The Comprehension of Classifiers in Cantonese-speaking Preschool Children

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Abstract

This study investigated the comprehension ability of classifiers in Cantonese-speaking preschool children. The participants for this study were 60 normal kindergarten children aged from 3 to 5. Comprehension task involved pointing was used. The result of the study indicated the following points: (1) As age increased, the comprehension ability of sortal classifiers which included shape, function, specific and mixed classifiers increased; (2) Children demonstrated better performance in function classifiers and specific classifiers than shape and mixed classifiers; (3) As age increased, the main error type for shape classifiers was the within dimension substitution. The results of this study agreed with that of Mak (1991) that children were more effective in using function classifiers as the basis of classification. In addition, the results showed that the error patterns of shape classifiers changed as age increased.

Introduction

Cantonese is a classifier language in which the quantification of an object usually requires the use of a classifier. When carrying out counting in Cantonese, the classifier is bound to the cardinal number. In addition, the classifiers can indicate some intrinsic characteristics of the objects being quantified (Szeto, 1998).

Classifiers are important element in Cantonese noun phrase that they are obligatory in many noun phrase types. The most typical classifier construction is:

Numeral	+	Classifier	+	Noun
saam1		*zek3*		*mao1*
三		隻		猫

Classifier represents a significant typological difference between English and Cantonese (Li & Lee, 2001). Classifier is not a feature in English while it plays a robust role in Cantonese noun phrases. Moreover, classifier is the part of linguistic system that the Cantonese speakers find difficult and took a relative longer time to acquire (Li & Lee, 2001). Therefore, classifier has been recognized as an important area in the study of Cantonese language acquisition.

There are about sixty classifiers in Cantonese (Matthews & Yip, 1994). The basic classification is verbal and nominal classifiers. Verbal classifier represents how many times an action has taken place (Szeto, 1998). The nominal classifier classifiers nouns can be further divided into sortal and mensural classifiers. (see Figure 1)

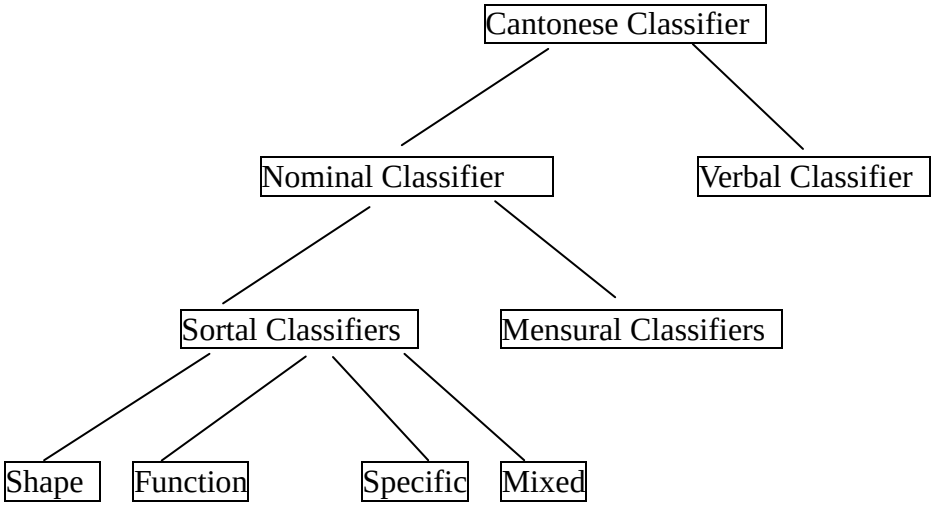

Figure 1. Classification of Cantonese classifiers.

Sortal classifiers classify nouns in terms of some distinctive intrinsic features (Matthews & Yip, 1994). For example, shape, size and texture (Szeto, 1998). There are four sub-groups under sortal classifiers namely shape, function, specific and mixed classifier (Mak, 1991). The shape classifier is a prominent sub-group of sortal classifier. The abbreviations 1D (1-DIMENTIONAL), 2D (2-DIMENSIONAL) and 3D (3-DIMENTIONAL) reflect the semantic features of length, flatness and roundness of the classified objects respectively (Denny, as cited in Loke, 1991). 1D and 2D classifiers could be further differentiated by the character of flexibility or rigidity while 3D classifiers are further differentiated by size (Mak, 1991). (see Table 1)

Table 1

Classification of Shape Classifiers in the Present Experiment (Adapted from Mak, 1991)

Shape classifier		Features	
枝	*zi1* (1D)	+ long	– flexible
條	*tiu4* (1D)	+ long	+ flexible
張	*zoeng1* (2D)	+ flat	+ often flexible
塊	*faai3* (2D)	+ flat	+ rigid
粒	*lap1* (3D)	+ roundness	+ small
舊	*gau6* (3D)	+ roundish	+ lumpy

Note. The positive sign represented the salient feature. The negative sign represented the less salient feature.

The function classifier is more language-specific than shape classifiers. It classifies objects according to function (Szeto, 1998). For example, 間 *gaan1* refers to a building or a house. On the other hand, specific classifiers have restricted meaning that they usually use with well-defined nouns. For example, 棵 *po1* for trees. The mixed classifiers referr to those which could classify a variety of nouns in different semantic domains (Szeto, 1998). For example, 個 *go3* can be used to classify many nouns such as human being, body parts and round objects.

Mensural classifiers, on the other hand, have the quantitative function. They quantify nouns in terms of some measurements (Szeto, 1998). There are three main kinds of mensural classifiers in Cantonese. They are the collective classifiers, measurement classifiers and containment classifiers. Collective classifiers refer to a type or kind of entity or grouped entities in units (Killingley, 1983). For example, 對 *deoi3*, 班 *baan1*. The container classifiers represent the actual containing and they can be common nouns by themselves, for example, 杯 *bui1*. The measurement classifiers involve the abstract measurement of linearity,

surface area, weight and volume (Killingley, 1983). For example, 磅 *bong6*.

Classifier plays an important role in early language development. Evidence showed that children as young as two years old used classifiers in spontaneous speech (Szeto, 1998). Her study stated that children were able to use classifiers in spontaneous speech before two years old. Erbaugh (1986) also reported that Mandarin children used classifiers in spontaneous speech before three. These data had an important implication that classifier played a significant role in early children's language development since they emerged in early child speech.

