plate
　　　　　 'nice round plate'　　　　　　　　　　　　　　　　(Sproat & Shih 1987:465)
　　(69)　a. 等一会儿去
　　　　　 děng yīhuǐ'er qù
　　　　　 wait a-while go
　　　　　 'Wait a while (before you) go!'
　　　　 b. 去等一会儿
　　　　　 qù děng yīhuǐ'er
　　　　　 go wait a-while
　　　　　 'Go and wait a while!'　　　　　　　　　　　　　　　(Chao 1968:326)

The third difference is that the semantic rules which determine ordering for prenominal adjective

stacking in *direct-modification* constructions (i.e., without *de*) and verb phrase stacking in

predicate positions are unrelated. Adjective ordering depends on the *apparentness scale* in (70):

　　(70)　LEAST APPARENT　----Quality----Size----Shape----Color----　MOST APPARENT[13]

To attribute the color *red* to a car, for instance, "... one has to establish that a sufficiently large

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[13] Sproat R., Shih C. (1991), "The Cross-Linguistic Distribution of Adjective Ordering Restrictions", *in*: C.
　　Georgopoulos, R. Ishihara, eds., *Interdisciplinary Approaches to Language*, Springer: Dordrecht, 565.

amount of its surface looks red," whereas to attribute the size *large* to a car, "... one first has to establish that the item is a car and that it is large for such items" (Sproat & Shih 1987:467). The latter example (i.e., size) is more *apparent* than the former one (i.e., color) because it requires more *comparisons* and therefore more cognitive *computations*. So, the less *apparent* an adjective is, the further left it is located in the prenominal string. *Table 2* above includes examples of four different types of ordering combinations where (a) examples abide by the *apparentness scale* while (b) examples violate it.

The *apparentness scale* has nothing to do with verb expression stacking. Rather, ordering follows the 'sequence of events,' as shown in (71), or the 'circumstances of event.' Examples of the latter (i.e., (72) – (74)) are similar to modification constructions where the second expression has approximately the same function as the whole and is modified by the first verbal expression:

(71) a. 我起来了穿衣裳。
      wǒ   qǐ-lái-le   chuān yīshang
      I stand-up-PTM put-on clothes
      'I got up and put on my clothes.'
    b. 我穿了衣裳起来。   FIRST IN TIME ORDER
      wǒ chuān-le yīshang qǐ-lái
      I   put-on-PTM clothes stand-up
      'I put on clothes and got up.'   (Chao 1968:336)

(72) 在年轻的时候做过这事。   TIME WHEN
    zài niánqīng de shíhòu zuòguò zhè shì
    at   young DE time   did   this thing
    'at youthful time did this thing, --did this when young'   (Chao 1968:337)

(73) 騎着馬找馬   MANNER
    qízhe mǎ   zhǎo mǎ
    riding horse look-for horse
   'look for a horse while riding a horse, —
    look for a job while holding a job, *or* do something absent-mindedly' (Chao 1968:340)

(74) 拿手打人   ACTION ON ACTION
    ná   shǒu dǎ rén

take hand hit people
'use hand to hit people'   (Chao 1968:342)

The final difference is that the first prenominal adjective in a stack may be followed by *de* whereas the first verb phrase in a stack cannot. In the former, *de* makes (75) & (76) grammatical:

(75) a. 红*(的)圆盘子
       *hóng *(de) yuán pánzi*   COLOR - SHAPE
       red   DE round plate
      b. 圆*(的)红盘子
       *yuán *(de) hóng pánzi*   SHAPE - COLOR
       round   DE red plate
(76) a. 好*(的)小盘子
       *hǎo *(de) xiǎo pánzi*   QUALITY - SIZE
       good DE small plate
      b. 小*(的) 好盘子
       *xiǎo *(de) hǎo pánzi*   SIZE - QUALITY
       small DE good plate   (Sproat & Shih 1987:472)

This is because these two permutations are ungrammatical in the *direct modification* construction (i.e., without *de*), even when they do abide ordering constraints set by the *apparentness scale*. Sproat & Shih (1987) explain that they violate another rule which states that "... two adjectives of the same *predicativeness* cannot both directly modify a noun in Mandarin" (p. 472).

