

Marking and acquisition of individuation: English and Mandarin compared

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In this paper, I will argue that the presence of a grammatical count/mass distinction in a language depends on the strength of its morphological marking of the semantic notion of individuation. I will compare data from Mandarin Chinese and English and show how the number marking on nouns and their combination with numerals influences the acquisition of the semantic notion and the language learner's positing of the functional structure of the nominal phrase.

Languages refer to individuals, sets of individuals and non-individuals, and they employ different strategies to do so. In languages like English, count nouns refer to individuals. They can appear with plural morphology and combine directly with numerals, e.g. *three chairs*. Non-individuals are referred to by mass nouns, e.g. *sand*, which cannot appear with plural morphology or combine with a numeral without the presence of a measure word, e.g. *two grains/piles of sand*. This shows that individuation in English is reflected in the morphosyntax. Plural morphology and numerals, i.e. count-syntax, rely on an individuated noun, whereas the use of measure words, i.e. mass-syntax, is available for both non-individuals and sets of individuals, e.g. *two piles of chairs*.

In Mandarin Chinese, nouns cannot combine directly with numerals. For counting, nouns must appear with a classifier, like the measure word needed for English mass nouns. Also, to the extent that there is a plural marker in Mandarin, the suffix *-men*, this is not required when referring to sets of individuals, as the suffix *-s* is in English. (For this reason, I set *-men* aside from this discussion as a different type of pluraliser.) Based on this, some researchers propose that, in classifier languages like Mandarin Chinese, all nouns are mass nouns and there is no count/mass distinction (Chierchia 1994, 1998; Krifka 1995).

However, there is evidence of a reflex of the count/mass distinction at the level of the classifier. Cheng and Sybesma (1998, 1999) separate count classifiers from mass classifiers, or as I will refer to them, classifiers from measure words. They point out that classifiers form a closed class and each only relates to a small number of nouns, whereas measure words are an open class and combine freely with nouns. Importantly, classifiers can only combine with nouns referring to individuals, and measure words can apply to both individuals and non-individuals. This aligns classifiers in Mandarin Chinese with plural morphology in English; both can only apply to individuals. Measure words in both languages can apply to both individuals and non-individuals.

I argue that marking this distinction at the level of morphology on the noun versus marking it with classifiers leads to a significant difference in the concepts in the lexicon,

in the functional structure of nominal phrases, and in the rate of acquisition of such concepts.

Taking morphological distinctions as a reflection of information relevant to the interpretation, I adopt an approach under which such “systematically signposted” information is grammatically encoded through functional heads. I maintain that the primary function of a nominal phrase is to identify reference and therefore the only motivation for functional elements within the extended projection of the noun is to narrow the range of possible referents for the whole phrase. Morphological content reflects the underlying functional structure, such that systematic morphological contrasts provide clues for the acquirer as to the functions available in an acquisition-based approach to grammar.

Bare nouns are supplied from the lexicon with a range of potential referents making up its denotation. I propose that the lexically-supplied denotation is subject to cross-linguistic variation depending on the systematic information available to the acquirer. The purpose of the extended projection of any noun is to restrict this denotation to the intended referent. This restriction is achieved through the application of functions to the denotation via functional heads.

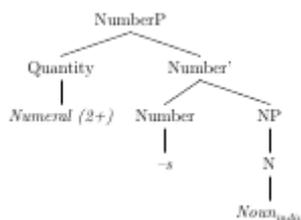
In terms of the count-mass distinction then, I put forward that if the language has a systematic morphological contrast between individual and non-individual nouns, then the acquirer will employ a functional head as the locus of this morphological marking and link the morphology to the difference in interpretation. In the absence of morphological marking, or with a vaguer systematic contrast, the acquirer has less evidence for a functional head and the concept is not grammatically encoded in the same way.

First focusing on English, as discussed above, plural morphology is only available for individual nouns. I argue that plural morphology in English not only leads to the presence of a functional head for grammatical number, but for the systematic listing of nouns in the lexicon as individuals or non-individuals. Individuation is linked to plural morphology in acquirers of English at as early as 2.5 years of age (Soja, Carey & Spelke 1992; Barner & Snedeker 2005). The acquirer, searching for the mapping between the sounds and the meaning, finds that there are three options in terms of plural morphology. Nouns occurring with plural morphology link to sets of individuals. Nouns that can appear with plural morphology but do not link to individuals – this is the singular. Nouns that cannot occur with plural morphology are non-individuals. Based on the ability for a noun to take plural morphology, the noun is listed in the lexicon as individuated if it can, and as non-individual if it cannot.

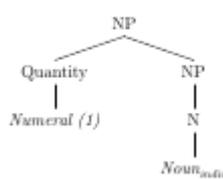
The denotation with which the noun is listed in the lexicon is what is supplied to the syntax for functions to apply to, in order to find the intended referent. If an

individuated noun enters the syntax, it will be possible for the function to apply that selects a set of individuals – a plurality. This function is based in a functional head which, for theoretical consistency, we will call Number. The morphological motivation for this is the plural suffix. The denotation of the noun is now sets of individuals with a cardinality of at least two. Now, it is possible for another function to apply which selects sets of specific cardinalities. This function can be based in a functional head we will call Quantity and will host numerals. It is necessary for the denotation to contain individuals before the Quantity function can apply. If a non-individuated noun enters the syntax, it is not possible for the function to apply that selects a set of individuals, as there is no sense of the individual.