Literature Review

Children's acquisition of classifiers in Mandarin had been studied in the past few decades. For the production studies, Fang (as cited in Szeto, 1998) found that the preschool children had dramatic increase in the use of classifiers and the shape. In addition, the function classifiers were acquired late. Erbaugh (1986) reported that the sortal classifiers developed slowly and stayed rare by three years old. Moreover, children preferred to use the general classifier 個 *go3*.

As for the studies on Cantonese classifier production in young children, Mak (1991) focused on the acquisition of shape and function classifiers. Mak put forward the Primary Set Hypothesis to explain the acquisition trend of classifiers. The study showed that children tended to acquire a set of maximally contrastive classifiers. This set of classifiers had at least one classifier represented one, two or three dimensions. Mak reported that the main error type for shape classifiers was within dimension substitution. In addition, Mak suggested that children showed better performance in function than shape classifiers. Szeto (1998) carried out a longitudinal study on the production ability of Cantonese children. Her study revealed that inappropriate use of classifiers was not frequent in children's production. For the mixed classifier 個 *go3*, the appropriate and inappropriate usage did not vary as age increased.

Some research had been done on the production of classifiers in language-disordered children. Stokes and So (1997) studied the use of classifiers in children with language disorder. They found that there were substitution and omission errors in the classifier production tasks. This showed that the study on classifier development contributed to the understanding of language-disordered children.

Most of the studies concerning the classifier acquisition were production studies. Exceptions to this included studies done by Fang (as cited in Szeto, 1998), Hu (1993) as well as Chien, Lust and Chiang (2003) on Mandarin children. In Fang's study, it focused on the comprehension of four shape classifiers. The results suggested that none of the four-year-old children had the knowledge of the shape classifiers while half of the five-year-old knew two of the shape classifiers. In Hu's study, he stated that children speaking Mandarin generally showed better comprehension than production ability for classifiers in various ages. In addition, the use of classifiers correlated positively with children's age. In Chien et al. 's study, it indicated that for children speaking Mandarin, their comprehension ability on the restricted classifiers (i.e. function classifier and specific classifier) were comparable to non-restricted classifier (i.e. shape classifier). In addition, children found the general classifier 個 *ge* the most difficult one in the comprehension task. Table 2 and 3 showed the summary of studies on classifiers in Cantonese and Mandarin respectively.

Table 2

Summary of Studies on Cantonese Classifiers (adapted from Szeto, 1998)

	Poon (1980)	Mak (1991)	Stokes & So (1997)	Szeto (1998)	Li & Lee (2001)
Task	Production	Production	Production	Production	Production
Language	Cantonese	Cantonese	Cantonese	Cantonese	Cantonese
Age of subject	2;07-6;10	4 to 8 years old	Mean age: 53 months	1;05-3;08	5 to 16 years old
No. of Subjects	27	122	28 (disorder and normal)	8	34 bilingual children
Test classifiers (CL)	27 sortal CL	6 shape CL 4 function CL	5 shape CL 2 function CL 2 mixed CL	Longitudinal study	12 sortal CL 4 mensural CL
Major findings	Young children only use 個 *go3* Children at six not yet reach adult proficiency	Acquisition order: function→shape mainly within shape substitution for shape CL	Four stage of acquisition process	CL emerged before 2 years old High percentage of correctness of CL usage	Overgeneralization and inappropriate use of CL

Table 3

Summary of Studies on Mandarin Classifiers (adapted from Szeto, 1998)

	Ying et al. (1983)	Fang (1985)	Erbaugh (1986)	Loke & Harrison (1986)	Loke (1991)	Hu (1993)	Chien et al. (2003)
Task	Production	Comprehension and production	Production	Production	Reinterpret data of (1986)	Comprehension and production	Comprehension
Language	Mandarin	Mandarin & Cantonese	Mandarin	Mandarin & Cantonese	Mandarin	Mandarin	Mandarin
Age of subject	4 to 7 years old	4 to 6 years old	1;10-3;10	5 to 7 years old	5 to 7 years old	3 to 6 years old	3 to 8 years old
No. of Subjects	179	72	2	61	21	24	80
Test classifiers (CL)	56 sortal and mensural CL	12 sortal and mensural CL	Longitudinal study	8 sortal CL	7 sortal CL	12 sortal CL	Sortal and mensural CL
Major findings	No firm grasp of semantics of CL 5 years old: acquired 4 sortal CL	Acquisition order: mixed → shape → function Syntax mastered earlier than classifier semantics	Slow development in sortal CL	Mandarin: Acquisition order: mixed→shape→ function	Decrease in the use of 個 *ge* with increase in use of shape CL	Comprehension more advanced than production	Comparable ability with sortal and mensural CL

After reviewing the related literature concerning Mandarin and Cantonese children's classifier development, I found that what is missing is a study on Cantonese children's comprehension ability of classifier. The study on this area was important for several reasons.

Firstly, it was said that although children had early acquisition of the syntax of classifiers, they demonstrated slow development and growth in the classifier vocabulary (Lee, 1996; Loke, 1991). Poon (as cited in Szeto, 1998) also stated that Cantonese children at six years old still had the difficulty to match the classifier with the correct noun referents. In addition, the experiment carried out by Fang (as cited in Szeto, 1998) found that both Mandarin and Cantonese children at four years old had the difficulty to use appropriate classifiers. In addition, the study carried out by Loke and Harrison (1986) revealed that children aged between three and seven did not have a good understanding of the semantics of classifiers. This raised the question whether the difficulty in using appropriate classifiers was due to the fact that children had limited ability in the comprehension of classifiers?

Secondly, some researches had been carried out on the comprehension ability of Mandarin children. Although both Mandarin and Cantonese were classifier languages, they differed in various aspects (Erbaugh, 2002). Semantic differences showed that Cantonese sortals referred to more mixed sets than Mandarin since Cantonese was "un-standardized and seldom written" (Erbaugh, 2002, p.37). Syntactic differences were also significant. Cantonese classifiers could be used without determiners in a noun phrase (Matthews & Yip, 1994). Moreover, the other highly significant and robust difference between Cantonese and Mandarin was that Cantonese have five times more sortal classifiers per noun and there was a greater range of sortal classifiers in Cantonese. For example, the Cantonese speakers use eight classifiers per narrative while the Mandarin speakers use only two in Erbaugh's study. In addition, Cantonese-speaking children used more different classifiers at early stage of language development as compared to that in Mandarin-speaking children (Erbaugh, 1986).

