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A Study on the Acquisition of Possession Constructions in Chinese Preschool Children's Natural Utterances

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Abstract

Based on the natural utterances of six Chinese-speaking preschool children, this paper examines the syntactic and semantic features of possession constructions. First of all, in terms of the syntax, there are three main types of possession constructions, including adnominal, predicative, and external possessions, as well as eight variations. Meanwhile, the older the children are, the more syntactic variations and frequencies they produce, and the more complex their syntactic structures become, following a developmental pattern from simple to complex. Secondly, in terms of semantics, the children express four main types of semantics: interpersonal, whole-part, ownership and spatiotemporal relationships, involving nine subtypes, such as social relationships, kinship and so on. The longitudinal features of the semantics have a developmental path from familiar to unfamiliar, concrete to abstract, and single to diverse. Finally, Studies have shown that children actively and gradually construct language in their interactions with adults, in a certain degree, which means that the driving force for children's syntactic acquisition and development comes from language use.

Keywords: Possession constructions, Syntactic acquisition, Usage-based language acquisition

1. Introduction

"Possession" is a fundamental cognitive concept in human life. In the objective world, the possession relationships between people, things, people and things are recognized by people

to be mapped into language through certain components and structures. In this way, possession constructions come into being, which covers various relationships, such as social relationships, ownership relationships, and whole-part relationships (Zhou, 2004). And Possession is one of the earliest concepts expressed by children in different forms (Marinis, 2016). That's to say, when children point to an object and say the name of its owner, it shows that children can understand the relationship between objects and owners, indicating that they have developed a preliminary awareness of possession relationships (Greenfield & Smith, 1976; Rodgon & Rashman, 1976).

As a grammatical category, Possession is expressed differently in different languages while as a semantic concept, Possession has universality across languages. Because of the different characteristics in different languages, the Possession constructions have been a concern of linguists at home and abroad. Foreign scholars mainly focus on the alienability, the grammaticalization and the complexity of possession semantics (Ge, 2018). Domestic scholars have studied Possession constructions from the perspectives of generative grammar, cognitive linguistics (Lei & Guo, 2015), language typology (Du, 2016; Cong, 2021), and distributed morphology (Nuo & Li, 2019).

The researches on possession constructions ontology have yielded fruitful results and in children language, the researches focus on the synchronic features. However, there is still much room for investigation in diachronic research for preschool children's possession constructions. Based on one year of natural utterance, this paper aims to conduct a multidimensional study of the syntactic and semantic features of possession constructions in Chinese children's spontaneous speech and provides empirical data for the debate between language nativism and usage-based acquisition theory.

2. Literature Review

Possession is a cognitive concept that describes the relationship of ownership and subordination between objects (Aikhenvald, 2013). This relationship between objects can be perceived by people and reflected in language, forming grammatical structures, known as possession constructions (Zhou, 2007). In possession constructions, the possessor and the possessed are key components, and possession constructions can be divided into three main types (McGregor, 2009): adnominal possession, predicative possession, and external possession. And the research of possession constructions mainly focuses on the ontological research and acquisition research, but there is still room for further research about the acquisition of possession constructions.

2.1 Research on the Ontology of Possession Constructions

Researches on the ontology of possession constructions mainly involves three aspects: syntactic features, semantic features and pragmatic features.

The syntactic features of possession constructions mainly focus on syntactic types and grammaticalization. Firstly, Chinese possession constructions generally include three components: N1 (the possessor), N2 (the possessed) and R (the possessive marker), and its typical syntactic representation is "N1+R+N2" (Chappell, 1966; Zhou, 2007). And there are

four types of possession constructions in English and other languages: (1) N1's N2; (2) N1+of+ N2; (3) personal pronoun + N2; (4) possessive pronoun (Brown, 1973; Kliffer, 1996; Marinis, 2016). Secondly, in the grammaticalization of possession constructions, Bendix (1966) and Heine (1997) are the pioneers, and have conducted researches from two perspectives: attributive possession and predicative possession. Regarding the grammaticalization of predicative possession, scholars have proposed eight event schemas and explained various grammaticalization processes from the perspectives of metaphor, decategorization, nominalization, and noun modification. As for the grammaticalization of attributive possession, the focus is on the grammaticalization process of the English possessive marker "s" (Janda, 1980; Allen, 1964) and the Chinese possessive marker "de" (Jiang, 1999; Shi, 2004).

The semantics of possession constructions reflect a dependency relationship between the possessor and the possessed, such as kinship, social relationship, whole-part relationship, ownership relationship, etc. (Heine, 1997; Dixon, 2010; Aikhenvald, 2013). Semantically, possession relationships can be classified into alienable and inalienable (Nichols, 2010; Chappell & McGregor, 2011; Shi & Zhou, 2018), where the former refers to possessors and possessed that can be separated while the latter refers to those that are inseparable. At the same time, the semantics of possession constructions are deeply influenced by animacy, and it has been found that the higher the animacy of the possessor, the more diverse and richer the expression of meaning (Liu, Ren & Zhong, 2018).

