

**DEVELOPMENT OF THE CHINESE BA
CONSTRUCTION:
A LONGITUDINAL STUDY***

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ABSTRACT

Based on the data of a Mandarin-speaking child from 1;9 to 6;1, this case study posits that the child's BA changes from a verb, to a semi-functional category, and eventually to a functional category as a Case assigner after 6;0. The findings explain why the acquisition of BA may take a long time, in contrast to the early acquisition of a functional category such as aspect (cf. Liu 2009; Chang 2013; Yang, Shi and Xu 2018). The findings are also compatible with the continuity hypothesis, which suggests that child language can differ from the language spoken by adults only in ways that adult language can differ from each other (Crain 1991; Crain and Pietroski 2002; Crain, Goro and Thornton 2006).

Keywords: *ba* construction, first language acquisition, serial verb construction, semi-functional category, the continuity hypothesis, Mandarin Chinese

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1. INTRODUCTION

This paper concerns the acquisition of a BA construction in Mandarin Chinese. In a BA construction, which can be schematically represented as ‘NP1 BA NP2 VP (XP)’, BA marks a preverbal object, i.e., NP2, resulting in an SOV order which deviates from the typical SVO order. (1) contains a BA sentence and its non-BA counterpart.

- (1) a. Wo ba na-ben shu kan-wan le.¹
 1SG BA that-CL book read-finish ASP
 ‘I finished reading that book.’
 b. Wo kan-wan na-ben shu le.
 1SG read-finish that-CL book SFP
 ‘I finished reading that book.’

The BA construction is characterized by three main features. First, the NP marked by BA tends to be interpreted as an affectee and because of this, syntactic objects that are unable to undergo any change or effect of any kind are unlikely to be found marked by BA.²

Second, NP2 in a BA construction has to be definite, as shown in (1a), or to be specific, as illustrated in (2). (Hashimoto 1971; Li 1974; Tiee 1990, among others)

- (2) Ta zhongyu ba yi-pian wenzhang jiao-chuqu le.
 3SG finally BA one-CL paper submit-out ASP
 ‘He finally submitted a paper.’

¹ The glossing abbreviations used in this paper are given below: ASP: aspect maker, BA: the *ba* marker in Mandarin, BEI: the passive *bei* marker in Mandarin, CL: classifier, DE: the modification marker *de* in Mandarin, E: the modification marker *e* in Taiwanese, KA: the *ka* marker in Taiwanese, and SFP: sentence final particle.

² See Section 2 for more discussion of affectedness.

The BA sentence in (2) is acceptable because, despite the fact that *yi-pian wenzhang* ‘paper’ is an indefinite NP, it is specific.

Third, a VP in a BA construction is complex, as shown in the contrast below.

- (3) a. Ta ba Zhangsan da-shang le.
3SG BA Zhangsan hit-injured ASP
‘He hurt Zhangsan.’
b. *Ta ba Zhangsan da.
3SG BA Zhangsan hit
‘He hit Zhangsan.’

A bare verb in (3b) is unacceptable in a BA construction.

A VP can be made complex by having a perfective marker *le* (e.g., in (1a)) and/or a phase/resultative complement (e.g., *wan* ‘finish’ in (1a), *chuqu* ‘out’ in (2), and *shang* ‘injured’ in (3a)), among other possibilities (Wang 1945; Lü 1948). Liu (1997) concludes that a BA sentence requires its predicate to denote a bounded event or situation. According to her, a predicate can be bounded either due to its verbal aspect or viewpoint aspect. Here is the list of the various forms summarized by Liu that make a predicate bounded:³

- (4) a. V + complement
b. V + *de*
c. V + retained object
d. V + perfective marker *le*
e. V + PP (durative or locative)
f. V + quantified phrase
g. V + *yi* ‘one’ + V
h. V + durative marker *zhe*
i. Adv + V

³ But see Huang, Li and Li (2009:157), which shows a bare verb such as *daibu* ‘arrest’, is possible when it has more than one syllable.

There are different analyses of BA in the literature. A comprehensive analysis that takes into consideration various aspects of a BA construction, which I adopt for this study, is given in Huang, Li and Li (2009). In their study, BA is analyzed to be a Case assigner, a functional category, which assigns Case to its following NP and does not hold a thematic relation with it, although they do allow the possibility that the so-called canonical BA sentence involves a ‘serial verb construction.’ In such usage, BA is viewed to be more lexical.

As far as the acquisition of the BA construction is concerned, previous literature (e.g., Erbaugh 1982; Tse et al. 1991; Li 1991; Cheung 1992; Fahn 1993; Yang and Xiao 2008, among others) shows that children use the BA construction as early as two years old and maybe even at a younger age, but may not have mastered it until the age of six (see Tse et al. 1991 and Fahn 1993, in particular). Children are also reported to make various non-adult-like BA sentences (e.g., Erbaugh 1982; Tse et al. 1991). Despite the above findings, there are few studies about how the acquisition proceeds. Compared to the early acquisition of other functional categories such as aspect (cf. Liu 2009; Chang 2013; Yang, Shi and Xu 2018), BA seems to take a long time to acquire. This paper aims to investigate the development of the BA construction in a child’s speech by studying his longitudinal data from 1;9 to 6;1.

The rest of the paper proceeds as follows. Section 2 discusses the syntax and semantics of a BA construction. BA will be compared to KA in a KA construction in Taiwanese Southern Min (or Taiwanese for short). Section 3 introduces the acquisition literature. Section 4 details the child’s linguistic background, data collection procedures, data analysis methods, and the results of this study. The discussions of the findings and their theoretical implications are included in Section 5. Finally, the conclusion of this paper is given in Section 6.

2. SYNTAX AND SEMANTICS OF THE BA CONSTRUCTION

The BA construction is known to be a disposal construction because historically BA was a lexical verb meaning ‘take hold of’ or ‘grasp’ (Wang 1957). In modern Chinese, BA is typically used to introduce an object which occurs in the preverbal position. The action of the verb that occurs in a BA construction has to have some effect on the referent of the post-BA NP it takes and as a result, the resultative part or an end point marked by verbal aspect or viewpoint aspect is indispensable (Liu 1997).

A controversial property of BA construction regards the syntactic category of BA. In traditional functional grammar (Li and Thompson 1981), it is referred to as a co-verb because it used to be a verb. In generative grammar, BA has been analyzed to be a lexical verb (Hashimoto 1971), a preposition (Chao 1968; Lü 1980; Travis 1984; Cheng 1986; Li 1985, 1990), or some kind of functional projection (Sybesma 1999). More recently, in Huang, Li and Li (H&L&L) (2009), BA is taken to be a Case assigner which takes a *vP* and assigns Case to the post-BA NP serving as the subject of the *vP*. It does not have any thematic relation with the post-BA NP. The relevant structure is represented as follows:

- (5) [_{baP} Subject [_{ba'} *ba* [_{vP} NP [_{v'} *v* [_{VP} V XP]]]]] (H&L&L 2009:182)

Crucially, H&L&L point out that BA cannot be a pure lexical verb because it does not behave like the causative verb *shi* ‘make’, as evidenced in the difference concerning coreference in (6) and (7) (H&L&L 2009:165):

- (6) a. *Ta ba Lisi_i hai le ta_i.
 3SG BA Lisi hurt ASP 3SG
 ‘He hurt Lisi.’
 b. *Ta ba Lisi_i hai le ziji_i/ta ziji_i.
 3SG BA Lisi hurt ASP self/3SG self
 ‘He hurt Lisi.’

- (7) Ta shi Lisi_i hai le ziji_i/ta ziji_i.
 3SG make Lisi hurt ASP self/3SG self
 ‘He made Lisi hurt himself.’

According to H&L&L, *shi* is a lexical verb that can take an external argument (subject) and a clausal complement, whereas BA is part of a verb complex and is not a lexical verb itself. Nevertheless, according to H&L&L, it is not always sufficient to just take BA as some functional projection not forming a constituent with the following NP, as shown in the structure given in (5). Note first that two types of BA sentences, according to H&L&L, do not behave the same.⁴

- (8) a. Wo ba shu kan-wan le.
 1SG BA book read-finish ASP
 ‘I finished reading the book.’ (Canonical BA)
 b. Na-ben shu ba wo kan de tou hen tong.
 that-CL book BA 1SG read DE head very painful
 ‘Reading the book made my head hurt.’ (Causative BA)

(8a) is a canonical BA sentence, while (8b) a causative BA sentence (see also Sybesma 1999). NP1 (the subject) in the former introduces the agent of the verb, while NP1 (the subject) in the latter involves a causer. In a canonical BA sentence, though not in a causative BA sentence, BA and the post-BA NP can be moved as a constituent, as shown in (9) and (10). This usage of BA patterns like a “serial verb construction”.⁵ H&L&L (2009:178) suggest that such a BA sentence can be analyzed as [[_{VP} BA NP][VP]], with the [_{VP} BA NP]

⁴ Crucially, using the coordination test, H&L&L (2009:166) show that the post-*ba* NP and the VP can form a constituent.

⁵ As H&L&L (2009:163) point out, a “serial verb construction” is not a unified structural notion. It refers to all VP sequences with one VP occurring after another, which in terms of structure can be analyzed as different types of coordination or subordination structures (Li Thompson 1981, Chapter 2). See also Paul (2008).

functioning like a VP modifying the following VP.⁶ I will continue to call it a serial verb construction for simplicity.