According to Kamp (1975:124), *predicative* adjectives behave independently from the nominals that they combine with (i.e., their extensions are unaffected) whereas the extensions of *non-predicative* ones are dependent on those nominals. Based on the test in (77), *color & shape* adjectives (i.e., more apparent) are *predicative* because (78c) & (79c), respectively, are true:

(77) *Predicativeness* (Kamp, 1975)
        All X's are Y's
        Z is an A(X)
        Therefore, Z is an A(Y).
(78) a. All mice are mammals.   COLOR   (Sproat & Shih 1987:470)
      b. Freddy is a white mouse.
      c. Therefore, Freddy is a white mammal. (apparently TRUE)

(79) a. All tables are pieces of furniture.   SHAPE
      b. This is a square table.

      c. Therefore, this is a square piece of furniture. (apparently TRUE)

However, *size* & *quality* adjectives (i.e., less apparent) are *non-predicative* because (80c) &

(81c), respectively, are generally false:

(80) a. All mice are mammals.   SIZE
        b. Freddy is a large mouse.
        c. Therefore, Freddy is a large mammal. (apparently FALSE)

(81) a. Agatha Christie novels are   QUALITY   (Sproat & Shih 1987:470)
          literature.
        b. *The Murder of Roger Ackroyd* is a good Agatha Christie novel.
        c. Therefore, *The Murder of Roger Ackroyd* is good literature. (possibly false)

In predicate positions, *de* rarely follows the first verbal expression and therefore, V-V series

diverges in behavior from subordinative constructions, as shown in (82) & (83):

(82) 拿笔(??的)写字
      ná bǐ (*??de*) *xiě zì*
      take pen DE write characters
      'write characters with a pen'

(83) 在屋裡(??的)睡觉
      zài   *wū lǐ*   (*??de*) *shuìjiào*
      at   in-the-house DE   sleep
      'being in the room, sleep—sleep in the room'   (Chao 1968:326)

As of this point, the overwhelming number of differences in stacking behaviors between

adjectives and verb-phrases supports *Hypothesis 2*. I am skeptical, however, of the account that

adjective ordering in *direct modification* constructions is restricted in all cases.

     The reason is that the only types of nominals that Sproat & Shih (1987) look at in

Mandarin Chinese are inanimate objects and, infrequently, animals. For instance, native

Mandarin Chinese speaker, Carrie Zhang, judged example (84) to be grammatical without *de*:

(84) a. 丑大歌手   QUALITY-SIZE
        chǒu dà gēshǒu
        ugly large singer
       b. 大丑歌手   SIZE-QUALITY
        dà chǒu gēshǒu
        large ugly singer   (my creation)

Not only does example (a) contradict the *predicativeness* rule but example (b) contradicts the *apparentness* rule. This raises the question of whether the nominal being modified determines whether the rules introduced by Sproat & Shih (1987) apply to modifier ordering. In his 1998 paper, linguist Richard Larson examines adjectives that are intersective (i.e., *predicative*) or non-intersective (i.e., *non-predicative*) that modify people, especially agentive nominals:

(85) *tall* → **tall'**   (Larson 1998:2)
 tall friend → λx[**tall'**(x) & **friend'**(x)]   "Intersective Modification"
(86) Olga is a beautiful dancer.   (Larson 1998:8)
 a. Qe[dancing(e, olga) ... beautiful(olga, C)] "Intersective Modification"
 b. Qe[dancing(e, olga) ... beautiful(e, C)]   "Non-intersective Modification"

In this analysis, size adjectives like *dà* 'large' may be *predicative* like 'tall' in (85) and quality adjectives like *chǒu* 'ugly' may be *predicative* or *non-predicative* like 'beautiful' in (86a) & (b), respectively. I am not arguing that human and agentive nouns re-analyze size adjectives as *predicative* and quality adjectives as *predicative* and *non-predicative.*

Instead, I propose that the modified noun to some degree influences the *predicativeness* of the adjectives it combines with and hence the ordering of adjectival stacks. In (84), for example, neither *dà* 'large' nor *chǒu* 'ugly' seems to be a *more apparent* adjective of *gēshǒu* 'singer' and the *predicativeness* of each adjective is not necessarily the same. Maybe this is why (a) & (b) are judged by Carrie Zhang to be grammatical.