The pragmatic features of possession constructions mainly involve discourse context (Zhang, 1994) and the "economy principle" of language communication (Martinet, 1963). Zhang (1994) believes that the special possessive meanings in sentences like "His baseball is played well" are caused by discourse context, and such ambiguous structures need to be identified relying on discourse context. The economy principle was originally proposed by Martinet (1963) to explain the reasons for phonetic changes. The "de" marker and personal pronouns used as attributive modifiers in possession constructions reflect the "economy principle" of language communication (Zhuang, 2014).

All in all, the ontological research on possession constructions has made great achievements in syntax, semantics and pragmatics, which laid a firm foundation for subsequent ontological research and acquisition research.

2.2 Research on the Acquisition of Possession Constructions

As mentioned above, children have developed a preliminary awareness of possession relationships when they point to an object and say the name of its owner (Greenfield & Smith, 1976; Rodgon & Rashman, 1976). And in the field of children's language acquisition, the research about possession constructions has yielded sosme achievements, mainly concerning syntactic and semantic features.

2.2.1 Syntactic Features in Children's Possession Constructions

The research on the syntactic acquisition of possession constructions in children's language have mainly focused on developmental patterns and error features.

In terms of the developmental patterns, scholars have studied the possession constructions in children's speech of Chinese, English, French, German, Greek, Hebrew, and other languages through experimental tests, natural corpus analysis, and induced production tasks. They found that children express possession using similar syntactic patterns, such as "X + Y", "X's Y", "X has a Y" (Braine, 1976). Moreover, children go through a similar developmental pattern in possession constructions: initially, they express possession in the form of a possessor, and later, a combination of possessor and possessed will gradually appear, followed by the acquisition of grammatical markers such as case inflection and prepositions, and eventually complete possession syntactic constructions (Brown, 1973; Golinkoff & Markessini, 1980; Stephany, 1995; Tomassello, 1998; Armon-Lotem & Crain, 1998; Eisenbeiss, 2014; Dabrowska, 2001; Marinis, 2003; Marinis, 2016). Although children go through a similar developmental pattern, scholars hold different views due to various factors, such as the acquisition of the possessive marker "s" in English children. Tomasello (1998) believes that the possessive marker "s" appears before children use possessive pronouns to express possession, while Radford & Galasso (1998) found that there is no sequence between the possessive marker "s" and possessive pronouns.

In terms of error features, through natural corpus analysis and experimental tests, researchers have found that children have made syntactic errors in possession constructions (Radford & Galasso, 1998; Tomasello, 1998; Marinis, 2016), such as omitting grammatical markers "s" or "of", replacing possessive pronouns with nominative or accusative pronouns, and mixing possessive pronouns with objective pronouns. Scholars believe that the errors are related to the speaker's gender, language origin, social culture, the animacy of the possessor or possessed (Wolford, 2006).

In a word, previous research has primarily focused on English or other Indo-European languages, with less attention given to Chinese-speaking children. Thus, there is a need for further acquisition investigation into the specific features of possessive syntactic structure in Chinese-speaking children, enriching the research of children's language

2.2.2 Semantic Features in Children's Possession Constructions

The semantic feature of possession constructions in children language focuses on children's understanding of the semantic relationship of possession constructions. There are two different views in academia: 1) some scholars believe that children in the early stages of language development cannot clearly distinguish the semantic relationship of possession constructions (Braine, 1976); 2) others believe that young children have already mastered the semantic relationship of possession constructions (Golinkoff & Markessini, 1980; Shi & Zhou, 2017). Moreover, children use different possession constructions to express different semantic relationships. For example, English children tend to use the "s" construction when the possessor is animate, and the "of" construction when the possessor is inanimate (Skarabela & Serratrice, 2009).

This paper aims to provide a specific analysis of the possessive semantic features in Chinese-speaking children's language, and to demonstrate whether pre-school children can clearly understand possessive semantics, thus providing more empirical data for existing

debates.

2.3 Comments of Possession Constructions Research

The ontological research on possession constructions has yielded rich achievements, involving syntactic features, semantic features, and pragmatic functions, which laid a theoretical and methodological foundation for subsequent researches. However, further explorations are needed in the area of possession construction acquisition. First of all, regarding syntactic features, current research has primarily focused on nominal possession in child language, while, predicative possession and external possession require further investigation. Secondly, With respect to semantic features, there is still room for exploring whether children can comprehend possessive meanings clearly and the distribution of possessive semantics. In addition, regarding research perspectives, current research has mainly focused on the synchronic features of possession constructions in children' language, so there is still room for diachronic research.

Therefore, based on a natural corpus of 230,000 Chinese words produced by six children over a period of one year, this study aims to address gaps in current research by analyzing predicative possession and external possession besides nominal possession in children's language. Moreover, the study seeks to provide a detailed examination of possessive semantics in children's language and offer empirical evidence to support existing debates that children whether clearly understand the meaning of possession. Finally, this study will analyze possession constructions in children's language from both synchronic and diachronic perspectives, deepening our understanding of children's syntactic acquisition and development. The results of this study will contribute additional empirical data to the ongoing debate between nativism and usage-based theory in the field of language acquisition.