These differences might make the Cantonese children show a different pattern of comprehension ability in classifiers as compared to the Mandarin children.

Lastly, there has been surprisingly little research to date directly investigating the comprehension of Cantonese classifiers. Most of the previous studies focused on children's ability of production of classifiers in spontaneous and elicited speech. According to Lust et al. (as cited in Chien et al., 2003, p.95), "converging evidence across production and comprehension studies is advisable for studies of language competence". The present study aimed to enhance our understanding on the classifier development in Cantonese children. Moreover, by giving the information of comprehension ability in normal developing children, it could enable the clinician to choose the appropriate targets in the treatment for children with language delay.

The present study focused on the sortal classifiers since children used significantly more sortal classifiers than mensural classifiers (Szeto, 1998). Previous research on acquisition of classifiers had also put more emphasis on sortal classifiers (Lee, 1996). In addition, error types of shape classifiers would be studied since "shape classifiers were not only the most frequently used, but also the one most likely to be generalized" (Erbaugh, 1986, p.404).

This study explored the following research questions:

1. The effect of type of classifier, gender as well as age on the comprehension ability of classifiers in preschool children.
2. The acquisition trend of shape, function, specific and mixed classifiers.
3. The error patterns of shape classifiers.

Method

Participants

The subjects were selected according the following criteria. Firstly, they used Cantonese as the first and primary language. Secondly, they had parents who were Cantonese speakers and used Cantonese as the main means of communication at home. Thirdly, they were known to be developing normally with no known history of language problem and sensory impairment. All of the subjects met these criteria by teachers' reports as well as a written questionnaire completed by their parents.

Sixty children (30 males and 30 females) aged between three and five were included in the study. They were assigned to three age groups differing in one-year interval, i.e. group one (three years old), group two (four years old) and group three (five years old). There were 20 children in each group with ten males and ten females. The children were sampled from two kindergartens in the same area. Most of the children lived near the school and they paid the same amount of school fees. This could provide us with some indication about the socio-economic statuses of the families.

Twenty adults (aged between 20 and 40) who were educated and native Cantonese speakers took part in the experiment. They served as the comparison group. Appendix A showed the age range and the mean age of both child and adult samples.

Material

Six shape classifiers, four function classifiers, three specific classifiers and two mixed classifiers were selected from a pool of Cantonese sortal classifiers. They were the basic and commonly used classifiers as mentioned in Mak and Szeto's studies. Two objects were used to represent each target classifier. These stimuli objects were selected by the prevalence of classifier-object association in adult speakers tested. Moreover, familiarities of the objects were also considered that the objects were common in the children's daily life. This was

because when children had limited experience with the unfamiliar objects, their comprehension ability would be affected. For instance, a familiar object was used to represent one classifier while an unfamiliar object was used for another classifier. The result would be different for these two classifiers not because the subject did not know the classifier, but because the subject had not use the classifier with the unfamiliar object. Appendix B listed the tested classifiers, their meanings and corresponding individual objects that were used in the study.

Procedures

Arrangement of the test stimuli

There were two experiments. Experiment one tested the shape classifiers while experiment two studied the function, specific and mixed classifiers. In both experiments, each target classifier appeared four times on different trials. Moreover, three objects were given on each trial with one target classifier and two distractors. In experiment one, one of the distractors had the same dimension as the target classifier; while the second distractor had different dimensions. Each classifier would appear with the classifiers in other dimensions for one time. The reason for making the same dimension classifier as one of the distractors was based on Mak's comment that children seldom made cross-dimension error. It was more frequent for children to use 1D classifier to replace another 1D classifier while less common to use 2D or 3D classifiers as the replacement. For experiment two, each classifier appeared with each of the remaining classifiers for one time. For both experiments, block randomization was carried out to balance the practice effect as well as avoid anticipation effect. With the block randomization, the same target classifiers did not occur on two consecutive trials. Moreover, the same object did not position in the same location for three consecutive trials.

Pilot Test

A pilot test was conducted to determine the suitability of the objects. Three children and five adults were taken part in the pilot test. One object was found to be unsuitable. The original noun for classifier 舊 *gau3* was meat. However, four adult subjects chose 塊 *faai3* instead of the anticipated classifier 舊 *gau3*. As a result, this noun was discarded and the object rock was used.

The comprehension task

The method was adapted from Chien et al. (2003). The experiment started by inviting the child to take part in a guessing game with the cartoon character Micky Mouse. Since Micky Mouse came from the United States that he could not speak Cantonese well, he could not tell the experimenter what he wanted. As a result, the child was asked to help the experimenter to guess what Micky Mouse would like to choose. The experimenter put three toys (e.g. candy, biscuit and chair) in front of the child and gave the following instruction: 'This is candy, this is biscuit and this is chair. Micky Mouse says he wants one- 塊 *faai3* (classifier) …..' 'So, what does Micky Mouse want?' Then, the child was asked to point out which object Micky Mouse wanted to say. If the child understood the object match with the classifier, then he/she should select the correct toy from the other two. If not, he/she would choose randomly.

Training session

Training session was carried out in order to make sure that the subjects understood the procedures of the tests. The procedures in the training session were exactly the same as that in the real experiment except that three classifiers other than that in the real experiment were chosen. The subjects were allowed to practice as many times as needed until they understood clearly about the procedure of the experiment.

Data Analysis

The experimenter used a pre-designed recording sheet to record the participant's background information and their response in each trial. The subject's responses were coded as which object he/she chose for each target classifier. The correct responses were determined by the classifier-object associations as listed in Appendix B. The scores of each subject was recorded by the experimenter during the task and then counted manually. Another experimenter who was the final year student of the Division of Speech and Hearing Sciences transcribed 10% of the data. The inter-rater agreement was 95%.