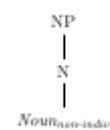
(1a) Plural count



(1b) Singular count



(1c) Mass



The structures in (1) show that nouns in English are listed as either individuated or non-individuated. If the denotation of the noun is individuated, then functions can apply to restrict the denotation. The Number function selects sets of individuals and is marked with the plural suffix *-s*. If the denotation contains sets of individuals, then sets of specific cardinalities can be selected through the Quantity function. If the denotation only contains individuals, or atoms, then the Quantity function can apply but only with the numeral *one*. (It is possible, however, that the numeral *one* is not solely a reflection of the Quantity function, and could appear as another function.)

In Mandarin Chinese, there is no morphological marking on the noun. The bare noun can refer to an individual, a set of individuals or a non-individual. I propose that this relative lack of clues for the acquirer means nouns are not grammatically encoded as individuals or non-individuals. The lack of morphology also results in there being no functional head for Number. Acquirers of Mandarin do not fully learn the distinction between individuals and non-individuals until 6 or 7 years of age (Huang, Barner & Li 2005). The acquirer is faced with the availability of bare nouns that say nothing about individuation or number, alongside the fact that classifiers, the only elements that might indicate which nouns are individuals, appear in a wide and varied range of forms that also encode other semantic information. The vaguer systematic contrast in Mandarin contributes to the delayed acquisition.

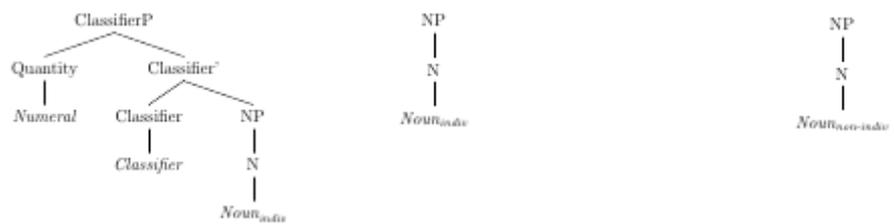
I argue that in Mandarin Chinese the evidence for listing nouns in the lexicon as individuals or non-individuals is not strong enough for this distinction to be encoded early on in acquisition. The lack of evidence results in this information being stored on nouns alongside other semantic information that is not directly relevant to the syntax.

Interestingly, acquirers of Mandarin Chinese begin to understand the distinction between classifiers and measure words much earlier than when they understand individuation in nouns (Huang, Barner & Li 2005). Classifiers include information such as the shape of the noun’s referent, and children pick up on this by 4 years of age. The understanding of the link between the classifier’s shape information and the referent of the noun takes priority, but eventually the acquirer develops the understanding that such information can only apply to nouns that refer to individuals. Those nouns that occur with classifiers must therefore have a denotation consisting of individuals.

I claim that the delayed acquisition of this concept in nouns in Mandarin, relative to English, is based on the strength of the morphological indicators. In English, the strong systematic plural morphology clearly marks which nouns denote individuals and which do not. This leads to nouns being listed as individuals or non-individuals based on morphosyntactic criteria. The count-mass distinction is therefore grammatically encoded in English. In Mandarin Chinese, the lack of morphology and any link to Number means that there is no information on the noun to give away whether it refers to individuals or non-individuals. Classifiers, however, provide semantic information which links them to the appropriate nouns. As part of this information, there is the notion of individuation. Due to the range of classifiers being acquired, and the bundle of information they provide, the link between classifiers and individuation is not understood until much later.

Once classifiers are linked to individuation, their function within the nominal projection can be better understood. Nouns, whilst not grammatically encoded as individuals or non-individuals, hold semantic information on whether they can be individuated. The function of individuation as provided by the classifier can therefore only apply to certain nouns based on their semantic information. The classifier stands to make this information available to the syntax. The individuation function is based in the functional head Classifier which hosts classifiers. Once the denotation of the noun is individuated by the classifier, it is possible for another function to apply which selects sets of specific cardinalities. Again, this will be based in a functional head called Quantity that hosts numerals.

(2a) Counted individuated (2b) Neutral individuated (2c) Non-individuated



The structures in (2) show that nouns in Mandarin Chinese are listed as individuated or non-individuated, but there is no functional head that systematically links to this concept as the Number head does in English. This allows a number-neutral reading, as

in (2b), which says nothing more than “some amount of N” and is very similar to the interpretation provided by the structure in (2c). To give the notion of a unit, the Classifier function applies. The unit can then be counted by the Quantity function, as in (2a)

In summary, I argue for a grammatically encoded count-mass distinction on nouns in English based on the prevalence of the morphological marking available to the acquirer. This means that in English it is possible to force a count interpretation of a mass noun through the syntax. In Mandarin Chinese, the lack of morphology on nouns means that the count-mass distinction is not grammatically encoded on nouns. Classifiers inherit the function of individuation through the other semantic information that links them to the correct nouns. Nouns in turn hold semantic information regarding whether they can be individuated. Unlike in English, it is impossible to force a count interpretation of a mass noun by combining it with a classifier in Mandarin Chinese. Until at least the classifier level, the count-mass distinction in Mandarin Chinese is only a direct reflection of semantic information.

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