3. Research Design

3.1 Research Questions

This study aims to investigate the syntactic and semantic features in synchronic and diachronic changes of Chinese children's possession constructions. Specifically, three questions will be addressed:

1) What are the syntactic features of possession constructions in Chinese preschool children's oral language?

2) What are the semantic features of possession constructions in Chinese preschool children's oral language?

3) What are the diachronic features of possession constructions in Chinese preschool children's oral language? and what language acquisition rules do they reflect?

3.2 Corpus Collection and Organization

The data mainly comes from a longitudinal observation of six Chinese-speaking children through recording, including both indoor and outdoor settings. And data collection was

carried out once or twice a month for each child, with a total recording time of about 30 minutes. After the audio collection from the children was completed, a transcription scheme for Chinese children's oral language was developed based on relevant transcription standards (Fang, 2018; Tao, 2004). In this way, the speech data were then transcribed, resulting in a corpus of 71 observations (one 2-year-old child was unable to record audio for one month due to illness).

3.3 Corpus Analysis

Firstly, the study employed NVIVO software to identify syntactic types, frequency, and examples of possession constructions. In terms of the limited expressive ability of children, the author primarily judged the syntactic types according to the meaning. For example, single Ns like "ear", "my" or structures like "my father" expressing a possessive meaning were all considered as possession constructions.

Secondly, based on the identified possession constructions' syntactic types and frequency, the author observed the syntactic and semantic features of possession constructions in children's language.

Finally, the author conducted a longitudinal (diachronic) analysis of possession constructions' syntactic and semantic, exploring the characteristics and regularities of children's early language acquisition.

4. Findings and Discussion

4.1 Syntactic Features of Possession Constructions Produced by Children

4.1.1 Syntactic Types

There are three main types of possession constructions: attributive possession, predicative possession and external possession. Attributive possession (also known as nominal possession) refers to constructions that contain both a possessor and a possessed, such as "my mom" and "mom's baby" (McGregor, 2009); Predicative possession uses verbs such as "have", "belong" and copular verbs like "be" to express possession (McGregor, 2009; Marinis, 2016). External possession involves a construction where the possessor-predicate relationship is encoded by a verb that is independent of the constituent containing the possessed entity, such as "I brought a book" (Doris & Barshi, 1999; Ge, 2016).

In Chinese, possession constructions typically consist of three components: N1, N2 and R. Therefore, the syntactic structure of possession constructions in Chinese is represented as N1+R+N2. In the natural corpus of six children aged 1-4 years old, possession constructions are used 706 times in total shown in Table 1.

Table 1. Syntactic types of possession constructions produced by children

Syntactic types	Syntactic variations	First appearance	Times	Account(%)	Examples
Attributive possession	N\P	01;11	56	7.93%	ear; I
	N1\P+de	02;02	42	5.95%	grandmother's; his
	N1\P+N2	01;10	191	27.06%	Xiaoai che; wo mama
	N1\P+de+N2	02;00	246	34.84%	captain Bao's car; his father
	P+(de)+ demonstrative pronoun\quantity phrase+ (quantity phrase\N)	03;06	24	3.40%	he this; your two; He's the one
Predicative possession	N1\P+have+N2	01;10	124	17.56%	I have so many rings
	N1\P1+is +N2\P2 de	03;09	10	1.42%	You're my little darling
External possession		04;01	13	1.84%	He's got a beard
Total			706	100%	

As shown in Table 1, children's output of possession constructions involves three syntaxes: attributive possession, predicative possession and external possession, of which attributive possession have five variations and predicative possession have two variations.

In terms of frequency, attributive possession is the most frequent, appearing 559 times, accounting for 79.18%; followed by predicative possession, which appears 134 times, accounting for 18.98%; external possession only appears 13 times, accounting for 1.84%. In attributive possession, the two variations of "N1\P+de+N2" and "N1\P+N2" are more frequent, accounting for 34.84% and 27.06% respectively; in predicative possession, "N1\P+have+N2" is more frequent, accounting for 17.56%.

In terms of first appearance, the "N1\P+N2" variation in attributive possession and the "N1\P+have+N2" variation in predicative possession appears earliest (01;10). However, at that time, attributive possession lacks the possessive maker "de" and complete predicative possession "N1\P+have+N2" have not yet formed, such as "have rice (01;10)". Later, the complete "N1\P+have+N2" appears in the spontaneous utterance of children at 2 years and 4 months, such as "He has a bad tooth (02; 04)". Subsequently, the variation of attributive possession "N\P" (01;11), "N1\P+de+N2" (02;00) and "N1\P+de" (02;02) appears in children's language, at which time the possession syntactic structure is also more complete and clearer. Finally, external possession (03;05), the variation of attributive possession "P+(de) +demonstrative/quantifier phrase+(quantifier phrase/N)" (03;06), and the variation of predicative possession "N1\P1+is+N2\P2 de" (03;09) appears in children's language relatively late.

In a word, possession constructions have three types: attributive possession, predicative possession and external possession, comprising a total of seven variations. What's more, the frequency and first appearance of each possessive variation differ.