A 3(age) X 2 (gender) X 4 (type of classifier) three-way Analysis of Variance (ANOVA) with repeated measure was carried out to determine whether there were significant effect of age, gender and the four types of classifiers. The between-group variables were age, with three levels (three, four and five years old), and gender, with two levels (male and female). The within-group variable was the type of classifier, with four levels (shape, function, specific and mixed classifier).

Results

For each classifier, the raw scores subjects obtained were converted to percentage which represented a possible 100% correct for each classifier. As a result, the percentage scores represented how well subjects understood a particular classifier. The percentage score for each classifier was presented in Table 4. It showed that the subjects' performance improved across ages for four types of classifiers. Adult gave 100% correct responses for all classifiers except the mixed classifier 個 *go3* in which the mean correct responses was 96.03%.

Table 4

The Mean Percentage Score for Each Types of Classifier

Age group		3	4	5	Child sample	Adult sample
Shape	Mean	47.50	72.71	88.54	69.57	100.00
	(SD)	(15.67)	(14.27)	(7.63)	(21.31)	(0.00)
	Range	40.00-65.00	65.00-88.75	76.25-100.00	40.00-100	100.00-100.00
Function	Mean	(65.31	92.81	99.38	86.03	100.00
	(SD)	(15.77)	(09.78)	(1.92)	(18.26)	(0.00)
	Range	45.00-91.25	90.00-96.25	98.75-100.00	45.00-100.00	100.00-100.00
Specific	Mean	50.83	88.33	97.50	78.89	100.00
	(SD)	(23.08)	(13.08)	(3.92)	(25.42)	(0.00)
	Range	42.50-60.00	80.00-96.25	93.75-100.00	42.50-100.00	100.00-100.00
Mixed	Mean	48.13	67.50	90.63	68.75	96.03
	(SD)	(18.71)	(23.44)	(10.63)	(25.16)	(5.19)
	Range	37.50-58.75	55.00-80.00	83.75-97.50	37.50-97.50	83.30-100.00

Effect of Age, Gender and Type of Classifiers

After carrying out the ANOVA, significant main effect of age [F (2,54) =69.98, p=.000] was found. This suggested the participants demonstrated significantly better performance across ages. Tukey's HSD test was conducted to identify the source of significant difference. It was found that children at five years old had significantly higher comprehension ability than the three and four years olds; and the four-year-old children comprehend significantly better than the three years olds (p<.05). There was no statistically significant main effect of gender (p>.05). On the other hand, there was main effect of classifier types [F (3,162) =30.190, p=.000]. From the Tukey's HSD test, it showed that the subjects demonstrated significant differences in comprehension ability among function, specific and shape classifiers (p<.05). This suggested that children performed significantly better in function classifiers than specific classifiers while specific classifiers were significantly better than shape classifiers. However, the performance in shape classifiers did not differ from that of the mixed classifiers (p>.05).

A statistically significant interaction effect between age and type of classifiers was found [*F* (6,162) =3.54, *p*=. 003]. (see Figure 2) Tukey's HSD tests were carried out to identify the source of interaction. i.e. to compare the mean differences among four types of classifiers across ages. Results of post-hoc comparisons under the condition of shape, function, specific and mixed classifiers were summarized in Table 5, 6, 7 and 8.

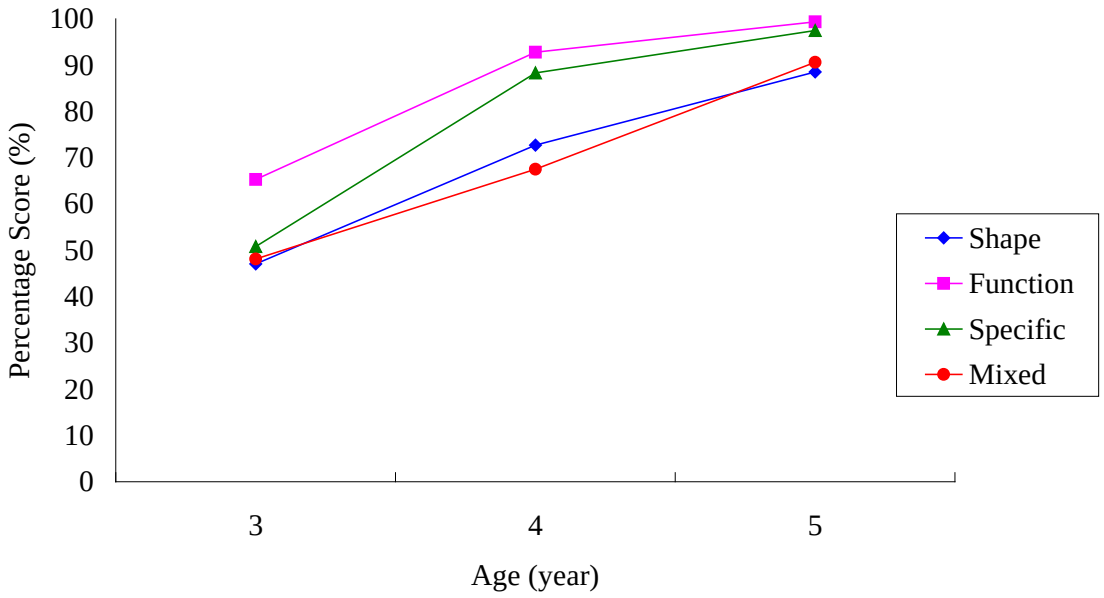

Figure 2. Interaction effect of age and type of classifier.

Table 5

Post-hoc Comparison under the Condition of Shape Classifiers

Age group	3	4	5
3	--	.033532*	.000137*
4	--	--	N.S.
5	--	--	--

Note. N.S. meant statistically not significant.

*p< .05.

Table 6

Post-hoc Comparison under the Condition of Function Classifiers

Age group	3	4	5
3	--	.013403*	.000794*
4	--	--	N.S.
5	--	--	--

Table 7

Post-hoc Comparison under the Condition of Specific Classifiers

Age group	3	4	5
3	--	.000232*	.000122*
4	--	--	N.S.
5	--	--	--

From Tables 5,6,7, it was found that for the shape, function and specific classifiers, the children at five years old performed significantly better than that of the four and three years olds ($p<.05$). On the other hand, there was no significant difference in the mean scores between the four and five years olds ($p>.05$). Yet, it was worth noting that children in the four years old group did showed poorer understanding of three types of classifiers than the five years olds.