- (9) a. Ni xian *ba zhe-kuai rou* qie qie ba!
 2SG first BA this-CL meat cut cut SFP
 ‘Cut the meat first.’
 b. *Ba zhe-kuai rou*, ni xian qie qie ba!
 BA this-CL meat 2SG first cut cut SFP
 ‘Cut the meat first.’
 (H&L&L 2009(34):167)
- (10) a. Zhe-ben shu *ba wo* kan de yanjing dou lei le.
 this-CL book BA 1SG read DE eye all tired ASP
 ‘I read the book such that my eyes got tired.’
 b. **Ba wo zhe-ben shu* kan de yanjing dou lei le.
 BA 1SG this-CL book read DE eye all tired ASP
 ‘I read the book such that my eyes got tired.’
 (H&L&L 2009(67):179-180)

H&L&L point out that such a structure is compatible with the analysis of BA as a verb or a preposition. But they seem to suggest that BA is analyzed as such only when movement takes place like in (9b) because they claim “in most cases, *ba* and the post-*ba* NP do not form a constituent” (2009:174). In other words, they maintain that (5) is the general structure for a BA sentence.

The second controversial property of a BA construction concerns the notion of affectedness. Typically, a post-BA NP is an inner object of the verb posting as an affectee. A theme such as *shu* ‘book’ in (8a) that can be manipulated by an agent can be taken to be an affectee. A patient perceived to

⁶ Here H&L&L propose a subordination structure with one VP modifying another. For the support of this analysis, please see H&L&L (2009:179) for the discussion of the interpretations of an empty pronoun in the resultant complement clause.

be affected can also appear as a post-BA NP in a BA sentence, as shown in (11).

- (11) Ta ba *ni* hen-tou le.
 3SG BA 2SG hate-thorough ASP
 ‘He hates you thoroughly.’
 (Mei 1978)

An affectee, however, does not have to be the direct object of the matrix verb. Consider the following examples.

- (12) a. Ta ba *Zhangsan* da-duan le *tui*.
 3SG BA Zhangsan hit-broken ASP leg
 ‘He broke Zhangsan’s leg.’
 b. Wo ba *juzi* bo le *pi*.
 1SG BA orange peel ASP skin
 ‘I peeled the skin of the orange.’
- (13) a. Wo ba *luzi* zhu*(-*hei*) le.
 1SG BA stove cook-black ASP
 ‘I cooked on the stove and made the stove black.’
 b. Ta ba *huaping* cha*(-*man*) le *hua*.
 3SG BA vase insert-full ASP flower
 ‘She made the vase full of flowers by inserting them into it.’

The examples in (12) and (13) (though not (13a)) involve a ‘retained’ object that occurs after the verb (an inner object). I will call it NP3. In such a case, the post-BA object, i.e., NP2, is not an inner object of the verb, but an individual or entity that is related to the inner object NP3 such as a possessor (an outer object) and is affected by the action of the verb. H&L&L propose that while an inner object receives a theta-role from the verb, an outer object is assigned an affected theta-role by the verb complex. They also point out

that in contrast to an outer object, an outmost object is not fully acceptable: (H&L&L 2009:159)

- (14) ??Wangwu you ba *Linyi* ji-chu le *yi-zhi quanleida*.⁷
Wangwu again BA *Linyi* hit-out ASP one-CL home.run
'Wangwu again hit a home run on Linyi.'

(14) is not acceptable because NP2 *Linyi* is neither an inner object, nor an outer object that is related to NP3 *yi zhi quanleida*, and as a result it is ruled out because it has no theta-role.

It should be pointed out that while NP2 and NP3 in (12) seem to involve some whole-part relation, NP2 in (13) marks a location for NP3. This is the reason why Cheung (1992) calls the kind of BA in (13) Locative BA. The fact that the resultative complement *man* 'full' in (13b) is required is reminiscent of the total affectedness existing in the following resultative construction in English: *Joe sprayed the wall with paint*. The inferences for such a sentence are that the wall is totally affected.

Before leaving this section, I will compare a BA construction with its apparent Taiwanese (TS) KA counterpart. This comparison is pertinent because the child in this study seemed to have produced KA-like sentences, despite the fact that he didn't know Taiwanese. Overall, BA and KA differ in two aspects that are relevant to the present study (cf. Yang 2006; Lin 2012, 2016, among others). First, post-KA NPs exhibit different thematic roles as indicated in the examples below (I follow Yang's spelling of the examples).

⁷ According to H&L&L (2009:159), Taiwan Mandarin speakers tend to accept an outmost object in a BA sentence more generally due to the influence of the KA construction in Taiwanese. See the discussion of the KA construction below.

- (15) a. Gua ka i phah-si a. (TS)
 1SG KA 3SG beat-dead ASP
 'I beat him to death.' (Patient)
- b. I ka hit-pun chheh be-tiau a. (TS)
 3SG KA that-CL book sell-gone ASP
 'He sold that book out.' (Theme)
- (16) a. Abing ka Asan ka Ingbuen. (TS)
 Abing KA Asan teach English
 'Abing teaches Asan English.' (Goal)
- b. Abing ka Asan mng cit-e mngthe. (TS)
 Abing KA Asan ask one-CL question
 'Abing asked Asan one question.' (Goal)
- (17) a. Kengchat ka hit-e lang huat lak-pah kho. (TS)
 policeman KA that-CL person fine 600 dollar
 'The policeman fined that man for six hundred dollars.'
 (Source)
- b. Abing ka Asan phen lak-pah kho. (TS)
 Abing KA Asan cheat 600 dollar
 'Abing cheated Asan of six hundred dollars.' (Source)
- (18) a. Abu ka Asan se sann. (TS)
 Abu KA Asan wash clothes
 'Mother washes clothes for Asan.' (Benefactive)
- b. Asan ka gua cau-khi. (TS)
 Asan KA 1SG run-go
 'Asan ran away (on me).' (Adversative)

Other than the cases with patients and themes, the Chinese BA counterparts of the above sentences, in contrast, are not acceptable, as illustrated below.

- (19) a. Wo ba ta da-si le.
1SG BA 3SG hit-dead ASP
'I beat him to death.' (Patient)
- b. Ta ba na-ben shu mai-diao le.
3SG BA that-CL book sell-away ASP
'He sold that book out.' (Theme)
- (20) a. *Zhangsan ba Lisi jiao Yingwen.
Zhangsan BA Lisi teach English
'Zhangsan teaches Lisi English.' (Goal)
- b. *Zhangsan ba Lisi wen le yi-ge wenti.
Zhangsan BA Lisi ask ASP one-CL question
'Zhangsan asked Lisi one question.' (Goal)
- (21) a. *Jingcha ba na-ge ren fa le liu-bai kuai.
policeman BA that-CL person fine ASP 600 dollar
'The policeman fined that man six hundred dollars.' (Source)
- b. *Zhangsan ba Lisi pian le liu-bai kuai.
Zhangsan BA Lisi cheat ASP 600 dollar
'Zhangsan cheated Lisi of six hundred dollars.' (Source)
- (22) a. *Mama ba Lisi xi yifu.
Mother BA Lisi wash clothes
'Mother washes clothes for Lisi.' (Benefactive)
- b. *Lisi ba wo zou le.
Lisi BA 1SG run ASP
'Lisi ran away (on me).' (Adversative⁸)

⁸ H&L&L (2009:183) give the following example of Taiwanese KA serving as an adversative. (I follow H&L&L's spelling of this example.)

- (i) Li e syaNim na ka gua se-ka
2SG E voice if KA 1SG small-extent

Following Lin (2001) and Li (2001), Yang (2006) treats KA as a light verb encoding AFFECT and claims that KA is more lexical than its close counterpart of Mandarin Chinese BA because KA takes a post KA-NP as its own argument and assigns a theta role to it.⁹

The above analysis of KA and BA also captures another difference between BA and KA, i.e., KA can occur with a bare verb, whereas BA cannot. While the verb in a BA sentence cannot stand alone as shown in (3), repeated in (23) below, a verb in a KA sentence can occur without the resultative complement as in (24) (See also Lin 2012).

- (23) a. Ta ba Zhangsan da-shang le. (= (3a))
 3SG BA Zhangsan hit-injured ASP
 ‘He hurt Zhangsan.’
 b. *Ta ba Zhangsan da. (= (3b))
 3SG BA Zhangsan hit
 ‘He hit Zhangsan.’

- (24) Abing ka Asan phah. (TS)
 Abing KA Asan hit
 ‘Abing hit Asan.’

bolang thiaN-u, guo tio ka li si thaolo.
 nobody hear-have 1SG will KA 2SG fire job
 ‘If your voice is so small that nobody can hear you (at my cost), I will fire you.’

⁹ In Yang’s analysis, the difference between a KA sentence in Taiwanese and a BA sentence in Mandarin is that the former involves a “double” VP shell structure, while the latter a “single” VP shell. Moreover, Yang (2006) assumes a null operator movement approach for the establishment of the relation between the inner object and the post-KA NP. This approach, however, is dismissed by Lin (2012, 2016), who assumes an A-movement of a Pro inner object instead. I do not follow Yang’s or Lin’s analysis of the child’s KA-like sentences. As will be discussed in Section 5.3, I assume a serial verb structure for the stage they occurred in.