4.1.2 Synchronic Comparison

We conduct a statistical analysis of possession constructions produced by 4 groups (Group one is the children at the age of 1; Group two is the children at the age of 2; Group three is the children at the age of 3; Group four is the children at the age of 4). The data are shown in Table 2:

Table 2. Synchronic data on children's production of possession syntax

	Group one		**Group two**		**Group three**		**Group four**		**Total**
	Time	**Amount**	**Time**	**Amount**	**Time**	**Amount**	**Time**	**Amount**	
N\P	01;11	6	02;02	10	03;06	9	04;03	13	38
N1\P+de	02;07	1	02;02	5	03;05	9	04;03	8	23
N1\P+N2	01;10	21	02;04	8	03;05	44	04;01	31	104
N1\P+de+N2	02;00	5	02;03	37	03;05	54	04;01	41	137
P+(de)+ demonstrative pronoun\quantity phrase+ (quantity phrase\N)	02;07	2	02;07	1	03;06	1	04;03	17	21
N1\P+have+N2	01;10	21	02;01	20	03;05	16	04;01	36	93
N1\P1+be		0		0	03;09	5	04;02	1	6

+N2\P2+de							
External possession	0	0	04;02	1	04;01	10	11
The number of types	6	6	8		8		
Total	56	81	139		157		433

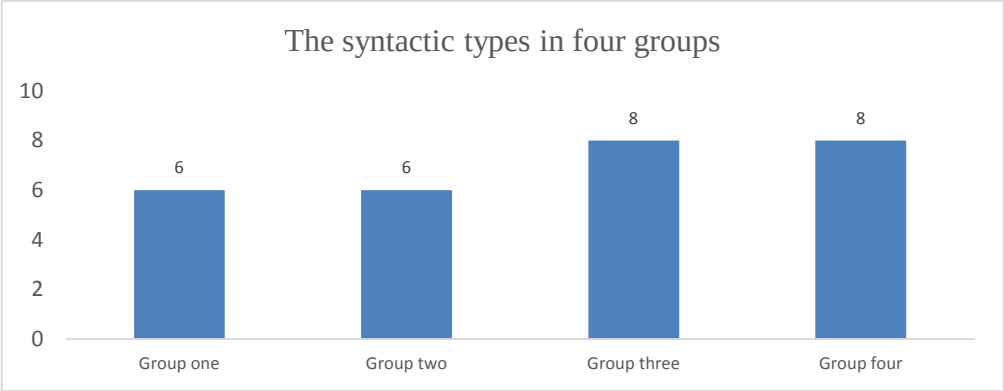

Figure 1. Observation of the syntactic types of possession constructions in children's language

We further conduct a statistical analysis on the average frequency of possession constructions produced by 4 groups. The results are shown in Figure 2.

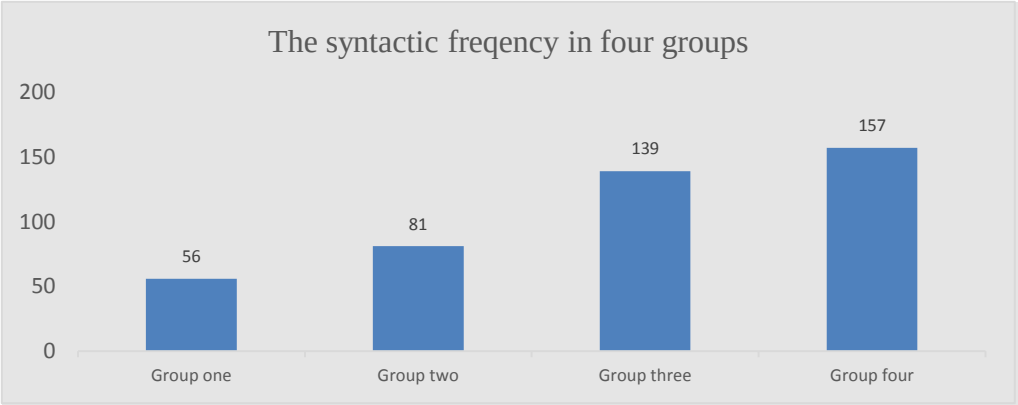

Figure 2. Observing the frequency of possession constructions in children's language

Through Table 1 and Figures 1-2, we can observe the synchronic features of possession constructions produced by 4 groups as follows:

1) In terms of types, the group one use six possession variations, as do the group two while the group three and four use eight. It is found that older children produce more possession variations with a small growth rate.

2) In terms of frequency, the group one and the group two produce possession constructions 56 and 81 times respectively. On average, the group three produce 139 times while the group four produced 157 times. It can be seen that older children produce possession constructions more frequently with a significant increasing.

3) In terms of complexity, firstly, the "P+(de) + demonstrative pronoun\quantity phrase+ (quantity phrase\N)" only appear in the natural utterance of 3-year-olds. By the age of 4, the variation become increasingly diverse, such as "P+demonstrative/pronominal phrase+N, P+de+demonstrative/pronominal phrase+N, P+quantifier phrase, P+N+de+demonstrative" etc. in addition, Although the predicative possession appears in the utterance of a child at 1 year-10 months, another predicative possession "N1\P1+be+N2\P2+de+(N)" only shows up at the age of 3. What's more, external possession only exists in the utterance of 4-year-olds. Therefore, it is concluded that the older the children, the more complex the possession constructions.