Table 8

Post-hoc Comparison under the Condition of Mixed Classifiers

Age group	3	4	5
3	--	N.S.	.000128*
4	--	--	N.S.
5	--	--	--

For mixed classifiers, the only significant difference was found between children aged three and five (p<.05) although percentage score did show improvement across ages.

Acquisition Trend of Shape, Function, Specific and Mixed Classifiers

Based on the results from Table 4, the order of mean percentage of score for four types of classifiers across ages in this study was: (1) function classifier (86.03%), (2) specific classifier (78.89%), (3) shape classifier (69.57%), and (4) mixed classifier (68.75%). As mentioned above, only the shape and mixed classifier did not show statistically significant differences. The acquisition trend of the four classifiers was as follows:

Function→ Specific→ Shape and Mixed

Error Analysis for Shape Classifiers

Table 9, 10 and 11 showed the error patterns for the shape classifiers. It showed that the within dimension substitution increased across ages while the cross dimension substitution decreased.

Table 9

Within Dimension and Cross Dimension Error Pattern in Three-year-old Children

Dimension	Classifier	Within dimension	Cross dimension (1D)	Cross dimension (2D)	Cross dimension (3D)
1D	枝 *zi1*	64.29	--	21.43	14.29
	條 *tiu4*	64.58	--	18.75	16.67
2D	張 *zoeng1*	64.58	10.42	--	22.92
	塊 *faai3*	37.78	35.56	--	26.67
3D	粒 *lap1*	61.54	17.95	20.51	--
	舊 *gau6*	56.82	22.73	20.45	--
Average		58.27		41.39	

Table 10

Within Dimension and Cross Dimension Error Pattern in Four-year-old Children

Dimension	Classifier	Within dimension	Cross dimension (1D)	Cross dimension (2D)	Cross dimension (3D)
1D	枝 *zi1*	88.89	--	--	11.11
	條 *tiu4*	75.00	--	20.00	5.00
2D	張 *zoeng1*	89.29	3.57	--	7.14
	塊 *faai3*	74.07	--	18.52	7.41
3D	粒 *lap1*	95.00	--	5.00	--
	舊 *gau6*	59.26	33.33	7.41	--
Average		80.25		19.75	

Table 11

Within Dimension and Cross Dimension Error Pattern in Five-year-old Children

Dimension	Classifier	Within dimension	Cross dimension (1D)	Cross dimension (2D)	Cross dimension (3D)
1D	枝 *zi1*	--	--	--	--
	條 *tiu4*	80.00	--	--	20.00
2D	張 *zoeng1*	100.00	--	--	--
	塊 *faai3*	100.00	--	--	--
3D	粒 *lap1*	100.00	--	--	--
	舊 *gau6*	63.64	36.36	--	--
Average		88.72		11.27	

Discussion

The present study had examined the comprehension ability of Cantonese classifiers in preschool children aged three to five. The result showed that the performance for shape, function, specific and mixed classifiers had significant improved as age increased. Moreover, children demonstrated better comprehension ability on the function and specific classifiers than shape and mixed classifiers. Lastly, as age increased, there was a change in the error pattern for shape classifiers. Children demonstrated both cross and within dimension

substitutions at young age and gradually changed to mainly within dimension substitution as age increased.

The Effect of Gender, Age and Type Classifiers on the Comprehension Ability of Classifiers

This study suggested that the gender was not a factor affecting the comprehension ability of classifiers. This result echoed with the study of Hu (1993) that no significant effect of gender was found in the comprehension of shape classifiers.

In the present study, the subjects demonstrated significant improvement on their comprehension abilities as age increased. This could be explained by the fact that classifiers had high semantic complexity. As a result, children demonstrated poor performance at younger age since they did not have a firm grasp of all the semantics of classifiers. As age increased, they have better understanding of the relationship of semantic properties between the classifier and the classified objects. This result agreed with the study by Hu (1993) that the frequency and number of classifiers used in children correlated positively with the age. In addition, the present study was also comparable with Fang's finding (as cited in Szeto, 1998) that children's ability to use appropriate classifiers increased rapidly during preschool period.

As for the comprehension of specific classifiers, Szeto (1998) suggested that Cantonese-speaking children never made mistakes when they used specific classifier. However, in present study, the result did not agree with Szeto's study. Children in the present study showed percentage of correctness from 50.83% to 97.50% across ages. This demonstrated that the participants did not have a stable usage of specific classifiers at young age. The discrepancy between previous and present studies could be attributed to the differences in research methods. Szeto's study used a spontaneous production task in which children could avoid to produce the uncertain classifier. This strategy could make the result fail to reveal the true ability of children's ability to use the specific classifier. In addition, sample size could be a factor. In Szeto's study, there were only eight subjects. Small sample

size indicated that the result was not adequate to generalize to all Cantonese-speaking children. Lastly, there were only a few children who produced the specific classifier in Szeto's study which could lead to higher percentage of correctness. All of the evidence suggested that the data in previous study on specific classifier might not be representative.

For mixed classifiers, the finding in present study suggested that the comprehension ability of 個 *go3* had a correlation with age. As age increased, the performance improved. In the study of Szeto (1998), however, it suggested that the use of 個 *go3* did not have a clear correlation with age and the percentage of correctness did not vary according to age. There are two possible explanations for such difference between the two studies. Firstly, the subjects' ages in the two studies were different. In Szeto's study, the participants were aged between 1;05 to3;08 which were younger than that in the present study of three to five years old. As a result, the subjects in Szeto's study might be too young to demonstrate the significant improvement in the performance of 個 *go3.* Secondly, the tasks of two studies were different. Szeto's study involved spontaneous production while the present study was a comprehension task. As suggested by Mak (1991), young children used 個 *go3* as a 'default' classifier and they used it when they failed to find the appropriate classifier in production. Hu (1993) also showed that children generalized the use of 個 *go3* in a widely that they had more frequent use of 個 *go3* than any other classifiers. As a result, children demonstrated similar performance of 個 *go3* across ages in the production task. On the other hand, in the comprehension task, participants were forced to select a correct association of 個 *go3*. The participants could therefore demonstrate their comprehension ability of 個 *go3* across ages.