In the analysis that KA is a semi-functional category which assigns a thematic role, the post-KA NP can be taken to be an affectee despite the fact that the predicate does not have to be bounded. In contrast, in a BA sentence, an affectee is assigned by a complex predicate to the post-BA NP. It is never simply related to the verb or BA alone. The verb in (23b) is thus never able to assign an affectee to the post-BA NP and is thus ruled out.

This analysis echoes L&H&H's (2009:185) comment on the difference between the two constructions, "...the *ba* construction in Mandarin can be viewed as a more grammaticalized and emptier version of the *ka* construction in Taiwanese. The two minimally differ in their theta-assigning abilities." In the case study below, it will be shown that the child may undergo a stage in which his BA behaves like KA in Taiwanese.

3. Acquisition of the BA Construction and Functional Categories

This section discusses the previous literature on the acquisition of the BA construction and the issue of the acquisition of functional categories in general. In Section 3.1, I will present six longitudinal studies and three experimental studies of the acquisition of a BA construction. In Section 3.2, I will discuss how functional categories are acquired.

3.1 Previous Studies of the BA Acquisition

A comprehensive study of a BA construction is given in Erbaugh (1982). Based on the naturalistic data of four children, Erbaugh (1982) divides the development of the BA construction into three stages. At the 1st stage (2;0~2;5), there were few occurrences of BA sentences and a lot of non-adult-like output:

- (25) Bu-yao ba ta cai-diao zhe-ge. (2;5)
not-want BA 3SG tread-away this-CL
'Don't tread on this one.'

In (25), an extra post-verbal NP, which refers to the same referent as the NP immediately following BA, occurred after the main verb (NP2=NP3). At the 2nd stage (2;6~3;5), the use of the BA construction became more productive, but there was still non-adult-like output. Finally, at the 3rd stage (3;6~late childhood), the use of the BA construction was productive and correct.

Another longitudinal study done by Jepson (1989) focused on the acquisition of the grammatical categorization of three co-verbs, i.e., *gen* 'with', *yong* 'use' and BA. Studying 12 children from 2;2 to 4;2, Jepson (1989) concluded that children differed in the class to which they initially assigned the co-verbs. For most of the children observed, BA, *gen* and *yong* were treated very differently from verbs: they occurred only in the co-verbal construction, never took *zhe*, and were almost never stressed. On the other hand, a small group of children exhibited verbal uses of the co-verbs:

- (26) Wo *ba* yizi. (Child A; 2;3)
1SG BA chair (as child picks up chair and begins to carry it
to another room)
- (27) *Ba*! (Child A; 2;3)
BA (trying to place doll in interviewer's arms)
- (28) Xiaomao *ba* zhe yu. (Child A, 2;3)
Little.cat BA ASP fish
(pointing to the storybook picture of a cat holding fish which it had
caught)
- (29) *Ba* zhei-ge! (Children C & D, 2;4)
BA this-CL (handing a book to another child)
- (30) Lili *ba* shu. (Children C & D, 2;4)
Lili BA book (pointing to another child who was holding a book)

While the analysis of this study is inspiring, a problem with this study, as pointed out by Jepson himself, is that children were observed from the ages of 2;2 to 4;2, but no child was observed for more than a relatively short section of this period. Therefore, “the development of the co-verbs could not be traced in any child from their inception to the age of 4;2.” (Jepson 1989:201)

In a longitudinal study done by Tse et al. (1991), it was found that children started using the BA construction as early as the age of 1;9, but it was not ‘clearly identifiable’ until it was at the age of 2;4.

- (31) Ba ? kai-kai. (LC 1;9)
BA ? open-open
‘Open (it).’

Four types of errors were observed:

A. Verb type errors

- (32) Jieguo ta jiu ba ta *fei-zou* le. (SN 2;4)
as.a.result 3SG then BA 3SG fly-away ASP
‘As a result, he ‘flew’ it away.’

In this example, an intransitive verb *fei* combined with the complement *zou* ‘away’ is used as a transitive verb.

B. Omission of the object

- (33) Weishenme ba qiao liang-ge. (LS 3;3)
why BA knock two-CL
‘Why are you knocking at the two?’
(34) Ta jiu ba ... dao dao... (LS 3;7)
3SG then BA pour pour
‘He then pour (it).’

- (35) Ba ta jian-kai, ba jian-kai dian. (ST 5;2)
 BA 3SG cut-open BA cut-open a.little
 'Cut it. Cut (it).'
- (36) Ranhou you ba cai dao shui li qu. (ST 5;2)
 then again BA tread to water inside go
 'Then (he) trod (on it) and made it go into the water.'

Unlike in adult speech where the post-BA NP is obligatory, the BA sentences in (33) to (36) have no post-BA NP. In (33), the internal object *liang-ge* 'the two' occurs postverbally, instead of preverbally.

C. Addition of the object

- (37) Zhe-ge, zhe-ge shi yaokong, keyi ba ta
 this-CL this-CL be remote.control can BA 3SG
 sha-diao da shayu de. (LS 3;7)
 kill-away big shark DE
 'This, this is a remote control which is able to kill big sharks.'
- (38) A, ba ta wa bikong de shihou... (CS 3;9)
 ah BA 3SG pick nostril DE time
 'Ah, when you pick the nose,...'

In (37) and (38), the post-BA NP and the post-verbal NP refer to the same entity (NP2=NP3), a similar error which was also found in Erbaugh (1982) as shown in (25) above.

D. Wrong word order

- (39) Ta yao chi ba ba zhu gege he zhu meimei
 3SG want eat BA BA pig brother and pig sister
 de fan. (SN 2;10)

DE meal
'He wanted to eat Brother Pig and Sister Pig's meal.'

Both BA and the post-BA NP in (39) occur postverbally.

Another longitudinal study was done by Yang and Xiao (2008). Based on the naturalistic data of a child from 1;4 to 2;5, Yang and Xiao (2008) found that the child was sensitive to the bounded property of the VP in a BA construction and the definite constraint around two years old. Their subject's first BA sentence occurred at the age of 1;11 and by the age of 2;5, she produced 52 correct BA sentences (types, not tokens). They are characterized as follows.

First, most of the post-BA NPs are patients. The only exception is given as follows, which involves a preverbal outer object and a post-verbal inner object: (NP2≠NP3)

- (40) Ba *zhe-ge yuanquan* hua yi-ceng *hua*. (2;3)
BA this-CL circle draw one-CL flower
'Add a layer of flowers to this circle.'

Second, thirty-six different verbs were used in 52 BA sentences, in which according to the two authors the child was quite productive in the use of this construction. Third, all of the BA sentences involve bounded VPs.

In contrast to Yang and Xiao (2008), the longitudinal data from a Mandarin-speaking boy from 24 months to 35 months in Chang and Zheng's (2017) study shows that he mainly used theme BA constructions. Furthermore, they also found that they usually denoted past events. In terms of predicates, they were found to be mainly composed of a verb and a resultative complement and nearly all the post-BA NPs were definite.

Moreover, in a longitudinal study of the corpus data of four children ranging from 1;11 to 4;10, Huang (2011) finds one of the children used a BA sentence at an age as young as 1;11 and posits that early BA sentences belong to the canonical type. He concludes that BA is first acquired as a lexical verb, not a grammaticalized category as in adult language. He categorizes non-

adult-like errors into the following types: ‘omission of post-BA NP’, ‘omission of VP’, ‘unbounded VP’, ‘coreference of NP3 with NP2’, ‘missing of preposition’, and ‘unknown mistake’. But while he shows that errors decrease in general, he claims that “it is not that easy to, decisively and lucidly, mark off the different development stages of *ba* construction, since the non-adult-like *ba* sentence and well-formed sentences are usually mixed together.” (Huang 2011:68)

Most recently, Tsung and Gong (2021) conducted a corpus-based study of spontaneous speech from 168 preschoolers aged 2;6, 3;6, 4;6 and 5;6 and found the children produced 11 types of BA constructions in total with the youngest age group (age 2;6) producing six types. These types of BA constructions largely follow Liu’s (1997) nine verb types. The three most frequently used types were ‘V + resultative verb complement’, ‘*gei* ‘give’ + verb/noun’ and ‘V + noun (possessive, person, resultative and partitive).’ ‘Possessive’ here refers to a whole-part relationship between NP2 and NP3 in a BA construction as discussed above.

Three experimental studies also contribute to our understanding of the BA construction. First, in an elicited production experiment given to children from ages three to six, Li (1991), it was found that 90% of the children’s 296 utterances in which BA constructions occurred contain resultative verbs. According to Li, the almost perfect association between BA constructions and perfective aspect and resultative verbs suggests that from age three on, Chinese-speaking children are aware of the occurrence constraints inherent in these sentences.

Second, based on the results from his experimental tasks and the spontaneous speech samples taken from Tse et al. (1991), Cheung (1992) concluded that children started using BA when they were two years old. Only Theme BA (with NP2 being an internal object) was used in the beginning. Locative BA (with NP2 being a location) and other 3-argument BA constructions came into use around the age of five.