In summary, three types of possession constructions are found in the children's language: nominal possession, predicative possession, and external possession. And they have a total of eight variations with its own characteristics. It is also found that older children use more syntactic variations, more frequently, and had more complex syntactic types.

4.2 Semantic Features of Possession Constructions Produced by Children

4.2.1 Semantic Types

The semantics of possession constructions reflect people's cognitive understanding of the relationship between entities, where one entity possesses something while the other is subordinate or dependent (Ge, 2018). For example, kinship, whole-part, ownership and spatial relationships between people and objects are usually considered as possessive semantics. In this way, we classify the semantics of possession constructions in children's language into four major categories: interpersonal relationships, whole-part relationships, ownership relationships, and spatiotemporal relationships and nine subcategories, including social relationships, kinship, body-part relationships, other-part relationships, possession of inanimate objects, possession of animate objects, possession of abstract objects, time and space. As shown in Table 3, the frequency of semantics in the natural utterance of four groups was 727 times.

Table 3. Observation of semantic features in children's possession constructions

Semantics types	Subcategories	First appearance	Times	Account (%)	Examples
Interpersonal relationships	Social	03;05	12	1.65%	Ours classmates; my teacher
	Kinship	01;10	49	6.74%	Wo mama; ta baba
Whole-part	Body-part	01;11	164	22.56%	my eyes; his ears

relationships	Other-part	01;10	46	6.33%	the gate of the farm; the door of the toilet
Ownership relationships	Inanimate	01;11	233	32.05%	my medicine; my bear
	Animate	01;10	46	6.33%	my rabbit; our Snail
	Abstract	02;07	26	3.58%	your help; my Speed
Spatiotemporal relationships	Time	03;10	20	2.75%	last night; tomorrow morning
	Space	01;10	131	18.02%	inside the sofa; inside the box
Total			727	100%	

As shown in Table 3, the possession constructions produced by the children involve four main semantic categories and nine subcategories.

In terms of frequency, ownership relationships are the most common, appearing 305 times, accounting for 41.96% and the possession of inanimate objects is relatively more frequent. Next are the whole-part relationships, appearing 204 times, accounting for 28.89%, with body-part relationships being relatively more frequent. Lastly, temporal-spatial and interpersonal relationships account for 20.77% and 8.39% respectively, with spatial and kinship being relatively more frequent.

In terms of first appearance, interpersonal relationships, whole-part relationships, ownership relationships, and temporal-spatial relationships all show up simultaneously in the natural utterance of 1-year-10-month-old children. In Subcategories, kinship, other-part relationships, possession of inanimate objects, and spatial relationships appear first in children's language (01; 10); then body-part relationships (01; 11), possession of inanimate objects (01; 11), and possession of abstract objects (02; 07); finally, social relationships (03; 05) and temporal relations ships (03; 10) are produced.

In summary, possession constructions in the utterance of the six children involve four main semantic categories as well as nine subcategories. And the frequency and time of the first appearance in different semantic categories are not the same.

4.2.2 Synchronic Comparison

Through observing the synchronic features of possession semantics in the utterance of four age groups, it is found that each group has its own characteristics, as shown in Table 4.

Table 4. Synchronic data on children's production of possession semantics

		Group one		Group two		Group three		Group four		Total
		Time	Amount	Time	Amount	Time	Amount	Time	Amount	
Interpersonal relationships	Social		0		0	03;05	3	04;01	2	5
	Kinship	01;10	6	02;04	10	03;06	10	04;08	3	29
Whole-part relationships	Inanimate	01;11	6	02;02	19	03;05	29	04;01	51	105
	Animate	01;10	6	02;01	3	03;05	8	04;02	14	31
Ownership relationships	Body-part	01;11	27	02;02	43	03;05	37	04;01	51	158
	Other-part	01;10	4	02;09	3	03;07	13	04;05	3	23
	Abstract	02;07	1	02;09	2	03;10	6	04;06	5	14
Spatiotemporal relationships	Time		0		0	03;10	2	04;04	14	16
	Space	01;10	4	02;07	7	03;07	28	04;01	29	68
Total of types		7		7		9		9		
Total of times		54		87		136		172		449

Through Table 4, we can observe the synchronic features of possessive semantics acquisition in children's language, which can be summarized as follows:

1) In terms of subcategories in semantic types, the group one and group two have seven subcategories in their utterance. However, the group three and four use nine subcategories, so we find that older children can produce more subcategories of semantic types with a smaller increment.

2) In terms of frequency, the group one and the group two produce 54 and 87 times respectively, while the group three produce an average of 136 times and the four used172 times. We also observe that older children produce possession semantics more frequently with a more significant change.

3) In terms of order of appearance, we find that the order of appearance about semantic subcategories are as follows: kinship > social relationships; body-part relationships > other-part relationships; possession of inanimate objects >possession of animate objects>possession of abstract objects; space > time.

