Adjectives of quantity as intensionalized verbal modifiers in Chinese

Introduction: Many analyses of quantity adjectives in natural language (e.g., Solt 2015, Lin 2014) treat them as semantically inert gradable predicates of sets of degrees, and the perceived semantic "contents" arise from the interplay of certain null functional elements (e.g., *pos* and *meas* degree heads) and semantic operations. My research takes issue with the general applicability of the claim of Q-adjectives (in Chinese) being contentless, by way of showing that when used as modifiers for verb phrases (the VM use), the Q-adjectives *duo/shao* carry independent semantic content, in encoding a "modal-flavor" on top of the positive interpretation.

Properties & analysis: Several properties of VM *duo/shao* point to the claim that they decompose into a *pos* morpheme and a function from degrees to sets of degrees. First, VM *duo/shao* are an independent adverbial use of Q-adjectives, rather than durative or frequentative adverbs: *duo* in (1) (Lü 1980) – at least in the most prominent reading – cannot be replaced with frequentative *chang* 'often', durative *jiu* 'long (time)', or the like. Moreover, VM *duo/shao* are distinguished from *duo/shao* that appear *after* certain verbs to indicate (quantitative) results roughly paraphrasable as "overly, too much" (2), as VM *duo/shao* occur *before* verbs and cannot be paraphrased along the lines of "overly, too much."

(1) wǒmen míngnián yào duō zhòng miánhuā. (我们明年要多种棉花。)
(2) tā xià le chē cái fāxiàn qián zhǎo duō le. （他下了车才发现钱找多了。）

Secondly, VM *duo/shao* cannot be modified by degree intensifiers (e.g., *hěn* and *fēicháng*) (3). Hence, this use of *duo/shao* is distinct from the predicative, quantificational, attributive, and differential uses, which have been analyzed to be semantically contentless (Lin 2014). Nor can VM *duo/shao* occur with the comparative *bi*, whose function is to introduce a standard of comparison (4). Hence, this use is distinct from *duo/shao* in the structurally similar Differential Verbal Comparative, in which *duo*/*shao* express comparison (Li 2015, Luo & Xie 2018). Yet another, related difference between VM *duo/shao* and *duo/shao* in the DVC is that the former *prohibits*, but the latter *requires*, the presence of differential phrases (5).

(3) yīshēng yào bìngrén (*hěn) duō hē shuǐ. (医生要病人（*很）多喝水。)
(4) yīshēng yào bìngrén (*/??bi tā) duō hē shuǐ. (医生要病人（*/?? 比他）多喝水。)
(5) yuēhàn bǐ mǎlì duō kàn le liǎng běn shū. （约翰比玛丽多看了两本书。）

Moreover, VM *duo* (and to a lesser extent, *shao*) can be reduplicated (6), and Chinese reduplicated adjectives convey positive (as opposed to comparative) predication (Liu 2013). These facts can be neatly explained if we take VM *duo/shao* to lexically encode a covert *pos* morpheme (7), which prevents other positive degree modifiers and comparative morphemes from occurring together with VM *duo/shao*.

(6) lǎoshī xīwàng xuéshēng duōduō dú shū. （老师希望学生多多读书。）
(7) VM *duo/shao* = non-VM *duo/shao* 'MUCH/LITTLE' + *pos*.

Additionally, the occurrence of VM *duo/shao* is restricted to canonical modal and generic contexts (8a-b) but is disallowed in other contexts (8c). Given the decomposition in (7), I further posit that *pos* in VM *duo/shao* is an intensionalized morpheme (cf., Klecha (2014a, b)) comparing a (hypothetical) degree to the relevant standard of number/amount in the base world/time (9). The semantics of non-VM *duo/shao*, adjusted from the definitions in Solt (2015) and Lin (2014), is spelled out as in (10) to accommodate the observed intensional "flavor." The analysis, if on the right track, has non-trivial implications for the proper treatment of quantity adjectives/adverbs in Chinese and cross-linguistically

(8) a. tā yīnggāi duō duànliàn shēntǐ. (他们应该多锻炼身体。)
b. duō duànliàn shēntǐ duì jiànkāng yǒu hǎochù. （多锻炼身体对健康有好处。）
c. */??tā zuówǎn duō duànliàn le shēntǐ. (*/??他昨天多锻炼了身体。)

(9) $[\![pos]\!] = \lambda\wp_{<s, i, d,,t>}\, \lambda w\, \lambda t.\, \exists d\, \wp(w)(t)(d) \wedge d \geq \mathrm{STND}(w_0)(t_0)$

(10) $[\![\mathrm{MUCH}]\!] = \lambda w\, \lambda t\, \lambda d\, \lambda\wp_{<s, i, d,t>}.\wp(w)(t)(d)$