Finally, Fahn’s (1993) experimental study found that age five was a crucial cutoff point for being sensitive to the incompatibility with the

progressive marker and verb selection in a BA construction, while age six was a demarcation point for the compound verb and definiteness constraints.

Here is a summary of what we know from the previous literature.

- (41)
- a. Children start to produce BA sentences at a young age, i.e., at the age of 2 or even younger. (e.g., Erbaugh 1982; Jepson 1989; Tse et al. 1991; Huang 2011)
 - b. Typically, the post-BA NP is associated with a theme/patient. (Yang and Xiao 2008; Cheung 1992)
 - c. Children may initially analyze BA as a verb. (Huang 2011)
 - d. Children may omit NP2 (Jepson 1989; Tse et al. 1991; Huang 2011)
 - e. Children may make coreference errors (NP2=NP3) (Erbaugh 1982; Tse et al. 1991)
 - f. Some studies suggest that children may acquire the bounded constraint and the definite constraint early (e.g., Yang and Xiao 2008), whereas others suggest children may take a longer time to acquire them (Fahn 1993).

Other than the analysis of BA as a verb at the initial stage, none of them, however, systematically explain children's errors committed by the children, such as the omission of NP2 and coreference errors found in Erbaugh (1982) and Tse et al. (1991). The non-adult utterances are taken to be unsystematic as in Huang (2011) or as erratic as in Cheung (1992). Cheung (1992) takes the omission of NP2 to be a performance error because it is found in different ages. A performance error refers to an error committed even though there is competence. Indeed, the same kind of error is also found to last for a long time in the data collected in this study. Nevertheless, extending over a long period does not necessarily implicate a performance error. It may be the fact that it is more difficult for a child to unlearn it and it will be significant if only after a certain time children stop making such an error.

3.2 Issue of the Acquisition of Functional Categories

It has long been observed that early child language lacks functional categories. An approach to the acquisition of functional categories within the framework of Principles and Parameters theory is Radford's (1995) maturational hypothesis. In this approach, it is proposed that children around 20 to 24 (20%) months of age lack functional heads such as auxiliaries, complementizers, determiners, and case particles and their projections altogether, and the transition to the grammatical state is attributed to the biological maturation of these categories. Thus, the theory predicts that the different features of language which presuppose the operation of functional categories be present or absent at a given stage of maturation. In other words, children operate with only one grammar at any one stage of development (and do not code-switch between more and less mature grammars). Similarly, Borer and Wexler (1987) argue that certain linguistic principles form over time, and only when a maturational threshold has been reached is exposure to primary linguistic data effective. For example, they posit that full verbal passives (with *by*-phrases) are not acquired early compared to adjective passives because the former involve the knowledge of A-chains and while the knowledge is innate, it becomes accessible only after the language faculty undergoes maturational change.

On the other hand, in light of the fact that children generally acquire language at an early age, supporters of the continuity hypothesis assume that children are born with a set of universal linguistic principles and a set of parameters that account for variation among languages (Pinker 1984; Goodluck 1991; Crain 1991, among others). Crain (1991), for example, points out that children learning Sesotho, an African language, used full passives before the age of three. He suggests that the observed absence of full verbal passives in the spontaneous speech of young children may be due to some performance factors that cause children to use the reduced form or an alternative structure. Therefore, it does not show that young children do not have the grammatical knowledge of full verbal passives nor their incapability to produce them. Crain and his subsequent works show that child language may differ from the language spoken by adults in the same linguistic

community, but only in ways that adult languages can differ from each other (Crain 1991; Crain and Pietroski 2002; Crain, Goro and Thornton 2006) For example, the properties of an English-speaking child's *why*-questions have been found to match the properties of *why*-questions in adult Italian.¹⁰

Based on the longitudinal data collected, the present study aims at drawing a more complete picture of the development of a BA construction from its inception to its adult-like use and brings light to what theoretical implications the data may lead us to draw.

4. THE CASE STUDY

In this section, the background information about the child studied, data collection procedures, methods of analysis, and results are included.

4.1 Informant and Data Collection Procedures

The longitudinal data studied in this study is based on the speech of my son, who spoke Mandarin but didn't speak Taiwanese Southern Min. There were two types of data included in this study. The first type was from the videotaping of his interaction with the author (Mother) and occasionally with additional family members including Father and Sister every other week, or sometimes every three weeks after he reached five. More than one hundred sessions were videotaped and 87 of them (from ages 1;9 to 6;1) were transcribed and included in this study. During his early years, a session usually lasted about 50 minutes. It was reduced to 30 minutes when he was about five to six years old. The second type of data was the child's non-adult-like BA sentences kept in the author's diary of the child's language development.

4.2 Data Analysis Methods

¹⁰ Between the maturational hypothesis and the continuity hypothesis, there are many options. See de Villiers (1992).

With the focus on whether the child could produce an adult-like BA sentence, it is the whole BA sentence that is taken into consideration. For this reason, when the child pronounced several instances of BA in attempting to make one complete BA sentence with a verb in one utterance, I take that to be one BA sentence. In terms of error types, three major error types relevant to the child's grammar of a BA construction are categorized based on the presence/absence of NP2 and NP3, and their coreference, and boundedness is further examined.

- (42) Three Major Types of Non-adult-like BA Sentences
Type I: BA+VP (bounded or unbounded)
Type II: BA+NP2(+VP) (bounded or unbounded)
Type III: BA+NP2+V+NP3 (bounded or unbounded)
 Subtype 1: NP2=NP3
 Subtype 2: NP2≠NP3

The major problem with Type I errors is the missing NP2, with other additional problems with the verb (e.g., no verb at all or an intransitive verb being used transitively) or lack of an additional element for marking boundedness. Type II errors differ from Type I errors in having an NP2. Finally, Type III errors involve an additional NP3. Two subtypes can be further distinguished. In one type, NP2 co-refers with NP3 (NP2=NP3), and in the other, NP2 does not co-refer with NP3 (NP2≠NP3). In the latter case, the problem may be the relation between NP2 and NP3, or the lack of boundedness.

4.3 Results

The results are summarized in Table 1.¹¹ The first column includes the number of adult-like BA sentences in the recorded data. The second column contains the number of non-adult-like BA sentences, which are categorized into the three error types as mentioned above (non-boldfaced). Boldfaced error types are taken from the author's diary. The error rates are calculated based on the data from the recorded sessions only, excluding the diary data.

(43) Table 1. Number of BA Sentences and Error Rates

	# of Adult-like BA Sentences	# of Non-adult-like BA Sentences	Errors/Totals	Error Rates
1;9 (21 months)	0	0	0	0
1;10 (22 months)	0	0	0	0
1;11 (23 months)	0	0	0	0
2;0 (24 months)	0	Type I: 2	2/2	100%
2;1 (25 months)	0	Type I: 2 Type II: 1	3/3	100%
2;2 (26 months)	0	0	0	0
2;3 (27 months)	0	0	0	0
2;4 (28 months)	0	0	0	0
2;5 (29 months)	1	Type I: 2 Type II: 2	4/5	80%
2;6 (30 months)	2	Type I: 1 Type II: 1	2/4	50%
2;7 (31 months)	0	Type II: 1	1/1	100%
2;8 (32 months)	1	0 Type II: 1 Type III: 2 (NP2=NP3)	0/1	0
2;9 (33 months)	15	Type I: 2 Type II: 2 Type II: 1 Type III: 2 (NP2=NP3)	4/19	21%
2;10 (34 months)	35	Type I: 3	9/44	20.5%

¹¹ Data for ages 5;2, 5;3 and 5;5 went missing. Nevertheless, no non-adult BA sentences during those periods of time were recorded in the author's diary during this period of time.

		Type II: 6		
		Type I: 1		
		Type II: 1		
2;11 (35 months)	8	Type II: 2	2/10	20%
		Type III: 1 (NP2=NP3)		
3;0 (36 months)	32	Type I: 2 Type II: 4 Type III: 1 (NP2=NP3)	7/39	17.9%
3;1 (37 months)	13	Type I: 1 Type II: 1 Type III: 1 (NP2=NP3)	3/16	18.8%
		Type III: 2 (NP2=NP3)		
3;2 (38 months)	10	Type I: 1 Type II: 2	3/13	23%
3;3 (39 months)	20	0	0/20	0
		Type II: 1 Type III: 1 (NP2=NP3)		
3;4 (40 months)	23	Type II: 1 Type III: 1 (NP2=NP3) Type III: 1 (NP2≠NP3)	3/26	11.5%
		Type III: 1 (NP2≠NP3)		
3;5 (41 months)	11	Type II: 1	1/12	8.3%
3;6 (42 months)	8	Type II: 1	1/9	11.1%
3;7 (43 months)	41	Type II: 2	2/43	4.7%
		Type I: 1		
3;8 (44 months)	5	Type III: 1 (NP2≠NP3)	1/6	16.7%
3;9 (45 months)	8	Type II: 1	1/9	11.1%
		Type III: 1 (NP2≠NP3)		
3;10 (46 months)	7	Type II: 3	3/10	30%
		Type III: 2 (NP2≠NP3)		
3;11 (47 months)	20	Type I: 2 Type II: 3	5/25	20%
		Type III: 2		