The idea that nouns affect the behavior of their modifiers is not original. According to Paul (2010), "... a new subcategory is established [in *direct modification*], which must present a natural, plausible class..." (p.125-126). Such interpretation is demonstrated in example (87) where *hēi* 'black' in (a) is a defining property of the resulting subcategory of *tóujīn* 'scarf' while *hēi* in (b) is a purely intersective modifier contrasting with other modifiers like *bái* 'white':

(87) a. 黑头巾
 hēi tóujīn

black scarf
　　b. 黑头的巾
　　　　hēi　　de tóujīn
　　　　black DE scarf　　　　　　　　　　　　　　　　　　　　　　　　(Paul 2010:126)

In English, the criteria of creating a 'natural, plausible class' is applied to the prenominal

position where the adjective occupying it expresses a characteristic property of the nominal it

modifies. According to Bolinger (1967), it is difficult to predict what adjectives can occupy this

position in a noun phrase (NP) because what constitutes a culturally relevant characterization is

based on pragmatic factors. This phenomenon manifest cross-linguistically in the English

prenominal position and in the Mandarin *direct modification* construction, as shown in (88) &

(89), respectively:

　　(88)　a. ill-behaved child
　　　　　b. *mistake-erasing secretary　　　　　　　　　　　　　　　　(Bolinger 1967:7)
　　(89)　a. 聪明孩子
　　　　　　cōngmíng háizi
　　　　　　intelligent child
　　　　　b. *聪明动物
　　　　　　**cōngmíng dòngwù*
　　　　　　　intelligent animal　　　　　　　　　　　　　　　　　　　(Paul 2010:130)

Therefore, the pragmatic factors that determine which adjectives and nouns create 'natural,

plausible classes' may possess greater predictive power of stacking characteristics than the

apparentness and *predicatives* rules. Despite the possibility that prenominal adjective ordering in

direction modification constructions is freer than what Sproat & Shih (1987) say, it is clear that

the evidence shown thus far supports *Hypothesis 2.*

6.2 Stacking of Adjuncts & Complements

　　　　Chao (1968:327) mentions that linguists like Wang Fwutyng (1960) propose to change

<u>*verbal* expressions in series</u> to <u>*predicate* expressions in series</u>. Chao counters that if V-V series

were made up of predicate expressions, an auxiliary verb would apply to both expressions rather

than the first one:

(90) 不能光着头出去
       bùnéng guāngzhe tóu chūqù
       cannot   bare   head go-out
       'You cannot go out bare-headed.'   (Chao 1968:328)

This is not the case, as demonstrated in example (90), because the proposition is neither, 'You

can't go out,' nor, 'You can't bare your head.'

Fwutyng's question about whether verbs are verbal expressions or predicate ones runs

parallel to a debate of whether prenominal verbs form verb phrases (VPs) or relative clauses. For

instance, Paul (2010) explains that verbs must form relative clauses in order to modify a head

noun and relative clauses must be followed by modification marker *de*, as shown in (91) & (92):

(91) 一个喜欢笑的人
       [DP *yī-gè* [IP t$_i$ *xǐhuān xiào*] *de rén$_i$*]
         one-CL   like laugh DE person
       'a person who likes laughing'   (Paul 2010:117)
(92) 担心*(的)人
       [RC *dānxīn* *(*de*)] *rén*
           worry   DE person
       'persons who worry'   (Paul 2010:123)

Yet, Paul (2010) does acknowledge that *de* is optional for some VPs that modify nouns, such as

(93) & (94):

(93) 下雨天
       [VP *xià yǔ*] *tiān*
           fall rain day
       'a rainy day'
(94) #担心人命[14]
       #[VP *dānxīn*] *rénmìng*
               worry life
       'a life of worries'   (Paul 2010:123)

My intention is not to argue that prenominal verbs form either relative clauses or VPs. However,

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[14] # = marks diverging judgements of grammaticality

if it is true that prenominal verbs do form VPs, then I propose that evidence of stacking from C.-T. James Huang (2016) supports *Hypothesis I.* Huang (2016) does not assert such a stance, but he does argue that there are two classes of prenominal modifiers: complements and adjuncts.

According to Comrie & Horie (1995:65), a complement clause is either an argument to a verb or a noun, as shown in (95a) & (b), respectively:

(95) a. *The teacher knows* [*that the student bought the book*]
b. *the fact* [*that the student bought the book*]   (Comrie & Horie 1995:65)

An adjunct, on the other hand, is a phrase that is not needed in a noun clause, but adds semantic specificity. A relative clause, such as (96), is a type of adjunct where a constituent at the front like 'the book' is indexed by a gap at the end of the relative:

(96) *the book$_i$* [*which the student bought* ---$_i$]   (Comrie & Horie 1995:67)

Huang (2016:434) demonstrates in (97) how X-bar schema arranges complements and adjuncts in Mandarin Chinese:

(97) X' → ZP$_{Adjunct}$ X'
X' → YP$_{Comp}$ X^0
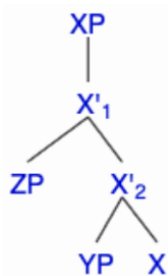
(Huang 2016:434)

There are three characteristics of stacking that apply to prenominal adjuncts and complements. First, a complement must first combine with the nominal head before adjuncts since the former is of type *e* while the latter is of type <e,t>; therefore, a complement occurs in closer proximity to the nominal head compared to an adjunct. Example (98) shows how this applies to adjectives while example (99) demonstrates this with potential verbal expressions:

(98) a. [**Adjunct**]-[**Complement**]-[**Head**]
　　长发的物理学生
　　　zhǎngfā - de　wùlǐ xuéshēng
　　long-hair-ed DE physics student
　　'long-haired physics student'
　　b. [**Complement**]-[**Adjunct**]-[**Head**]
　　*物理长发的学生
　　* *wùlǐ　　zhǎngfā - de xuéshēng*
　　physics long-hair-ed DE student　　　　　　　　　　　(Huang 2016:435)

(99) a. [**Relative clause**]-[**Noun complement**]-[**Head**]
　　我们正在考虑的(那个)要不要扩大招生的问题
　　[RC *wǒmen zhèngzài　kǎolù　de*] (*nàgè*) [NC *yāo-bù-yào　　kuòdà　zhāoshēng de*]
　　　　we　currently consider DE (that-CL)　want-not-want expand recruitment DE
　　wèntí
　　question
　　'the question whether to increase student enrollment that we are considering'
　　b. [**Noun complement**] [**Relative clause**] [**Head**]
　　*要不要扩大招生的(那个)我们正在考虑的问题

　　*[NC *yāo-bù-yào　　kuòdà　zhāoshēng de*] (*nàgè*) [RC *wǒmen zhèngzài　kǎolù　de*]
　　　　want-not-want expand recruitment DE (that-CL)　　we　currently consider DE
　　wèntí
　　question　　　　　　　　　　　　　　　　　　　　　　　(Huang 2016:441)

The second characteristic is that an *individual-level* prenominal must combine with the head

noun before a *stage-level* one. Individual-level prenominals express intrinsic properties of the

head noun while stage-level ones express transient properties of the head. Example (100) shows

how this applies to adjectives while example (101) demonstrates this with verbal expressions:

(100) a. [**Stage level**]-[**Individual level**]-[**Head**]
　　英国的中文老师
　　　yīngguó　　de zhōngwén lǎoshī
　　England-located DE Chinese teacher
　　'The English Chinese teacher.'
　　b. [**Individual level**]-[**Stage level**]-[**Head**]
　　*中文的英国老师
　　**zhōngwén de　　yīngguó　　lǎoshī*　　　　((Huang 2016:436), slightly revised
　　Chinese　DE England-located teacher　　　　　　　by linguist Shi-Zhe Huang)

(101) a. [**Stage level**]-[**Individual level**]-[**Head**]
　　我昨天看见的喜欢音乐的人
　　[RC *wǒ zuótiān kànjiàn de*] [RC *xǐhuān yīnyuè de*] *rén*
　　　I yesterday　　saw DE　　　like music DE person
　　'the person who likes music who I saw yesterday'

b. **[Individual level]-[Stage level]-[Head]**
*喜欢音乐的我昨天看见的人
* [RC *xǐhuān yīnyuè de*] [RC *wǒ zuótiān kànjiàn de*] *rén*
         like music DE   I yesterday   saw DE person   (Huang 2016:443)

Notice in (100) that the individual-level adjective *zhōngwén* 'Chinese' is a complement, but in (101) relative clauses can be either individual-level or stage-level predicates.

