

“Nounless” nominal expressions in Mandarin Chinese:
Implications for classifier semantics and nominal syntax

Many languages, including varieties of Chinese, require classifiers to co-occur with numerals and nouns in nominal expressions that express cardinality (1a). This paper looks at a set of exceptional Mandarin Chinese “nounless” nominal expressions that consist of just a numeral and what will be shown to be a classifier (1b-d), arguing that they inform debates about the semantic function of classifiers and the syntax of nominal expressions. Semantically, they support the hypothesis that classifiers are related to deeper cross-linguistic variation in numeral semantics, not variation in noun semantics (Krifka 1995, Wilhelm 2008, Bale & Coon 2014, Sudo 2016, a.o., *pace* Chierchia 1998). Syntactically, they provide indirect support for a theory where nominal expressions are headed by a functional head (e.g. the DP Hypothesis), as opposed to the lexical head N (*pace* Bruening 2009, Bruening et al. 2018, Chomsky 1970).

- (1) a. yi *(tiao) bihua b. yi nian c. yi hua d. yi bu
 one CL pen stroke one year one stroke one step
 “one stroke of the pen” “one year” “one stroke [of the pen]” “one step”

Why do some languages require classifiers? There are two competing semantic hypotheses about why some languages have obligatory classifiers and others do not. One approach holds that languages vary in terms of what nouns denote (e.g. Chierchia 1998). A language like English has count nouns, which can be directly quantified by numerals. A language like Mandarin Chinese does not; instead, a classifier is needed for a noun to become countable.

An alternative hypothesis locates the variation in numeral semantics (e.g. Krifka 1995), on the assumption that some kind of measure function is required for expressing cardinality. English numerals uniformly have this measure function, while Chinese numerals lack it. Consequently, numerals in Chinese must appear with classifiers, which denote this function, when they modify nouns.

The first “classifiers for nouns” hypothesis predicts that nouns and classifiers co-occur, while the second “classifiers for numerals” hypothesis predicts that numerals and classifiers co-occur (Bale & Coon 2014). Nounless expressions are consistent with the second prediction, but not the first.

Data. Nounless structures have been observed for time interval lexical items (1b) (e.g. C.-C. J. Tang 2005, S.-W. Tang 2013). This paper shows that they also occur for lexical items like *hua* “(pen) stroke” (1c) and *bu* “step” (1d) and argues that there is no noun present in the syntax of these expressions.

At first glance, these lexical items seem to have much richer semantics typical of nouns. However, morphosyntactic diagnostics show that they are **classifiers**. For instance, like more conventional classifiers e.g. *tiao*, they cannot co-occur with the plural “classifier” *xie* (2) and can be reduplicated, which produces a “one-by-one” reading (3) (see S.-W. Tang 2013).

- (2) a. yi xie *(tiao) bihua b. *yi xie hua (3) a. yi tiao tiao bihua b. yi hua hua
 one PL CL pen stroke one PL stroke one CL CL pen stroke one stroke stroke
 Intended: “some strokes of the pen” Intended: “stroke by stroke”

They are also **not nouns**. Unlike nouns, they cannot occur alone in argument positions (4a), nor be modified with relative clauses (4b).

- (4) a. Ni xie cuo le {bihua / *hua}. b. [_{RC} xie cuo de] {bihua / *hua}
 you write wrong PERF pen stroke stroke write wrong MOD pen stroke stroke
 “You wrote (some) strokes incorrectly.” “strokes that were written incorrectly”

I also argue that there is **no null noun** in these structures (5a) (*pace* S.-W. Tang 2013, Watanabe 2012 for Japanese). If there were, given sufficient context, the null noun should co-occur with plural *xie* (5b) and be modifiable with relative clauses (5c). Neither prediction is borne out.