Acquisition Trend of Shape, Function, Specific and Mixed Classifiers

The children demonstrated different comprehension abilities across the four types of classifiers. The subjects had better performance on function and specific classifiers than

shape and mixed classifiers. This result matched with the findings by Mak (1991) that children aged between four to eight years old performed significantly better in function than shape classifiers. On the other hand, such sequence did not agree with the study carried out by Fang (as cited in Szeto, 1998) in which the study suggested that the mixed and specific classifiers were acquired first. In addition, the study in Loke and Harrison (1986) also suggested that mixed classifier 個 *go3* was acquired first followed by shape and function classifier respectively. There are several reasons could explain why function and specific classifier showed better performance than the specific and mixed classifiers. Firstly, for the function classifiers, the higher accuracy in performance could be due to the fact that children were more effective in using function as the classification method in acquiring classifiers. This could be explained by the Functional Core Hypothesis (FCH) presented by Andersen (as cited in Mak, 1991). This hypothesis suggested that function seemed to be a more efficient and reliable method for classification than shape that function classifiers tend to be better defined as a basis for classification (Mak, 1991). As a result, children showed higher accuracy to use function as bases for classification.

Secondly, for specific classifiers, the number and types of nouns which associated to them were extremely limited. Children only used few nouns with each of the specific classifier. As a result, there were less confusion for the association between the noun and specific classifier which lead to better performance in the comprehension task.

Thirdly, the shape classifiers were semantically more complex. There were many common features shared among the shape classifiers. For example, two classifiers could denote the same dimension, but different in secondary properties such as size, rigidity (Hu, 1993). The semantic complexity of shape classifiers might contribute the late acquisition of shape classifiers than function and specific classifiers. The function classifiers, however, did not have much in common feature between each other so that fewer errors occurred.

Fourthly, for the mixed classifier, it was the classifier caused children the most problems in the present study. The discrepancy between the present and previous studies could be explained by the difference in the task design. In the present comprehension task, correct response was determined by the classifier association. The mixed classifier 個 *go3* were expected to match with the object with semantic features of 'human' and 'roudness'. All the other associations were marked as incorrect. It was common that children overgeneralize 個 *go3* to other nouns which could be represented by more appropriate classifiers in production. As a result, they did not search for a particular referent when they heard 個 *go3* in the comprehension task. Therefore, they achieved lower percentage of accuracy in present study. This explanation could be supported by the previous production study that children predominately used the mixed classifier 個 *go3* to fill the position of classifier. For example, for children aged six or seven years old, they still use 個 *go3* rather than other specific classifiers (Chien et al., 2003).

Mandarin and Cantonese Studies

Not only compared to the Cantonese studies, there was an interesting finding between the present study and the research on Mandarin comprehension ability. In the present study, the comprehension ability for restricted classifiers (e.g. specific and function classifiers) which applied to limited noun reference showed better performance than non-restricted classifiers (e.g. shape classifiers) which could be used to enumerate a wider set of different things. For example, the non-restricted shape classifier 條 *tiu4* could be used with objects like fish, rope, trousers, and snakes. On the other hand, the restricted function classifier 本 *bun2*, were restricted to books. However, in the Chien et al.'s study (2003), they found that children showed similar ability in comprehending non-restricted and restricted classifiers. This difference could be explained by the fact that the stimuli of the two studies were

different. In the previous study, there were less shape classifiers as compared to the present study. As a result, the performance in the previous study might not truly reflect the clients' comprehension ability. On the other hand, there was difference between Mandarin and Cantonese classifiers. Cantonese children had more types of sortal classifiers and they had a richer and earlier onset of classifier usage. As a result, the comprehension ability of shape, function and specific classifiers might have more variation as compared to the Mandarin children.

Error Pattern of Shape Classifiers

Children in this study showed both cross dimensional as well as within dimensional substitution. In addition, there was a general pattern that as age increased, within dimension substitution increased while the cross dimension substitution decreased at the same time. The error pattern of the present study could be explained by the Primary Set Hypothesis mentioned by Mak (1991). According to this hypothesis, children acquired a set of classifiers with different dimensions. In the present study, the younger children had not acquired the primary set of classifiers which included one classifier from each dimension. As a result, they would have more varied error types that they choose classifiers randomly from any dimensions. However, as children acquired the primary set of classifiers, they had a set of classifiers which represented 1D, 2D and 3D. Then, their error types would become mainly within dimension substitution. This was because children tended to use the acquired 1D, 2D and 3D classifier in the primary set to replace all the other classifiers in their corresponding dimensions. The present study partially matched with the studies of Mak (1991). In Mak's study, children showed a high rate of within dimension substitution but rarely had cross dimension errors. The discrepancy of the error pattern between the previous and present studies could be explained by the difference in the age of the subjects between the two studies. For Mak's study, the subjects were aged from four years old. However, in the present study,

the youngest age group was three. So, the present study might show the pattern of errors for children at younger age. Moreover, as comprehension ability was more advanced than the ability to produce correct classifiers (Hu, 1993), the present comprehension task might reflect the pattern of error types at earlier stage of classifier acquisition as compared to the Mak's production study.

Limitations

In the present study, there were several limitations with regard to selection of classifier stimulus and selection criteria of subjects.

Firstly, for the mixed classifier 個 *go3*, the noun referents in the study included only apple and human which represented the semantic feature of 'roundness' and 'animacy' respectively. However, there were other semantic features which could be represented by 個 *go3* like abstract concept, container. These semantic features were not tested so that this study was not sensitive to the other semantic features represented by 個 *go3*. Children could have different comprehension ability with different semantic features with 個 *go3*. As a result, the result could be more representative if the noun referents in the study include well-rounded semantic feature of 個 *go3*.

Secondly, for each classifier in this study, there were only two familiar objects for each classifier. The stimuli chosen were determined by the prevalence of classifier-object association in adult speaker tested as well as the familiarities of the objects in the children's daily life. However, the subjects might not be equally familiar with the objects chosen. In addition, the exposure and frequency of use by adults in children's life could affect the acquisition order of classifiers (Hu, 1993). As a result, the comprehension ability of classifiers might be affected due to imbalanced stimuli selection.