The last characteristic is that relative clauses can be iterated (i.e., stacked), but noun complements cannot, as shown in (102a) & (b), respective:

(102) a. **+Iteration**
他发出来的令人害怕的声音
   [RC *tā fā-chūlái de*] [RC *lìng   rén   hàipà de*] *shēngyīn*
     he produce DE   cause person afraid DE sound
   'the sound that terrified others that he produced'
   b. **-Iteration**
  *他弹钢琴的我拉小提琴的声音
  *[NC *tā dàn gāngqín de*] [NC *wǒ lā xiǎotíqín de*] *shēngyīn*
     he play piano DE   I play violin   DE   sound   (Huang 2016:448)

Although there are no examples of this iteration rule applied to Mandarin Chinese adjectives, it is implied by example (103) that this is a cross-linguistic phenomenon:

(103) a. **+Iteration**
   the tall, handsome, long-haired student
   b. **-Iteration**
   *the physics chemistry student   (Huang 2016:448)

If noun complements composed of verb like example (104) and relative clauses composed of verb expressions like (105) below can be analyzed as VPs, then Huang (2016)'s data shows an overlap in the behavior of stacked prenominal verbs and adjectives, which supports *Hypothesis I*:

(104) 自申请的次年开始适用到毕业的次年停止   (Huang 2016:460)
   zì [NC *shēnqǐng de*] *cì-nián kāishǐ   shìyòng dào* [NC *bìyè de*] *cì-nián tíngzhǐ*
   from   apply DE next-year begin applicable to graduate DE next-year stop
   'Effective from the year after application, until the year after graduation.'
(105) 長得高高的留著長頭髮的對手
   [RC *zhǎng-dé gāo gāo de*] [RC *liúzhe zhǎng tóufà de*] *duìshǒu*
      grow   tall   DE   keep long   hair DE opponent
   'the opponent who wears long hair and stands quite tall'   (Huang 2016:449)

7 Conclusion

I have demonstrated that neither *Hypothesis 1* or *Hypothesis 2* is noticeably superior in evidence quantity or quality compared to the other. The empirically-based evaluation has shown that each proponent's theory possesses strengths as well as limitations or missed opportunities.

Chen-Sheng Luther Liu (2010)'s proposal that a polarity-like positive morpheme with two allomorphs θ-binds predicative gradable adjectives in Mandarin Chinese is questionable because natural language typically recognizes an overt or a covert form of a lexical item rather than both. Furthermore, Liu (2018)'s claim that the *Constraint on Multiple Foci* accounts for the distribution of both allomorphs does not capture cross-linguistic patterns. Despite the limitations of the theory itself, he crucially points out that the pro-form *nàgè* 'that-GE' can substitute for both verbs and gradable adjectives. The requirement of the modal operator *huì* and the overt form *hěn* to identify *nàgè* as a verb or an adjective, respectively, supports *Hypothesis 1*, but the pro-form can only co-reference things with adversely-negative meanings and in limited contexts.

Avid supporter of *Hypothesis 2*, Waltraud Paul, proposes that adnominal-modifying verbs require *de*, unless they form compounds, whereas adnominal-modifying simple adjectives (SAs) can form phrasal constructions without *de*. Although gradable simple adjectives do not require the copula *shì* 'to be' to function as predicates, they do form relative clauses because, unlike adnominal verbs, *de* is optional. Paul also demonstrates how some nominal constructions modified by adjectives are phrasal by grammatically eliding head nouns in subsequent NPs. However, the *Lexical Integrity Hypothesis* (LIH), which the eliding test is based on, can be violated (i.e., some compounds behave like phrases) and some adnominal verbs can indeed form phrases without *de* (i.e., [VP N]).

Shi-Zhe Huang (2006, 2015, 2017) proposes that SAs and bare nominals are of semantic

type *e* whereas verbs and *derived* adjectives (DAs) are of type <e,t>, and that *de* is a general type shifter of type <<e,t>,e> whose purpose is to ensure that two lexical items are type matched before intersecting. Huang's theory accounts for why SAs in predicate positions cannot appear in their bare forms, but can modify a nominal without *de*. This behavior diverges from that of DAs and verbs where the opposite occurs, which supports *Hypothesis 2*. She does miss an opportunity to consider how *Hypothesis 2* is weakened by certain situations where verbs and bare gradable adjectives are re-analyzed as nominals (i.e., type *e*) and predicates (i.e., <e,t>), respectively.

After conducting an analysis comparing stacking of Mandarin Chinese adjectives and verb-phrases, I conclude that the stacking behaviors do not decisively support one hypothesis over the other as of now. At first, the number of identifiable differences is overwhelmingly greater than the number of similarities, which further reinforces *Hypothesis 2*. Nevertheless, there are two pieces of evidence that may support *Hypothesis 1*. First, the claim that adjective stacking without *de* is restricted is based on modification of mostly inanimate and some animal nominal, and one native Mandarin Chinese speaker judged the ordering of adjectives to be freer with the human, agentive nominal 'singer.' Therefore, I propose that the prenominal adjective ordering of some NPs is relatively free, similar to verb ordering. Second, Huang (2016) demonstrates how stacking order of adjuncts and complements applies to both adjectives and predicates in the nominal domain. I am not in a position to claim that adnominal-modifying verbs form either verb phrases (VPs) or relative clauses; but if they do indeed form VPs, then I propose that such data from Huang (2016) supports *Hypothesis 1*.