Base on the order of appearance in the semantic subcategories, we try providing some explanations. First of all, in interpersonal relationships, the kinship terms such as "father,

mother, grandfather and grandmother" appeared earliest, but after interacting with society, children then learn nouns that express social relationships like "teacher and classmates". As a result, kinship relationships appear earlier and more frequently than social relationships. Secondly, the whole-part relationships occupy a significant proportion in the entire semantic types of possession constructions. Among them, compared to other-part relationships such as "the gate of farm (03; 09)", there are more body-part relationships, such as "my eyes (01; 11), my ears (02; 03)", which are related to children's early self-centered psychology. Thirdly, ownership relationships are a universal human feature and children not only consider what they own but also habitually think about what others own in a certain degree. Possession of abstract objects appear later in children's language, such as "your help (03; 05), my rate (03; 10)", which are not as tangible as "my medicine (02; 03)", so children require need more time to understand or memorize. Finally, space is the fundamental form of material existence in the objective world, and it is closely related to children's daily lives while time is more abstract than space and exists beyond human consciousness, so spatial relationships show up earlier than temporal relationships appear.

In conclusion, we agree that in children's language, there are four major semantic types of possession constructions: interpersonal relationships, whole-part relationships, ownership relationships, and spatiotemporal relationships, as well as nine semantic subcategories. And we also find that older children use more semantic subcategories of possession constructions and more frequently.

4.3 The Diachronic Development of Possession Constructions in children's Language

4.3.1 Diachronic Development in Syntax of Possession Constructions

Based on analysis of diachronic data, we find that the changes in possession constructions in children's early language are manifested in two aspects: diversity in syntactic types and expansion of syntactic structures. As children get older, they use more types of syntactic structures and more complex syntactic structures. The overall trend shows a pattern of simple to complex and single to diverse.

In terms of syntactic diversity, we created Table 5 to longitudinally observe the language of six children over one year. Through this way, we observe two patterns: first, the syntactic types of possession constructions in children's language fluctuate within a year, increasing at a slow rate. Second, the frequency of output of possession constructions has no a clear regular.

Table 5. Diachronic development of syntactic types and frequency of possession constructions produced by 6 children

Children		February	March	April	May	June	July	August	September	October	November	December	January
XRC	Types	3	3	3	3	1	2	3	3	2	5	2	2
	Times	5	3	3	3	1	2	5	2	11	4	15	11
PZY	Types	1	5		2	6	4	4	2	3	3	3	4
	Times	1	7		1	20	7	5	6	11	8	11	5
ZRX	Types	6	4	5	6	4	1	3	2	1	3	2	3
	Times	9	4	17	20	5	1	7	9	2	5	5	27
SLY	Types	2	7	3	2	2	3	2	3	5	6	3	6
	Times	9	4	17	20	5	1	7	9	2	5	5	27
QZH	Types	3	2	1	4	2	3	5	4	4	4	4	4
	Times	3	4	1	13	3	5	8	9	12	19	21	6
TML	Types	5	3	8	5	5	5	5	2	4	2	4	4
	Times	15	3	25	13	20	12	9	2	11	11	15	11

In terms of syntactic expansion, according to the Table 1 and the Table 6, we observe that the expansion phenomenon is the most obvious in 4-year-old children. Initially, they only use a single noun (a possessor or a possessed) and an incomplete predicative possession (“have” variation) to express possession meaning. Later, they expand to “N\P+de” variation and complete predicative possession (“have” variation). At this time, although the possessive maker “de” has appeared, the possessed is still missing. Subsequently, they further expand to “N\P+N” and “N\P+de+N” variations with the possessed, making the possession construction more complete. Finally, the predicative possession (“be” variation) shows up, as well as more complex external possession, at the same time, in the “be” variation, the possessed become more diverse, such as demonstrative pronouns “this one, that one” and quantifiers “the two, the one” etc.

Table 6. Diachronic development of syntactic expansion of possession constructions produced by 6 children

Children	The Span of time	Developmental order of syntactic structures
XRC	01; 10-02; 09	N1\P+N2=N1\P+have+N2>N\P>N1\P+de+N2>N1\P+de=P+(de)+demonstrative pronouns\quantitative phrases+ (quantitative phrases\N)
PZY	02; 01-03; 00	N1\P+have+N2>N1\P+de=N\P>N1\P+de+N2> N1\P+N2>P+(de)+demonstrative pronouns\quantitative phrases+ (quantitative phrases\N)
SLY	03; 05-04; 04	N1\P+have+N2=N1\P+de+N2=N1\P+N2>P+(de) +demonstrative pronouns\quantitative phrases+(quantitative phrases\N) =N1\P+de>external possession=N1\P>N1\P1+be+N2\P2+de+(N)
ZRX	03; 05-04; 04	N1\P+de=N1\P+N2=N1\P+de+N2=N1\P+have+N2>N\P>external possession
QZH	03; 06-04; 05	N1\P+de+N2=N1\P+have+N2>N1\P+N2=N1\P+de>N\P>N1\P1+be+N2\P2+de+(N)
TML	04; 01-05; 00	N1\P+have+N2=N1\P+N2=N1\P+de+N2>N1\P+de=N\P=P+(de)+demonstrative pronouns\quantitative phrases+ (quantitative phrases\N)

In a conclusion, the diachronic characteristics of syntactic expansion of possession constructions produced by 6 children indicate that the older the children are, the more complex their syntactic structures become. This exhibits a pattern of development from simplicity to complexity and from singularity to diversity.