Development of the Chinese BA construction

		(NP2≠NP3)		
4;0 (48 months)	8	Type II: 1	1/9	11.1%
4;1 (49 months)	16	Type II: 3	3/19	15.8%
4;2 (50 months)	27	Type II: 3	3/30	10%
		Type III: 1 (NP2≠NP3)		
4;3 (51 months)	7	Type I: 1 Type II: 3 Type III: 1	5/12	41.7%
		Type III: 1 (NP2≠NP3)		
4;4 (52 months)	20	Type I: 1 Type II: 6	7/27	25.9%
		Type III: 1 (NP2≠NP3)		
4;5 (53 months)	13	0	0/13	0
4;6 (54 months)	16	Type I: 1 Type II: 4 Type III: 1 (NP2≠NP3)	6/22	27.3%
4;7 (55 months)	12	Type II: 1 Type III: 1 (NP2≠NP3)	2/14	14.3%
		Type I: 1		
4;8 (56 months)	4	Type I: 1	1/5	20%
4;9 (57 months)	9	0	0/9	0
		Type III: 1 (NP2≠NP3)		
4;10 (58 months)	18	Type I: 1 Type II: 1	2/20	10%
4;11 (59 months)	6	Type I: 1	1/7	14.3%
5;0 (60 months)	9	Type II: 2 Type III: 1 (NP2≠NP3)	3/12	25%
5;1 (61 months)	43	Type II: 4 Type III: 1 (NP2=NP3) Type III: 5 (NP2≠NP3)	10/53	18.9%
		Type II: 1 Type III: 2 (NP2≠NP3)		
5;2 (62 months)				

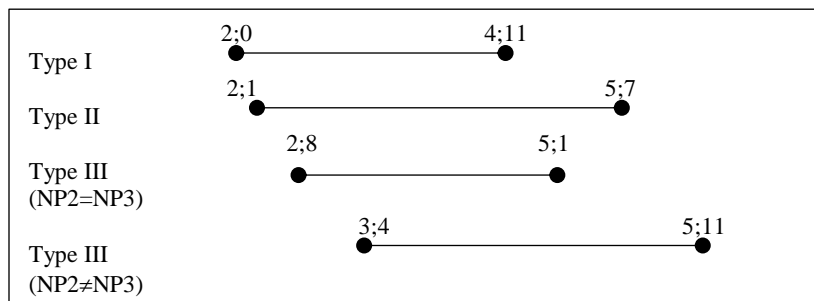
5;3 (63 months)				
5;4 (64 months)	3	0	0/3	0
5;5 (65 months)				
5;6 (66 months)	29	Type III: 1 (NP2≠NP3)	1/30	3.3%
5;7 (67 months)	40	Type II: 2 Type III: 1 (NP2≠NP3)	3/43	7%
		Type III: 1 (NP2≠NP3)		
5;8 (68 months)	17	0	0/17	0
5;9 (69 months)	4	0	0/4	0
		Type III: 1 (NP2≠NP3)		
5;10 (70 months)	10	Type III: 1 (NP2≠NP3)	1/11	9%
5;11 (71 months)	8	0	0/8	0
		Type III: 1 (NP2≠NP3)		
6;0 (72 months)	5	0	0/5	0
6;1 (73 months)	2	0	0/2	0
	586	106 (31)	106/692	15.3%

As shown in Table 1 above, the child either produced no BA sentences or only non-adult-like BA sentences from 1;9 to 2;4. Between 2;5 and 2;8, only 11 BA sentences (adult-like and non-adult-like) were found in the recorded data and seven of them were non-adult-like, with the error rate being 63.6% (7/11). More BA sentences (both adult-like and non-adult-like) were found after 2;9. The error rates from 2;9 to 3;9 remained low (23% at 3;2 being the highest). Some high error rates were found from 3;10 up: 30% (3;10), 41.7% (4;3), 25.9% (4;4) and 27.3% (4;6). The average error rate from 2;9 to 5;1 was 16.1% (89/553). From 5;6, the error rates started to drop below 10% and eventually no non-adult-like BA sentences were found after 6;0 (no error was found in the recorded data at 5;11, but one was found in the diary). In total, the child made 586 adult-like BA sentences and 106 non-adult-like BA sentences, with an additional 31 non-adult-like BA sentences collected from the author's diary. Without including the data from the diary, the average error

rate was 15.3% (106/692). Among the 586 adult-like BA sentences, the majority had a verb followed by an additional element marking a result.

In terms of error types, the child only made errors of Type I and Type II from 2;0 to 2;7, including the recorded data and data from the diary. This is significant because it means the child didn't relate the relation between NP2 and NP3 at this stage of development. The sign that shows that he started to entertain the relation between the two was when two Type III errors, which belong to the NP2=NP3 subtype, first appeared at 2;8. The other subtype of Type III errors, i.e., NP2≠NP3, did not appear until 3;4. After 3;4, all Type III errors belong to the second subtype only (with only one instance of NP2=NP3 found at 5;1). Type III errors could not be found after 5;11. The timeline for the three error types is given as follows.

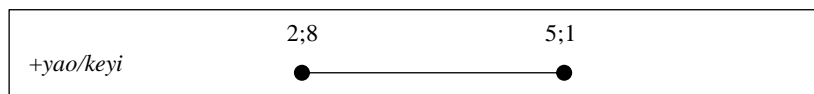
(44) Timeline for the three types of errors



From the above table, it seems that the child developed different types of errors in a certain order, with Type I first, followed by Type II, and then Type III.

Remarkably, the timeline of Type III errors overlapped with that of misplacing modals such as *yao* 'want/need' and *keyi* 'can' before the verb.

(45) Non-adult-like modals before the verb



More detailed discussions of the findings are given in Section 5 below.

5. DISCUSSION

In this section, the findings with respect to different aspects of a BA construction are discussed.

5.1 Omission of NP2

As found in Tse et al. (1991), Jepson (1989) and Cheung (1992), a post-BA NP was omitted in the data of this study:¹²

¹² There is a clear discrepancy between adult grammar and child grammar in such kinds of utterances. At a reviewer's suggestion that I compare the child's spontaneous speech with adults' spontaneous data, I checked the National Chengchi University Corpus of Spoken Taiwan Mandarin: <http://spokentaiwanmandarin.nccu.edu.tw/> and found 48 BA sentences. The data shows that while adult speakers may repeat BA, or pause after BA or after a post-BA NP, they always finish their utterance with a bounded predicate such as *jiang-wan* 'speak-finish' as in the following example taken from the corpus.

- (i) ...Ni jiu ba.. zai ba yong yixie hua zai ba
 2SG then BA again BA use some word again BA
 ta jiang-wan erqie you jiang Taiyu. (NCCU-TM005-CN-FFM)
 3SG speak-finish and actually speak Taiwanese
 'You finished it with some words eventually and actually spoke in Taiwanese.'

But it is quite possible that if a speaker does not have a chance to finish their sentence, BA or BA+NP2 can occur. Similarly, the same situation may happen with a child. So, if it is obvious that the child didn't finish his sentence due to some factors in the situation (e.g., someone

- (46) Ba zhu zhu, ... (2;0, V¹³)
BA cook cook
'Cook (this).'

I assume the VP is bounded in this example (cf. *qie qie* in (9)). A well-formed BA sentence occurred at 2;5:

- (47) Ba zhe-ge nian-zhu le...gankuai na-qilai. (2;5, D)
BA this-CL stick-fix ASP hurry take-up
'(It) stuck this. Hurry up in getting it up.'

Here are examples that involve a missing NP2 but a bounded VP.

- (48) Ba si-kai. (2;10, D)
BA tear-open
'Tear (it) apart.'
- (49) Jiejie ba liang-gan le. (3;7, D)
Sister BA expose-dry ASP
'Sister has dried (the blocks).'
- (50) Ba xin de yifu jian-xialai. Wo ba tu-shang
BA new DE clothes cut-down 1SG BA paint-on
yanse. (4;7, D)
color
'Cut off (the tag of) the new clothes. I (will) color (it).'

interrupted the child's utterance, or something suddenly caught the child's attention and prevented the child from finishing his sentence), an occurrence of BA or a sequence of BA+NP2 is treated as a non-adult-like BA sentence in this study.

¹³ 'V' stands for the utterances that were taken from the author's diary, while 'D' marks the utterances that came from the videotaping sessions.

The problem with a missing NP2 still persisted until the child was 4;11:

- (51) Ta duo-qilai ta ba bian yi-ge shitou ranhou
 3SG hide-up 3SG BA change one-CL rock then
 diren dou bu zhidao. (4;11, D)
 enemy all not know
 'He hid and changed into a rock. The enemy didn't know.'
 (cf...ba ziji bian-cheng yi-ge shitou)
 BA self change-become one-CL rock

In addition to a missing NP2, (51) is also non-adult-like because the VP is not bounded. In this case, the resultative complement *cheng* 'become' is needed. Finally, it should be pointed out that other than one BA sentence which does not have a clearly identifiable predicate, all other Type I errors found in this study contained an additional VP.

Two stages of development that allow the omission of NP2 can be characterized as involving a serial verb structure as follows: ('R' stands for an additional element marking boundedness.)