Thirdly, there was no tight control on the selection of subjects in the present study. The subjects were not matched with their language age. The subjects were reported to have

normal language development by their parents and teachers. No formal language assessment was carried out in the subject recruitment process. As a result, the subjects might demonstrate various language ages which affected their comprehension ability.

Further Research

Further research could be carried out by replicate the current study and include more classifiers. There were only three specific classifiers and two mixed classifiers in this study, more classifiers could definitely be more representative to reflect the whole picture of the children's comprehension ability.

In addition, there should be more stimuli object for each classifier in the further research. Both familiar and unfamiliar object could be included. There are two advantages to include more stimuli in the experiment. Firstly, since children might have different level of exposure to objects. More stimuli could therefore balance the effect of familiarity of objects among children. Secondly, the experiment could test the children's ability to generalize the use of classifier to less familiar objects.

There were many controversial points about the acquisition trend of shape classifiers. Erbaugh (1986) suggested 1D was acquired before 2D and then 3D. Loke (1991) suggested that unmarked 3D was acquired before 1D while 1D before 2D. In Mak's study, the result demonstrated the following acquisition order: first, one 1D classifier; next, three classifiers of 1D, 2D and 3D respectively; finally, two classifiers of 2D and 3D. The results were inconclusive from these previous studies. Studies on comprehension of shape classifiers could be carried out to add information to the existing literature on the acquisition trend. The study could be very useful for us to determine the acquisition trend for shape classifiers.

The present study focused on the comprehension ability on the sortal classifiers. On the other hand, there was no study carried out on the comprehension ability of mensural classifiers. As children at very young age had spontaneous production of mensural classifiers,

the development of mensural classifier should be investigated. In addition, the future research could focus on the classifiers used more in written part. For example, 堆 *deoi3*, 排 *paai4*, 列 *lit3*. These classifiers are less common in oral language but will occur more in written Chinese.

Clinical Implication

Classifier, being an important grammatical item in Cantonese, is frequently a treatment target in speech and language treatment. Several clinical implications for both assessment and intervention could be drawn from the present study. As for assessment, the clinician could assess the use of sortal classifiers according to the sequence suggested in this study. For intervention, the result of this study could help the clinician to choose the target classifier by considering the comprehension ability of the classifiers.

Acknowledgement

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Appendix A

The Age Range and the Mean Age of the Child Sample and Adult Sample in the Experiment

Age groups	Number of participants	Age range	Mean age
G1 (3 years old)	10 M	3;02-3;11	3;06
	10 F	3;00-3;10	3;04
G2 (4 years old)	10 M	4;02-4;11	4;05
	10 F	4;00-4;11	4;04
G3 (5 years old)	10 M	5;00-5;10	5;05
	10 F	5;00-5;11	5;06
Child Sample	10 M	3;02-5;10	4;04
	10 F	3;00-5;11	4;02
Adult sample	10 M	20;05-36;08	30;02
	10 F	22;03-37;08	28;07

Note. Age range and mean age were recorded in years; months.

Appendix B

The Target Classifiers and Their Corresponding Objects Used in the Experiment

Type of classifier	Meaning	Object 1	Object 2
Shape classifier:			
枝 *zi1* (1D)	Long, thin, cylindrical and rigid	Pen	Toothpaste
條 *tiu4* (1D)	Long, thin, cylindrical and flexible	Fish	Rope
張 *zoeng1* (2D)	Thin, flat, rectangular, two dimensional extended surface	Chair	Piece of paper
塊 *faai3* (2D)	Chunk, lump or a piece of something	Biscuit	Cloth
粒 *lap1* (3D)	Small objects	Candy	Small ball
舊 *gau6* (3D)	Chunky	Rock	Eraser
Function classifier:			
本 *bun2*	Book-like, volume	Book	Exercise book
架 *gaa3*	Means of transport or electrical appliances Vehicles and other large machines	Airplane	Bus
把 *baa2*	Has a handle / held in the hands when use Tools and instruments	Knife	Ruler
間 *gaan1*	Whole flat or building	House	/
Specific classifier:			
棵 *po1*	For plant	Tree	Vegetable
封 *fung1*	Message	Letter	Lai si
幅 *fuk1*	Rectangular items	Picture	Photo
Mixed classifier:			
隻 *zek3*	For one of a pair, one of a set, vessel, non-human animate	Pig	Shoe
個 *go3*	People, small objects, abstract nouns	Human	Apple

Appendix C

The Ranked Order of Children's Correct Responses for Classifiers

3 year old	4 year old	5 years old	Child sample
*架 91.25	*架 96.25	*枝 100.00	*架 95.83
▼	↕	↕	▼
△間 67.50	*封 96.25	*把 100.00	□間 85.42
▼	▼	↕	▼
△枝 65.00	*間 90.00	*架 100.00	□枝 84.58
▼	▼	↕	▼
△棵 60.00	*把 92.50	*封 100.00	□本 83.75
↕	↕	▼	▼
△本 60.00	*本 92.50	*本 98.75	□棵 82.50
▼	▼	↕	▼
▲隻 58.75	□棵 88.75	*間 98.75	□封 82.08
▼	↕	↕	▼
▲粒 51.25	□枝 88.75	*棵 98.75	■把 79.13
▼	▼	▼	▼
▲封 50.00	□幅 80.00	*隻 97.5	■隻 78.75
▼	↕	▼	▼
○把 45.00	□隻 80.00	*條 93.75	■粒 72.08
↕	▼	↕	↕
○舊 45.00	■粒 75.00	*幅 93.75	■幅 72.08
▼	↕	▼	▼
○塊 43.75	■條 75.00	*粒 90.00	△條 69.17
▼	▼	▼	▼
○幅 42.50	△塊 66.25	□舊 86.25	△舊 65.75
▼	▼	▼	▼
○條 40.00	△舊 66.00	□張 85.00	△張 63.33
	▼	▼	▼
○張 40.00	△張 65.00	□個 83.75	△塊 62.08
▼	▼	▼	▼
•個 37.50	▲個 55.00	■塊 76.25	▲個 58.75

