

Chinese plurals are not exclusively exclusive: experimental evidence by Chinese children

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This paper investigates how children interpret plurality in the absence of obligatory marking in their L1 and more specifically the type of inferences that the use of **optional** overt plural marking can trigger. Plural marking is normally understood to yield a multiplicity inference which can take two forms, the so-called *exclusive reading* (*more than one x*) (1a), and the *inclusive reading* (*one or more*) (1b) (Sauerland 2005 among others). (Examples adapted from Tieu et al. 2014).

1) Emily fed giraffes.

- a. *Emily fed more than one giraffe.* (exclusive reading)
- b. *Emily fed one or more giraffes.* (inclusive reading)

In downward entailment environments such as negation (2), the exclusive readings disappear (2a) and only the inclusive reading is possible (2b) yielding a reading of *no x*.

2) Emily didn't feed giraffes.

- a. *Emily didn't feed more than one giraffe (she only fed one).* (exclusive reading)
- b. *Emily didn't feed one or more giraffes. (she didn't feed any giraffes.)* (inclusive reading)

This is empirically supported in English, Greek and Turkish (Tieu et al., 2014; Renans et al., 2018; 2020) where adults and children are compared in their interpretation of bare plural nouns (BPs). Adults are shown to interpret BPs with an exclusive reading ('more than one') in the positive context (1a), while the exclusive reading tends to disappear in the negative context, and an inclusive reading is preferred (2b). Children (4-7 years) computed exclusive readings for BPs less often than adults in both positive and negative contexts, preferring inclusive readings in both contexts ((1b) and (2b)). This is in line with the proposal that multiplicity inferences are scalar implicatures and that children tend to compute fewer scalar implicatures than adults do (e.g., Papafragou & Musolino, 2003). The current study tests these findings in Chinese where plural marking is not obligatory: bare nouns (BNs) are used with both singular and plural meanings, suggesting they are number neutral (Rullmann & You, 2006). The use of the plural marker *-men* (*men* plurals) is only limited to humans and other personified individuals and it is still optional (3) and it has been proposed to be only associated with exclusive readings (Li, 2020; Kim and Melchin, 2018).

3) Qianqian zai jiao xiao tuzi(-men) xue yingyu.

Qianqian AD teach little rabbit(-PL) learn English

Qianqian is teaching more than one rabbit to learn English.

The study We tested pre-school Chinese children in their interpretation of BNs and *men* Plurals in positive and negative contexts. Our prediction is that the results in BNs and *men* plurals differ such that the former is interpreted inclusively while the latter will receive significantly more exclusive readings in both positive and negative contexts. By testing pre-school children of ages 4-6 - the age groups where the full computation of implicatures has not yet fully emerged - we seek to observe their interpretation of the base meaning of nominals.

A Truth-Value Judgment Task (adapted from Tieu et al., (2014) and Renans et al., (2018; 2020)) was carried out on 30 native Chinese children of ages 4-6. The test was conducted in the form of one-to-one online meetings. Children were presented with an animated context (e.g., Emily feeding one panda, in Fig. 1), followed by a rabbit asking, 'what happened?'. Then a positive or negative test sentence (e.g., (4)) appeared to which children responded with True or False.

4) a. Qianqian wei le xiongmao (positive)
Qianqian feed AX panda

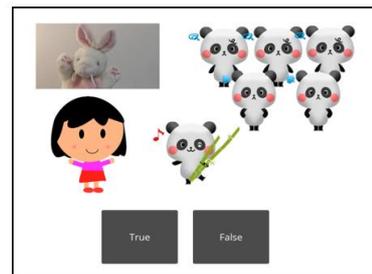


Fig. 1. Context in animation

Qianqian fed one or more pandas.

b. Qianqian meiyou wei xiongmao. (negative)

Qianqian not feed panda

Qianqian didn't feed one or more pandas.

There were 6 positive and 6 negative test tokens (12 test tokens in total (6 for BNs and 6 for *men* plurals)), plus 8 control items (4 positive and 4 negative).

The Results The results reveal that in line with the prediction, children interpreted BNs with an inclusive reading in both positive and negative contexts (no significant difference, $p > .05$). However, *men* Plurals showed a mixed picture. Unlike the prediction, the inclusive reading was dominant by two thirds in the positive context, while it was almost the only interpretation in the negative context (Fig. 2). Compared with BNs (Fig. 3), the inclusive reading of *men*-plurals in positive context is statistically different from that of BNs ($.01 < p < .05$), while the readings in negative context is largely inclusive across BNs and *men*-plurals.

We conclude that BNs are *similar to bare plurals in languages with obligatory plural marking*. However, the results on *men*-plurals contradict the received wisdom on *men*-plurals, i.e. that they give rise to exclusive readings only. Chinese nouns remain number neutral irrespective of the presence of the overt presence of plural

marking. Our results call into question the intuitively plausible proposal that the use of optional plural marking is associated with an exclusive interpretation of the plural. We analyse *-men* as a weak marker (associated with focus perhaps although that is not clear) which, while it highlights the exclusive reading of the plural, it is not strong enough to override the base meaning. The results in this study also add support to the findings that all nominals crosslinguistically are number neutral whether or not they have overt plural marking.

Selected References

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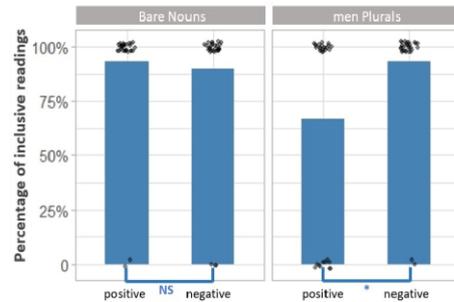


Fig. 2. Percentage of inclusive readings (positive vs negative)

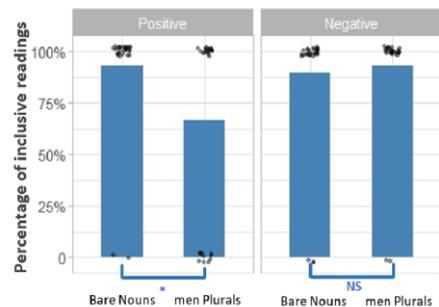


Fig. 3. Percentage of inclusive readings (BNs vs. *men*-plurals)