4.3.2 Diachronic Development in semantics of Possession Constructions

Based on Diachronic analysis, we discover the developmental patterns of possession semantics in children are characterized by the expansion of possession meanings. Specifically, this expansion follows a pattern from concrete to abstract, from familiar to unfamiliar, and from singular to diverse.

Table 7. Diachronic development of semantic expansion of possession constructions produced by 6 children

	XRC	PZY	SLY	ZRX	QZH	TML
	(01;10-02;09)	**(02;01-03;00)**	**(03;05-04;04)**	**(03;05-04;04)**	**(03;06-04;05)**	**(04;01-5;00)**
Interpersonal relationships	kinship>social	kinship>social	kinship>social	kinship>social	kinship>social	social>kinship
Whole-part relationships	body-part> other-part	Body-part> other-part	Body-part> other-part	Body-part= other-part	Body-part= other-part	Body-part> other-part
Ownership relationships	Inanimate> animate> abstract	Inanimate> animate> abstract	Inanimate> animate> abstract	Inanimate> abstract > animate	Inanimate= abstract > animate	Inanimate> abstract > animate
Spatiotemporal relationships	space>time	space>time	space>time	space>time	space>time	space>time

We analyze the diachronic development of semantic expansion of possession constructions produced by 6 children and find that they have similar patten of semantic expansion.

Firstly, in interpersonal relationships, children express possession semantic from their own relatives, such as “my mother (01;11)”, to others’ relatives, such as “fish’s mother (02; 01)”, and then further extend to social relationships, such as “our teacher (03; 09)” and “your classmate (04; 01)”.

Secondly, in whole-part relationships, possession relationships expressing body parts expand to possession relationships expressing other parts, such as “the shadow of a big tree (03; 07)”and “the gate of the farm (03; 09)”. Meanwhile, possession relationships for body parts are no longer limited to human body parts, and relationships for animal body parts are expressed more richly, such as “Hedgehogs have many thorns (03; 05)” and “Rabbit’s feet (04; 02)”.

Thirdly, in ownership relationships, children expand the possession relationships expressing their own possession, such as “my shoes (02; 03)” to the relationships expressing the others’ possession, such as “grandmother’s room (02; 04)”. And possession relationships are limited to the child’s own things, which may be related to their self-centered cognition and psychology. In addition, the objects in possession semantics expand from general objects to social institutions and emotional feelings, such as “my school also has slides (03; 11) and school’s teachers (04; 00)”. What’s more, the objects in possession semantics extend from inanimate objects “my pens (01; 11)” to people or animate things “my friends” (04; 00)”, and then to abstract objects “my secret (04; 02)” and “my voice (04; 06)”.

Finally, in spatiotemporal relationships, children expand the possession relationships from spatial to temporal relationships, such as “inside the basin (02; 01)” to “yesterday morning (03; 08)”.

4.4 Discussion

There are two theories regarding early syntactic development in children: 1) Nativism, represented by Chomsky, which posits that early syntactic development is rule-based (Chomsky, 1965); and 2) Constructionism, represented by Tomasello, which argues that early syntactic development is usage-based (Tomasello, 2003). According to constructionism, children acquire language by actively imitating, constructing, and using it through cognitive skills and communication with adults from items (words) to abstract language structures. This study indicates that the acquisition of possession constructions in children is based on the usage-based theory, which is manifested in two aspects: adult language input and gradual changes in structure and semantics.

4.4.1 Adult Language Input

The usage-based theory of early syntactic development emphasizes the importance of adult language input in children's language acquisition. As shown in Table 8, all variations of possession constructions produced by children can be found in adult language. In this way, we find that the more or earlier variations adults use, the more or earlier variations children use and vice versa. This similar to Tomasello's (2008) proposition that "the more frequently children hear a particular morpheme, word, or construction, the earlier they acquire it."

Table 8. Comparison of possession constructions between children and adults

Syntax	The output frequency in children's language	The output frequency in adults' language
N\P	56	15
N1\P+de	42	15
N1\P+N2	191	102
N1\P+de+N2	246	127
P+(de)+ demonstrative pronoun\quantity phrase+ (quantity phrase\N)	24	14
N1\P+have+N2	124	37
N1\P1+be +N2\P2 de	10	6
External possession	13	2
Total	706	318

Then, based on the data in Table 8, we use SPSS to conduct a correlation analysis between

the possession constructions of children and adults, as shown in Figure 5. The Pearson correlation coefficient is r=0.977 (p<.01), indicating a significant correlation between the two. and this suggests that adult language input plays a crucial role in children's acquisition of possession constructions.