- (52) The child's grammar from 2;0~3;9 (BA as a verb)
 [_{VP} BA (NP2)][_{VP} V(+R) (NP3)] (allowing omission
 of NP2; allowing NP2 to co-refer with NP3; VP is not always
 bounded)
- (53) The child's grammar from 3;10~4;11 (BA as a semi-functional
 category)
 [_{VP} BA (NP2)][_{VP} V(+R) (NP3)] (allowing omission
 of NP2; allowing NP2 to co-refer with NP3; VP is not always
 bounded)

The two stages differ in the analysis of BA: as a verb or as a semi-functional category. I will show in Section 5.4 that the child's grammar allows NP2 to

co-refer with NP3 and provide evidence that BA behaves like a semi-functional category starting from 3;10.

5.2 Problems with the Verb Used

Just like being reported in the literature that children may be mistaken in the use of an intransitive verb as a transitive verb in a BA sentence, the child made the same kind of errors. I categorize this into a Type II error as they contain a NP2. For example,

- (54) Wo bu hui ba ta liu chuqu. (2;10, D)
 1SG not will BA 3SG flow out
 ‘I won’t make it (the water) flow out.’

- (55) Ba ta qi-bu-qilai. (3;3, D)
 BA 3SG up-not-up
 ‘(I) cannot lift it (the excavator).’

Given the fact that *liu* in (54) and *qi-bu-qilai* in (55) are not transitive verbs, the post-BA NP *ta* cannot be an inner object of the verb. Examples as such were considered to be non-adult-like.

This type of error could still be found when the child was 5;7:

- (56) Rang ta feichang xuyao ba ta diao-xialai. (5;7, D)
 let 3SG very need BA 3SG fall-down
 ‘Let it be necessary to make it fall down.’

- (57) Ta you ba ta suo-da yidian le. (5;7, D)
 3SG again BA 3SG shrink-large a.little SFP
 ‘He again shrank it.’
 (cf...*fang-da*...)
 enlarge

Suo-da in (57) is not acceptable in adult language. For the reason such kind of error is related to the verb of a BA construction, I still include them as non-adult BA sentences.

5.3 Coreference between NP2 and NP3

Similar to what was found in Erbaugh (1982) and Tse et. al (1991), the child was found to co-refer NP2 with NP3. The earliest examples were found when he was 2;8 and many more were found afterward.

- (58) Wo ba ta fang-diao zhe-ge dongxi qilai, wo
1SG BA 3SG release-away this-CL thing up 1SG
ba ta fang-diao. (2;8, D)
BA 3SG release-away
'I let go of it (this thing). I let it go.'
- (59) Wo ba ta tu wa-diao. Wo ba ta wa tu. (2;8, D)
1SG BA 3SG soil dig-away 1SG BA 3SG dig soil
'I dug the soil. I dug it (the soil).'
- (60) Wo keyi ba ta ca-diao zhe-ge ma? (2;10, D)
1SG may BA 3SG erase-away this-CL SFP
'Can I erase it (this)?'

- (61) Child: Na yu hao da, ba ta chong-zou
that rain very big BA 3SG flush-away
yu le. (2;11, D)
rain SFP
'It rained heavily. It flushed the rain away.'
Mother: Ba shenme chong-zou?
BA what flush-away
'(It) flushed what?'
Child: Ba yu chong-zou.
BA rain flush-away
'(It) flushed the rain.'
- (62) Wo ba ta diao-qi dongxi. (3;1, D)
1SG BA 3SG hang-up thing
'I hanged it (the thing) up.'
- (63) You xia yu, ba ta dai zhe-ge yusan qu,
have fall rain BA 3SG bring this-CL umbrella go
hao ma? (3;1, D)
good SFP
'It rained. Bring it (this umbrella), OK?'
- (64) Ta yao ba ta mai dongxi gei ta. (3;1, D)
3SG want BA 3SG buy thing give 3SG
'He wanted to buy them (things) for him.'
- (65) Wo ba ta chuan-qilai zhe-ge. (3;3, D)
1SG BA 3SG wear-up this-CL
'I wore this (the underwear).'

Remarkably, the pronoun may be immediately followed by another NP.

- (66) Wo ba ta zhe-ge wanju tui-guoqu. (3;1, D)
1SG BA 3SG this-CL toy push-over
'I pushed it (this toy) over.'

In adult grammar, the coreference between the pronoun NP2 and NP3 is not possible because it violates Binding Principle C (Reinhart 1976; Lasnik 1976, 1991; Chomsky 1981, among others). This is captured in the structure in (5), repeated here.

- (67) [_{baP} Subject [_{ba'} ba [_{vP} NP [_{v'} v [_{VP} V XP]]]]] (H&L&L 2009:182)

Su's experimental study (Su 2020) shows that children follow Binding Principle C in general. A way to reconcile the conflict in the findings, in my view, is to assume that a different BA structure is involved in this stage of development. I propose the following serial verb structure for this stage of development.

- (68) The child's grammar between 5;0-5;1 (BA as a semi-functional category) (with no omission of NP2)
[_{VP} BA NP2] [_{VP} V(+R) (NP3)] (no omission of NP2; NP2 may co-refer with NP3; VP is not always bounded)

In this structure, NP2 does not c-command NP3, so Binding Principle C is thus not violated.¹⁴ For the discussion of the analysis of BA as a semi-

¹⁴ Principle C says that a referential NP cannot be coreferential with a pronoun that c-commands it (Reinhart 1976; Lasnik 1976, 1991; Chomsky 1981, among others). The coreference between the pronoun and the referential NP in (ib), but not that in (ia), is ruled out by Principle C.

- (i) a. While he_i was dancing, the Ninja Turtle_i ate pizza.
 b. *He_i ate the hamburger when the Smurf_i was inside the fence.

Using the truth-value judgment task, Crain & McKee (1986) found that English-speaking three- and four-year-olds accepted the coreferential reading of (ia) 73 percent of the time and rejected

functional category, see the discussion of the relation between NP2 and NP3 in Section 5.4 below.

An important piece of evidence supporting the serial verb structure in (52), (53) and (68) comes from the non-adult use of a modal such as *yao* ‘want/need’ or *keyi* ‘can’ in a position sandwiched between NP2 and the verb.

- (69) Wo ba ta yao he-guangguang le. (2;8, D)
 1SG BA 3SG want drink-gone ASP
 ‘I want to drink it up.’
 (cf. ...yao ba ta...)
 want BA 3SG

- (70) Ba ta limian yao xi-ganjing. (2;9, D)
 BA 3SG inside need wash-clean
 ‘(You) have to clean the inside.’
 (cf. ...yao ba ta limian...)
 need BA 3SG inside

- (71) Ba zhe yao zenme wan? (3;11, V)
 BA this need how play
 ‘How do I play with this?’
 (cf ...yao ba zhe zenme wan?)
 need BA this how play

- (72) Ta keyi ba ta ta keyi jiang. (4;6, V)
 3SG can BA 3SG 3SG can this.way
 ‘You can play with it this way.’
 (cf ...keyi ba ta jiang.)
 can BA 3SG this.way

it in (ib) 84 percent of the time. These findings suggest that Principle C is operative in children’s grammar before the age of three years.

This type of error could also be found when the child reached 5;1.

- (73) Ba zhe-ge yao na-qilai ma? (5;1, V)
 BA this-CL need take-up PRT
 ‘Do I need to take up this?’
 (cf...yao ba zhe-ge...)
 need BA this-CL

From 5;2 on, the child was not found to co-refer NP2 with NP3 and no more misplacement of modals are found. This is taken to be evidence that the child has entered a new stage in which NP2 c-commands NP3.

5.4 Relating NP2 and NP3

The earliest example that may be qualified to show that NP2 and NP3 do not co-refer was produced when the child was 2;9.

- (74) Ba ta yong-qilai yi-ge le. (2;9, D)
 BA 3SG make-up one-CL SFP
 ‘(I) Made one building block go up from it (the toy).’

The pronoun *ta* here may refer to the toy as a whole. It is an inner object of the verb and is an affectee. *Yi-ge* ‘one-CL’ can be considered to be an NP3. The two maintain a whole-part relation, which may seem to be acceptable, although (74) is somewhat non-adult-like. This might have something to do with the combination of the three-syllable verb complex *yong-qilai* with an object is cumbersome.

The following is an adult-like BA sentence in which NP2 is an inner object of the verb, and NP2 and NP3 also exhibit a whole-part relation.

- (75) Ba ta qie yi ban. (3;3, D)
 BA 3SG cut one half
 ‘Cut it into half.’

The following example found to appear one month later further shows the child started to develop another new relation between NP2 and NP3, the latter referring to the result of the former, despite the fact that (76) is non-adult-like due to the lack of an additional element marking such as *cheng* ‘become’.

- (76) Wo fang yu limian, wo ba zhe-ge zuo
 1SG put fish inside 1SG BA this-CL do
mianbao. (3;4, D)
 bread
 ‘I put the fish cookie inside. I used it to make bread.’
 (cf. ...*zuo-cheng* mianbao)
 do-become bread

Two more adult-like examples found to appear afterward are given as follows:

- (77) Mother: Youxie ren chi shayu.
 some person eat shark
 ‘Some people eat shark.’
 Child: Ba shayu sha-diao tou. (3;10, D)
 BA shark kill-away head
 ‘Kill the head of a shark.’
- (78) Wo xiang ba ta ji shui chulai. (3;11, D)
 1SG think BA 3SG squeeze water out
 ‘I want to squeeze water out of it.’