Note:

* > 90%	□ 80% < X< 90%	■ 70% < X < 80%	△ 60% < X < 70%
▲ 50% < X < 60%	○ 40% <X < 50%	• < 40%	
▼: Higher to lower performance		↕: Equal performance	

Appendix D

Recording Form

Name	Sex	DOB
Date	Others	

No	1		2		3	
1	裳	件	禮物	份	帽	頂
2	襪	對	帽	頂	裳	件
3	帽	頂	襪	對	禮物	份
4	帽	頂	禮物	份	裳	件

Experiment One

No	1		2		3	
1	波子	粒	餅	塊	橛	張
2	橛	張	波子	粒	石頭	舊
3	筆	枝	餅	塊	魚	條
4	魚	條	石頭	舊	波子	粒
5	魚	條	波子	粒	筆	枝
6	筆	枝	波子	粒	石頭	舊
7	橛	張	餅	塊	筆	枝
8	波子	粒	魚	條	石頭	舊
9	橛	張	魚	條	餅	塊
10	魚	條	筆	枝	波子	粒
11	餅	塊	石頭	舊	橛	張
12	橛	張	魚	條	筆	枝
13	布	塊	紙	張	糖	粒
14	糖	粒	擦膠	舊	布	塊
15	牙膏	枝	繩	條	紙	張
16	糖	粒	擦膠	舊	牙膏	枝
17	紙	張	布	塊	牙膏	枝
18	紙	張	繩	條	布	塊
19	繩	條	擦膠	舊	牙膏	枝
20	糖	粒	紙	張	擦膠	舊
21	布	塊	牙膏	枝	繩	條
22	布	塊	擦膠	舊	糖	粒
23	擦膠	舊	紙	張	布	塊
24	繩	條	牙膏	枝	擦膠	舊

Experiment Two

No	1		2		3	
1	尺	把	畫	幅	人	**個**
2	人	個	樹	棵	畫	**幅**
3	樹	**棵**	尺	把	屋	間
4	樹	棵	尺	**把**	鞋	隻
5	鞋	隻	簿	本	信	**封**
6	飛機	**架**	鞋	隻	信	封
7	畫	**幅**	屋	間	鞋	隻
8	信	封	屋	間	簿	**本**
9	樹	**棵**	畫	幅	信	封
10	信	封	樹	棵	屋	**間**
11		個	信	**封**	飛機	架
12	飛機	**架**	畫	幅	尺	把
13	尺	把	樹	棵	鞋	**隻**
14	人	個	尺	**把**	屋	間
15	屋	**間**	鞋	隻	尺	把
16	鞋	隻	簿	**本**	尺	把
17	飛機	架	鞋	**隻**	人	個
18	人	**個**	樹	棵	信	封
19	屋	間	書	本	豬	**隻**
20	書	本	屋	**間**	相	幅
21	書	本	車	**架**	屋	間
22	利是	封	書	本	較剪	**把**
23	蘋果	個	車	架	菜	**棵**
24	菜	棵	利是	**封**	屋	間
25	書	**本**	相	幅	車	架
26	蘋果	**個**	車	架	豬	隻
27	書	本	相	**幅**	利是	封
28	蘋果	個	菜	棵	車	**架**
29	書	**本**	蘋果	個	菜	棵
30	車	架	相	幅	較剪	**把**
31	相	幅	較剪	把	利是	**封**
32	屋	**間**	蘋果	個	車	架
33	書	本	蘋果	**個**	屋	間
34	相	**幅**	較剪	把	車	架
35	豬	隻	菜	**棵**	書	本
36	相	幅	豬	**隻**	利是	封

Appendix E

Parent's Consent Form

各位家長：

邀請參加研究

f

本人乃香港大學言語及聽覺科學系四年級學生，現正為發展一份可評估兒童語言能力的問卷進行研究。研究結果有助我們建立一份可評估兒童語言能力，令我們更明白兒童語言發展的進度。

現誠邀　台端參與是項研究。這項研究約需時三十至四十五分鐘。 台端將被邀請填寫一份個人資料的簡單問卷，之後再填寫一份評估兒童語言能力的家長問卷。 台端填寫問卷時，研究員亦會在場作指導及供 台端發問有關該問卷之詳細事宜。

這次研究為本人之畢業論文。研究之結果將會作公開演講，但問卷內的所有個人資料將會保密。

本人承蒙閣下合作，深表謝意。

香港大學言語及聽覺科學系四年級學生
趙殊嵐　　謹啓
二零零四年　月　日

※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※

家長同意書

本人 ______________ (家長之姓名) 為 _____________ (貴子弟姓名)之家長，同意參加上述研究，而所有個人資料將絕對保密。

家長簽署： _______________　　研究員簽署： _______________
日期： _______________　　日期： _______________

Appendix F

Questionnaire

基本資料

日期:	孩子姓名:
孩子性別:	出生日期:
電話:	
地址:	
孩子出生次序: 長子/女□ 次子/女□ ，其他 (請註明) 家中孩子總數	

接觸其他語言

除了廣東話以外，你的孩子有沒有經常地接觸到其他語言? 有□ 沒有□ 若有:	
什麼語言?	誰人教他/她?
每星期有多少天?	每天有多少個小時?
自從多少歲開始 (包括月份)?	
孩子日常生活的照顧者 菲律賓佣工□ 爺爺/麻麻/外公/外婆□ 父毋□ 其它□-_____	
照顧孩子者所用的語言 廣東話□ 英文□ 鄉下話□ 其它□_____	

健康狀況

你的孩子有没有任何健康或語言問題?

有□	若有，請簡述:
没有□	

父母資料

父親姓名:	母親姓名:
母親之職業:	父親之職業 :
請作出詳細的描述 (例如: 電腦技術員，店舖監管，牙醫助理，快餐店經理)，請勿用太空泛的描述 (例如: 醫學界，業主，自聘)	

教育程度

母親:	小學程度或以下□	中學程度□	大專程度或以上□
父親:	小學程度或以下□	中學程度□	大專程度或以上□

種族背景

母親:	父親:
請註明種族背景(例如: 中國，台灣，菲律賓，等等)	

* 請選擇適當答案 □