Rather than dwell longer in this debate on part-of-speech status, I advise future research to further define the nuances of Mandarin Chinese adjectives and verbs in order to clearly outline what areas they converge and diverge in behavior. As a start, it seems to me that absolute SAs

are the only type of adjectives that consistently distinguish themselves from verbs.

8 Work Cited:

Bolinger, D. (1967), "Adjectives in English: Attribution and Predication", *in: Lingua, 18,* 1-34.

Chao, Y. R. (1968), "A Grammar of Spoken Chinese", Berkeley: University of California Press, 1-820.

Chierchia, G. (1998), "Reference to kinds across languages", *in: Natural Language Semantics,* p. 339-405.

Chomsky, N. (1981), "Lectures on Government and Binding", Berlin: Mouton de Gruyter.

Comrie, B. & Horie, K. (1995), "Complement Clauses Versus Relative Clauses", *in:* Sandra A. Thompson, Thomas Givón, Werner Abraham, eds., *Discourse, Grammar and Typology: Papers in Honor of John W.M. Verhaar,* The Netherlands: John Benjamins Publishing Company, 65-74.

Huang, C.-T. J. (1984), "Phrase structure, lexical integrity, and Chinese compounds", *in: Journal of the Chinese Language Teachers Association, 19*, 53-78.

Huang, C.-T. J. (2016), "The Syntax and Semantics of Prenominals: Construction or Composition?*", *in: Language and Linguistics*, *17*(4), 431-475.

Huang, S.-Z. (2006), "Property theory, adjectives, and modification in Chinese", *in: Journal of East Asian Linguistics, 15,* 343-369.

Huang, S.-Z. (2017), "Adjectives", *in:* Rint Sybesma, Wolfgang Behr, Yueguo Gu, Zev Handel, C.-T. James Huang, James Myers, eds., *Encyclopedia of Chinese Language and Linguistics,* The Netherlands: Brill Academics Publishers, Inc., 1-16.
Huang, S.-Z. (2015), "Ineligibility for Ellipsis: Type <e,t> or Functional Category Status?", presented at a conference at *Tokyo University of Foreign Studies*, 1-12.
Huang, S.-Z. & Li, Y.-H. A. (2009), "Henda Guwu – more on the type matching constraint on Modification", *in: Essays on Linguistics, 39,* 157-203.

Larson, R. K. (1998), "Events and Modification in Nominals", *in:* D. Strolovitch & A. Lawson, eds., *Proceedings from Semantics and Linguistic Theory (SALT) VIII*, Cornell University, Ithaca, NY, 1-27.

Li, P. *et al.* (1993), "Where Is the Boundary between Compounds and Phrases in Chinese? A Reply to Zhou et al.", *in: Brain and Language, 45,* 94-107.

Liu, C.-S. (2010), "The positive morpheme in Chinese and the adjectival structure", *in: Lingua, 120,* 1010-1056.

Liu, C.-S. (2018), "Projecting adjectives in Chinese", *in: J East Asian Linguist, 27,* 67-109.

McCawley, J. D. (1992), "Justifying Part-of-Speech Assignments in Mandarin Chinese", *in: Journal of Chinese Linguistics, 20*(2), 231-246.

Paul, W. (2010), "Adjectives in Mandarin Chinese: the rehabilitation of a much ostracized category*", *in:* Patricia Cabredo Hofherr and Ora Matushansky, eds., *Adjectives: Formal analyses in syntax and semantics,* Philadelphia: John Benjamins Publishing Company, 115-148.

Russel, B. (1905), "On Denoting", *in: Mind, 14,* 479-493.

Sproat, R. & Shih, C. (1987), "Prenominal Adjectival Ordering in Mandarin Chinese", *in: North East Linguistics Society, 18*(3), 465-486.

Sybesma, R. (2017), "Classifiers, Nominal", *in*: Rint Sybesma, Wolfgang Behr, Yueguo Gu, Zev Handel, C.-T. James Huang, James Myers, eds., *Encyclopedia of Chinese language and linguistics,* Leiden: Brill, *1,* 620.