Nevertheless, there were many more non-adult-like examples which do not relate NP2 and NP3 in a way that NP2 is considered to be affected. For example, all of the three examples below involve a benefactive NP2, which can be marked by KA in Taiwanese, but not BA in Mandarin:

- (79) Ba wo gai beizi. (3;10, D)
 BA 1SG cover comforter
 'Cover a comforter for me.'
 (cf. Bang wo gai beizi.)
 for 1SG cover comforter
- (80) Wo ba ta huan tu. (4;3, D)
 1SG BA 3SG change soil
 'I changed the soil for it (the beetle).'
 (cf. ...bang ta huan tu)
 for 3SG change soil
- (81) Wo gangcai dabian, wo ba ziji ca pigu. (5;1, D)
 1SG just.now poo 1SG BA self wipe bottom
 'I just had done a poo. I cleaned my own bottom.'
 (cf. ...wo bang ziji ca pigu)
 I for self wipe bottom

The three examples show that the child treated BA more like KA, which can assign a theta-role to the following NP if the NP is present. I thus take the second stage to begin at this age as stated in (53), repeated here.

- (82) The child's grammar from 3;10~4;11 (BA as a semi-functional category)
 [_{VP} BA (NP2)][_{VP} V(+R) (NP3)] (allowing omission of NP2; allowing NP2 to co-refer with NP3; VP is not always bounded)

Still, there are non-adult utterances in which NP2 and NP3 cannot be related by BA in adult grammar:

- (83) Xia yu ta hui yue lai yue zhangda, ba ta
 fall rain 3SG will more come more grow BA 3SG
 fang yidian shui. (3;10, D)
 put a.little water
 ‘With the rain, it will grow bigger. Put some water on it.’
 (cf. ...fang/jia yidian shui zai ta shangmian)
 put/add a.little water in 3SG top
- (84) Ni yao ba zhe-ge jingyu huan shu le. (3;11, D)
 2SG need BA this-CL whale return book SFP
 ‘You want to return this book of whales.’
 (cf. ...ba zhe-ge jinyu de shu huan le)
 BA this-CL whale DE book return ASP
- (85) Wo ba ta hua-chulai yanjing. (4;2, D)
 1SG BA 3SG paint-out eye
 ‘I drew eyes on it (the hood of the jacket).’
 (cf. ...hua ta de yanjing)
 paint 3SG DE eye
- (86) Ni yao ba ta kan yuanlai de yangzi,
 2SG want BA 3SG see originalDE way
 ni yao kan yuanlai de yangzi ma? (4;9, D)
 2SG want see original DE way SFP
 ‘Do you want to see its original appearance? Do you want to
 see its original appearance?’ (*Ta* ‘it’ here refers to the box
 being discussed.)
 (cf. ...kan ta yuanlai de yangzi ma?)
 see 3SG original DE way SFP

- (87) Na-ge dabian tu, ni *ba* ta zhong *hua*,
 that-CL poo soil 2SG BA 3SG grow flower
hua jiu hui zhang. (4;4, D)
 flower then will grow
 ‘That soil of poo, you can grow flowers in it. The flowers
 will grow.’
 (cf. ...yong ta zhong *hua*...)
 use 3SG grow flower
- (88) Ba *ta* tu *koushui* zai limian qu. (5;1, D)
 BA 3SG spit saliva in inside go
 ‘Spit the saliva inside the bottle.’
 (*Ta* ‘it’ here refers to the bottle being discussed.)
 (cf. ...tu ta *koushui*)
 spit 3SG saliva

Both (83) and (87) involve a locative NP2, but in order for it to be used in a BA construction, total affectedness has to be expressed or BA is infelicitous (see the discussion in Section 2).

There are other cases in which an additional resultative complement is missing for marking total affectedness:

- (89) Wo ba *nimen* chi *yi-ge* *dong*. (3;9, D)
 1SG BA 2PL eat one-CL hole
 ‘I ate some of your popcorn about the size of a hole.’
 (cf. ...ba *nimen* de baomihua chi-*chu* *yi-ge* *dong*)
 BA 2PL DE popcorn eat-out one-CL hole
- (90) Wo ba *ta* jian *yi-ge* *da* *dong*. (3;11, D)
 1SG BA 3SG cut one-CL big hole
 ‘I cut a hole out of it.’
 (cf. ...jian-*chu* *yi-ge* *da* *dong*)
 cut-out one-CL big hole

- (91) Mother: Na zenmeyang ba shui nong de hen chou?
 then how BA water do DE very stinky
 'Then how can you make the water stinky?'
 Child: Ba ta quanbu diu lese a! (4;6, V)
 BA 3SG all throw garbage SFP
 'Cover it all with garbage.'
 (cf. Ba ta diu-man lese...)
 BA 3SG throw-full garbage

The BA sentence in (91) is interesting because instead of *man* 'full' for total affectedness, the child used *quanbu* 'all', which seems to quantify over its preceding NP.

This type of error could still be found when the child was 5;7:

- (92) Ba ta quanbu zha-sui guan jiu
 BA 3SG all blow-broken barrier.gate then
 keyi la... zha-sui jiu keyi guoqu la. (5;7, V)
 may SFP blow-broken then may pass SFP
 'It will be fine if all the barrier gates are smashed into pieces...(I
 can) go through if I blow it into pieces.'

It is evident that establishing the relation between NP2 and NP3 was challenging as the child may still produce a non-adult BA sentence at 5;11.

- (93) Wo ba ta gei si-po zhongjian. (5;11, D)
 1SG BA 3SG give tear-broken middle
 'I broke it and as a result it has a hole in the middle.' (*Ta* 'it'
 refers to a flyer.)

But given the fact that no errors were found after the child reached 6;0, I conclude that the fourth stage of the development before the grammar is complete:

- (94) The child's grammar from 5;2 to 5;11 (BA as a Case assigner)
baP BA [_{VP} [NP2 [_{VP} V(+R) (NP3)]]] (no omission of NP2; NP2 may not co-refer with NP3; VP is not always bounded)

5.5 Utterances with *Gei*

The child was caught using two causative BA sentences with *gei* 'give' when he was 4;2. These two are the only two causative BA sentences found in all the data.

- (95) Ba zhexie dou shou-wan ba wo *gei* lei-si le...
 BA these all put.away-finish BA 1SG give tired-die ASP
 hui ba wo *gei* lei-si. (4;2, V)
 will BA 1SG give tired-die
 'Finishing putting away all these will tire me to death...will tire me to death.'

This may seem to indicate that the child has started to enter the stage in which BA is a Case assigner. But two months later, he produced a non-adult-like BA sentence with *gei*:

- (96) ...yinwei wo yao ba *gei* jiao-chulai. (4;4, V)
 because 1SG want BA give stir-out
 '...because I wanted to stir it and make it come out.'

The problem with this BA sentence was the omission of NP2. In view of this, BA cannot be a Case assigner yet. I will thus take the two examples as involving a frozen form that was acquired by the child without analyzing its structure. This analysis is supported by the fact that after that, the child was not found to utter a BA sentence with *gei* until as late as when he was 5;8:

- (97) Ni ba ta gei yi-kai le o?! (5;8, D)
2SG BA 3SG give move-away ASP SFP
'You moved it away?!'

Many examples with *gei* appeared at 5;10. Four out of the eight adult-like BA sentences contained *gei*. More surprisingly, all of the eight adult-like BA sentences found at 5;11 all contained *gei* (There was one non-adult-like BA sentence from the diary that contained *gei*. See (93) above.)

Remarkably, it was around the same time that a passive sentence occurred with a preverbal *gei* in the child's data:

- (98) Bei ta gei na-zou le. (5;11, D)
BEI 3SG give take-away ASP
'It was taken away.'

This marker, according to Tang (2002:335), is one for affectedness. *Gei* plays a similar function in a *bei* sentence as it does in a BA sentence, i.e., the marking of affectedness. The use of *gei* indicates that the affectedness was well developed when the child reached 5;11.

5.6 Boundedness

As mentioned in Section 5.1, the child produced adult-like bounded BA sentences as early as 2;5. Among the adult-like BA sentences, the majority of them consisted of a verb and an additional resultative or directional complement. An example like (99) may show that in an utterance, boundedness was eventually expressed, but in view of the use of the first verb *nong* 'do', the VP is not bounded:

- (99) Wo ba ta nong, yizhi cuo, yizhi cuo,
 1SG BA 3SG do continuously rub continuously rub
 ranhou *bian-cheng zhe-jian wazi*. (5;1, D)
 then change-become this-CL sock
 ‘I was trying to rub it and rub it and it changed into this sock.’
 (cf. Wo ba ta nong-hao...)
 1SG BA 3SG do-done)

Evidence shows that boundedness was not completely mastered until the child was 5;10.