- (5) a. *yi hua [_N Ø_{stroke}] = “one stroke,” where Ø_{stroke} has the same meaning as *bihua*

- b. Lianxi xie zi de xiaohai xie cuo le yi xie { $\emptyset_{\text{stroke}}$ / bihua}.
 practice write character MOD child write wrong PERF one PL pen stroke
 “The child who is practicing his/her writing wrote some strokes incorrectly.”
- c. *yi hua [_{RC} xiaohai xie cuo de] $\emptyset_{\text{stroke}}$
 one CL child write wrong MOD
 Intended: “a stroke that the child wrote incorrectly”

Finally, these expressions are **not derived via NP ellipsis**. Like in other languages, NPs cannot be elided in out-of-the-blue contexts (6a). Nounless expressions can appear in these contexts (6b).

- (6) a. Zhe yi ge zi you ji tiao #(bihua)? b. ... you ji hua?
 this one CL character have how.many CL pen stroke have how.many stroke
 Intended: “How many strokes are there in this character?”

Implications for semantics of classifiers. Nounless structures pose a problem for the “classifiers for nouns” hypothesis, in which classifiers are present to make nouns countable. Since there are no nouns in these structures, it is unclear why classifiers are present in the first place. In contrast, the data are consistent with the “classifiers for numerals” hypothesis, in which languages vary in whether their numerals contain the measure function μ necessary for expressing cardinality (7a, b). Mandarin numerals lack this function, and so cannot combine directly with a noun like *bihua* ‘pen stroke’ (after Krifka 1995, Wilhelm 2008, Bale & Coon 2014, and Sudo 2016). (Denotations simplified for clarity.)

- (7) a. Mandarin [[*yi*]] ‘one’ = 1 b. English [[*one*]] = $\lambda P \lambda x. P(x) \ \& \ \mu(x) = 1$
 c. Mandarin [[*bihua*]] = English [[*pen stroke*]] = $\lambda x. \text{PEN STROKE}(x)$

In Mandarin, the measure function μ is instead found in the denotation of classifiers (8). This explains why classifiers are found in both nounless structures (1b-d) and regular numeral-classifier-noun structures (1a): they provide the necessary ingredient for expressing cardinality. To explain why the absence of a noun in nounless expressions has no impact on interpretation, I suggest that in addition to the measure function, classifiers like *hua* ‘stroke’ also have richer, noun-like semantics (8b).

- (8) a. [[*tiao*]] (classifier for pen strokes) = $\lambda P \lambda n \lambda x. P(x) \ \& \ \mu(x) = n$
 b. [[*hua*]] (classifier in nounless expression) = $\lambda n \lambda x. \text{PEN STROKE}(x) \ \& \ \mu(x) = n$

Implications for syntax of noun phrases. Despite the absence of a noun in their syntax, nounless nominal expressions have the same distribution as regular nominal expressions with overt nouns; they can appear with demonstratives, appear in subject (9a) and object positions (e.g. 4a), and be coordinated with regular nominal expressions (9b). These expressions are thus consistent with theories in which both types of nominal expressions are headed by some functional head (e.g. the DP hypothesis, Abney 1987, Szabolcsi 1994). In contrast, they pose problems for theories in which nominal expressions are headed by N (e.g. Chomsky 1970, Bruening 2009, Bruening et al. 2018). Under the latter approach, one would have to posit the presence of a null noun – difficult to justify with (1-6) – or conclude that they are of distinct syntactic categories – which would miss the generalization about their distribution (9).

- (9) a. [Zhe san hua / Zhe san tiao bihua] dou xie cuo le.
 this three stroke this three CL pen stroke all write wrong PERF
 “These three strokes are written incorrectly.”
- b. [Zhe yi ge zi he zhe san hua] dou xie cuo le.
 this one CL character and this three stroke all write wrong PERF
 “This character and these three strokes are written incorrectly.”

Selected references. Bale & Coon. 2014. Classifiers are for numerals, not for nouns. *Linguistic Inquiry*. Bruening, Dinh, & Kim. 2018. Selection, idioms, and the structure of nominal phrases. *Glossa*. Chierchia. 1998. Plurality of mass nouns and the notion of “semantic parameter.” *Events and Grammar*. Krifka. 1995. Common nouns: A contrastive analysis of English and Chinese. *The Generic Book*. Tang. 2005. Nouns or classifiers: a non-movement analysis of classifiers in Chinese. *Language and Linguistics*.