		Children	Adults
Children	Pearson correlation	1	.977**
	Significance (bilateral)		.000
	N	8	8
Adults	Pearson correlation	.977**	1
	Significance (bilateral)	.000	
	N	8	8

**. There was a significant correlation at the. 01 level (bilateral).

Figure 5. Correlation analysis of possession constructions between adults' language input and children's language acquisition

Due to the limitations of cognitive ability and language proficiency, children's early production of possession constructions begins with imitation of adult speech. There are two types of imitation: direct imitation, which involves directly imitating adult' utterance, and compliant imitation, which refers to answer adult questions with similar structures. Thus, it can be seen that children gradually acquire possession constructions through the process of imitating adult language, as shown in Table 9.

Table 9. Observing children's imitation

			01; 10——02; 00	**02; 01——02; 03**	**02; 04——02; 06**
Imitation	Direct imitation	Adults	bag	others' things	her father
		Children	bag	others' things	her father
	Compliant imitation	Adults	Where is your hat?	Where is our garage?	Do you have any money?
		Children	My hat is here.	Our garage is at home.	I have no money.

In summary, we can conclude that adult language input plays a significant role in the process of children's acquisition of the target language, and the research findings support the usage-based theory of language acquisition.

4.4.2 Gradual Changes in Structure and Semantics

According to the usage-based theory, the development of early syntax is a gradual process (Zhang, 2014). And the theory believes that children's language learning is also a cumulative process, from concrete words and structures to abstract syntactic structures. Through the corpus analysis, this study also supports this view. First of all, before producing the "Nl\P+R+N2" variation, children need to learn personal pronouns and nouns first. In addition, the previous data also indicates that the acquisition of possession constructions is not immediate: from personal pronouns as possessors to Ns as possessors, from Ns as possessed to pronouns or numerals as possessed, from spatial possession to temporal possession, and from possession based on kinship to possession based on social relationships. All these examples illustrate that the development of early syntax is not a sudden change but a gradual one. Furthermore, complex possession constructions come from simple possession constructions previously used by children, and then children use substitution and expansion to construct possession (Tomasello, 1992), as shown in Table 10.

Table 10. Observing substitution and extension in children's language

Substitution	Notional substitution	His father beat him. (02; 04)	They're going to make a Mr. Bao's car. (02; 06)
	Maker's substitution	my phone (03; 06)	He has only one rabbit ear, and he has two rabbit ears. (04; 02)
Extension	Structural extension	my mother (01; 10)	He has grown a beard (04; 01)
	Semantic Extension	inside the sofa (01; 10)	Last night (03; 10)

In substitution, it can be seen that children initially use personal pronouns to indicate possessors, which are later replaced by Ns such as "Mr. Bao" and the possessive maker "de" is used most frequently, and later, there are "have" "be" makers in their language.

In extension, it mainly reflects in two aspects: structural extension and semantic extension. Children extend the length of syntactic structure by structural extension. As mentioned earlier, the "N\P, N1\P+N2, N1\P+de+N2" variations gradually expand to variations containing demonstrative pronouns or quantifier phrases, such as "P+(de) +demonstrative pronoun/quantifier phrase+(quantifier phrase/N)" and "N1\P+be+N2\P2+(de)" variation and external possession.

All in all, we can consider the process of children acquiring the target language to be gradual, and the results support the usage-based theory.

In conclusion, this study believes that children tend to acquire target language based on usage, and they actively construct language step by step, which means that the driving force behind

children's syntactic acquisition and development comes from language use (Tomasello, 2003).

5. Conclusion

This study focuses on natural utterance from six Chinese preschool children, examining the synchronic and diachronic features of syntax and semantics about their possession constructions, and exploring the basic rules of possession construction acquisition in early childhood.

In term of synchronic features, we find that in syntax, possession constructions in children's language can be classified into three major types: nominal possession constructions, predicative possession constructions, and external possession constructions, as well as eight variations, each with its own structural characteristics. The frequency and first appearance of possession variations differ for each type, and we also find that older children produce more syntactic variations with higher frequency, and more complexity. In semantics, possession relationship in children's language can be divided into four major types: interpersonal relationships, whole-part relationships, ownership relationships, and spatiotemporal relationships, and nine subtypes: social relationships, kinship, body-part relationships, other-part relationships, possession of inanimate objects, possession of animate objects, possession of abstract objects, time and space. The possession semantics follow a pattern from familiar to unfamiliar, and from concrete to abstract.

In terms of diachronic features, we find that in syntax and semantics, as children grow older, they use more variations of possession constructions, possess more complex syntax of possession constructions, and it follows a pattern from simple to complex, from concrete to abstract.

In a certain degree, this study supports the usage-based theory, believing that adult language input plays a significant role in the process of children's acquisition of the target language, and the process of acquiring the target language to be gradual.

The limitation of this study is that it did not observe children speaking Chinese dialects or other languages. Future research can focus on more Chinese dialect-speaking children and add pragmatic features to provide multi-dimensional descriptions. And the comparisons between different dialects, dialects and Mandarin, or Chinese and foreign language in children's language also need to be examined to further deepen our understanding of children's language acquisition and provide more empirical data for research on children's language.

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