- (100) Wo yao ba ta zuo *biede dongxi*. (5;9, D)
 1SG want BA 3SG do other thing
 ‘I want to make it into something else.’
 (cf. ...zuo-cheng *biede dongxi*)
 do-become other thing
- (101) Child: Mama zhe-ge ni xu-bu-xuyao?
 Mother this-CL2SG need-not-need
 ‘Mother, do you need this?’ (‘This’ refers to a cardboard.)
 Mother: Bu xuyao. Ni yao zuo shenme?
 not need 2SG want do what
 ‘I don’t need it. What do you want to do with it?’
 Child: Wo yao ba ta *jian dongxi*. (5;10, D)
 1SG want BA 3SG cut thing
 ‘I want to cut it and make it into something.’
 (cf. ...ba ta *jian-cheng dongxi*)
 BA 3SG cut-become thing
 Mother: Shenme?
 what
 ‘What?’
 Child: Wo yao ba ta *gei jian dongxi*. (5;10, D)
 1SG want BA 3SG give cut thing

‘I want to cut it and make it into something.’
 (cf. ...ba ta gei jian-cheng dongxi)
 BA 3SG give cut-become thing

Considering the development of the fourth stage discussed in the previous section and what we have in this section, we then reach the conclusion that it was only from 6;0 that the child reached the adult grammar of BA:

- (102) The child’s grammar after 6:0 (BA as a Case assigner) (with a bounded VP)
 [_{baP} BA [_{vp} [NP2 [_{vp} V+R (NP3)]]] (no omission of NP2; NP2 may not co-refer with NP3; VP is bounded)

5.7 Definiteness and Others

The earliest example in which BA occurs with an indefinite NP2 appeared when the child was 3;7:

- (103) Wo ba yi-ge chang-chang-de dongxi gua zai
 1SG BA one-CL long-long-DE thing hang in
 zheli. (3;7, V)
 here
 ‘I hanged a very long thing in here.’

The two examples below show that the child did use BA for an indefinite NP that occurs preverbally:

- (104) Child: Changjinglu...yi-ge ren cai-bian le. (4;5, D)
 giraffe one-CL person tread-flat ASP
 (cf. ...ba yi-ge ren cai-bian le)
 BA one-CL person tread-flat ASP
 Mother: Changjinglu...yi-ge ren cai-bian le
 giraffe one-CL person tread-flat ASP

shi shenme yisi?
 be what meaning
 ‘What do you mean by ‘Giraffe...a person tread flat?’’
 Child: Changjinglu ba yi-ge ren cai-bian le. (4;5, D)
 giraffe BA one-CL person tread-flat ASP
 ‘The giraffe trod on a person and made him flat.’

- (105) Jian yi-ge yuanxing xialai, ba yi-ge yuanxing
 cut one-CL circle down BA one-CL circle
 ba ta tu lüse. (5;7, D)
 BA 3SG color green
 ‘Cut a circle down and color it green.’
 (cf. ...ba ta tu-shang lüse)
 BA 3SG color-up green

Finally, it should be pointed out that even up to 5;10, the child still produced a non-adult-like BA sentence as follows:

- (106) Ba ta dakai luosiqizi. Nabian zhuan
 BA 3SG open screw.driver which.way turn
 wo jiu bu hui le. (5;10, V)
 1SG then not know SFP
 ‘Open it with a screwdriver. I don’t know which way to turn it though.’

From the context, it may seem what the child wanted to express was ‘to use a screwdriver to open it (the toy car)’. This was the only single example that involves an instrument in the object position. For this reason, it was taken to be a performance error.

5.8 Development of BA and Theoretical Implications

The five stages of development are summarized in the following table below:

(107) Table 2. The Development of BA

I (2;0~3;9): BA as a verb [_{VP} BA (NP2)] [_{VP} V(+R) (NP3)]	1. Omission of NP2 2. NP2 and NP3 may co-refer 3. VP is not always bounded
II (3;10~4;11): BA as a semi-functional category [_{VP} BA (NP2)] [_{VP} V(+R) (NP3)]	1. NP2 may be omitted 2. NP2 and NP3 may co-refer 3. VP is not always bounded
III (5;0~5;11): BA as a semi-functional category (with no omission of NP2) [_{VP} BA NP2] [_{VP} V(+R) (NP3)]	1. No omission of NP2 2. NP2 and NP3 may co-refer 3. VP is not always bounded
IV (5;2~5;11): BA as a Case assigner [_{baP} BA [_{VP} [NP2 [_{VP} V(+R) (NP3)]]]	1. No omission of NP2 2. NP2 and NP3 may not co-refer 3. VP is not always bounded
V (6;0~): BA as a Case assigner (with a bounded VP) [_{baP} BA [_{VP} [NP2 [_{VP} V+R (NP3)]]]	1. No omission of NP2 2. NP2 and NP3 may not co-refer 3. VP is bounded

The findings that the development of the child's BA proceeds in stages and is not complete until after 6;0 do not seem to be compatible with the maturational hypothesis unless we can identify what principles mature and make a BA construction possible. Moreover, if a grammar matures, it is on a biological schedule and cannot really differ from language to language. The fact that BA is not mastered until six is quite unexpected as it is different from the acquisition of other functional projections.

In contrast, the development of BA may be argued to be consistent with the continuity hypothesis. Recall that it was mentioned in Section 3.2 that Crain's studies support the continuity hypothesis (Crain 1991; Crain and Pietroski 2002; Crain, Goro and Thornton 2006). He maintains that child language can differ from the language spoken by adults only in ways that adult

languages can differ from each other. The fact that the child in the present study may use BA like KA supports this. Given the fact that the child did not speak Taiwanese, it is unlikely that his speech was affected by Taiwanese. As for the structure of the first stage, it is a structure available for a canonical BA in some cases in adult speech. How the child's grammar differs from adults' grammar at this stage is that it is the only possible analysis for the child. This grammar can be considered to fall into a possible grammar for the child as is predicted by the continuity hypothesis. Moreover, note that such a structure is also needed for the explanation of coreference in some dialects. According to H&L&L (2009:163), in dialects such as Modern Shanghai and Wuhan, the post-verbal NP can be a pronoun coreferential with the post-BA NP in a BA sentence. While the coreference is between a post-BA NP and a post-verbal pronoun (as opposed to the coreference between a post-BA pronoun and a post-verbal NP in the child's speech), what matters is that structurally the two NPs cannot c-command each other. In these dialects, if the post-BA NP c-commands the post-verbal pronoun, Binding Principle B will be violated (Chomsky 1981). In other words, a structure that will prevent the post-BA NP to c-command the post-verbal pronoun such as [_{VP} BA (NP2)] [_{VP} V(+R) (NP3)] is needed. Finally, BA was used as a verb in older Chinese. It is later reanalyzed as a Case assigner. Feng (2001) argues that this reanalysis may be due to the transfer of stress from the post-BA NP to the verb in a purpose clause, a type of serial verb construction. The child's BA development thus patterns like the historical BA development.

Overall, we can maintain the continuity hypothesis in the sense that the child's development patterns like what is found in language change or in another dialect. Recall that Yang and Xiao's child produced one instance that contained a retained object at the age of 2;3 (i.e., (40)). While it may be true that children can produce such sentences at a young age, it will take a long time for a child to correctly relate NP2 and NP3, judging from the child's data in this case study.

6. CONCLUDING REMARKS

The development of BA may proceed as follows.

- (108) BA as a verb > BA as a semi-functional category > BA as
a semi-functional category (with no omission of NP2) > BA as a
Case assigner > BA as a Case assigner (with a bounded VP)

If my analysis is on the right track, the findings in this study are significant in two aspects. First, the findings may explain why BA occurs at an early stage, but takes a long time for a child to master it as suggested in Fahn (1993), longer than typical functional categories such as aspect (cf. Liu 2009; Chang 2013; Yang, Shi and Xu 2018). Fundamentally, this may have something to do with the fact that in adult grammar, BA can still be more lexical in some cases (H&L&L 2009). Also, the notion of affectedness is hard to pin down (H&L&L 2009).

The second implication of this study is that the different stages that BA undergoes show that non-adult-like output can only be potential structures in the language or in another language. They are thus most consistent with the continuity hypothesis, which posits that child language is only different from the adult language in a way that a language differs from another (Pinker 1984; Crain 1991; Crain and Pietroski 2002; Crain, Goro and Thornton 2006). This longitudinal study, however, faces the challenge that is inherent in a longitudinal study as discussed in Stromswold (1998), especially when only one child was observed. It is also not surprising that some children may have fully acquired a BA construction at an earlier age (cf. Huang 2011), but it is hoped that the slower process of development that was pieced up as exhibited in the child's data sheds light on our understanding of the acquisition of a semi-functional category.

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漢語把字句的發展：一個個案的縱向研究

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本文研究一位說漢語兒童從一歲九個月到六歲一個月期間把字句的發展，其發展顯示「把」從一個動詞，發展到一個類似半功能詞類，到六歲才真正發展成一個負責指派受格給「把」之後名詞詞組的功能詞類。本研究之發現得以解釋為何「把」的習得甚晚，與其他功能詞類的早期習得明顯不同(如：屬於功能詞類時貌的習得 Yang, Shi and Xu 2018)，此外，也符合連續假說，也就是孩童的語言輸出與成人的不同呈現不同語言之間的差異 (Crain 1991, Crain and Peitroski 2002, Crain, Goro and Thornton 2006 等)。

關鍵字：把字句、一語習得、連動結構、半功能範疇、連續假說、漢語