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<td>University of Hong Kong</td>
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<td><strong>Author(s)</strong></td>
<td>Hon, Tip-po, Judy</td>
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<td><strong>Issued Date</strong></td>
<td>2005</td>
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<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10722/56220">http://hdl.handle.net/10722/56220</a></td>
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The role of input on the development of coverb hai2 (at) locative construction in young Cantonese-speaking children

Hon Tip Po, Judy

A dissertation submitted in partial fulfilment of the requirements for the Bachelor of Science (Speech and Hearing Sciences), The University of Hong Kong, April 30, 2005.
Abstract

Usage-based theory of language acquisition (Campbell & Tomasello, 2001) suggested that the frequency of input determined the child’s early language development. The present study examined whether the input frequency related to the development of the coverb hai2 (at) locative constructions in young Cantonese-speaking children. Utterances containing coverb hai2 (at) were extracted from a corpus of spontaneous language samples from 101 children between 3;01 and 4;07 and their parents. Four types of coverb hai2 (at) locative constructions were examined. They occurred with the name of a place (Type 1), a localizer (Type 2), a noun phrase followed by localizer (Type 3) and in the context of a ‘where’ question (Type 4). The descending order of frequency tokens were 1>4>2>3 in both children and parents. The result supported the input frequency notion generally. However, further analysis of the utterances suggested that other factors, including linguistic complexity, cognitive ability, communication needs might also contribute to the children’s learning of these constructions.

Keyword: Cantonese, locative construction, coverb hai2 (at), input frequency
A number of accounts have been proposed to explain how children acquire words and adult-like linguistic constructions and words (Pinker, 1984; MacWhinney, 2001). One account, the usage-based theory, highlighted the importance of input frequency (Campbell & Tomasello, 2001). The usage-based account emphasized that language use preceded the emergence of syntactic structures (or grammar rules), and children acquired linguistic constructions in a piecemeal fashion and only after consistent exposures. According to the input frequency proposal, O’Grady (2000) stated that the more frequently a child is exposed to a specific construction/word, the earlier the child acquires that specific construction/word. This proposal has been examined in a number of studies using conversational samples.

Theakston, Lieven, Pine, and Rowland (2004) explored the role of input frequency and semantic generality on the acquisition of verbs. They examined the conversational interaction between nine normal two- to three-year-old English-speaking children and their mothers. All verbs in the children’s and parents’ utterances were classified into two types and counted. Semantically general verbs were verbs that semantically common (e.g., go, do, make). Semantically specific verbs were verbs that describe different specific aspects of meanings and differentiate them from the more general meanings (e.g., dance, comb, build). Data from this study suggested that regardless of verb types, the frequency of verbs used in the parents played an important role in the children’s acquisition of verbs. The more frequent a verb was used in the input, the earlier the verb was used in the child’s utterances.

Campbell and Tomasello (2001) investigated the acquisition of dative constructions in seven English-speaking children aged between 1;6 and 5;0 from the CHILDES database. They found out that most children produced the double-object dative construction (e.g., X gives Y the Z) before the to-dative (e.g., X gives the Z to Y) and for-dative (e.g., X makes the Z for Y)
constructions because the children heard the double-object dative construction from their parents most often. They also noticed that the verbs that were used the most often in the children’s dative constructions were those that generally occurred most frequently in the adult utterances. They, therefore, concluded that the input frequency was sufficient to account for the order of development of dative constructions in children.

Rowland, Pine, Lieven, and Theakston (2003) investigated the role of several factors in the acquisition order of wh-questions in twelve 2;0 to 3;0 English-speaking children. Using child-mother conversation samples, they measured the input frequency of the different wh-words, and determined the syntactic complexity of each wh-word and the semantic generality of the main verb used with each wh-words. They found that input frequency, statistically, was a more powerful predictor of the children’s order of acquisition of wh-questions than the syntactic complexity of the wh-word, and semantic generality of the main verbs. In addition, the input frequency could account for the order of wh-question acquisition in a majority of the children (10 out of 12).

However, Wong, and Ingram (2003) studied the acquisition of questions in Cantonese-speaking children and found that the input frequency proposal was not supported. They analyzed conversational samples from eight Cantonese-speaking children between 1;0 and 3;0 from CANCORP database (Lee, Wong, & Leung, 1996). Their use of three different types of questions: particle/intonation questions, A-not-A questions and wh-questions were examined. In addition, these different question types were also counted in a sub-sample of the utterances of the investigators and the family members who were involved in the conversations. Correlation between the children’s acquisition order and the frequency of the three question types in the input was low. The researchers argued that linguistic/cognitive factor might account for the
order of Cantonese question acquisition.

Cheung (1997) examined the acquisition of the Cantonese resultative particle *dou2* in eight Cantonese-speaking children aged between 1;5 and 3;8 from CANCORP database (Lee, et al., 1996) (which were the same subjects as in Wong and Ingram, 2003, study). She analyzed the longitudinal conversational samples between children and the investigators. She reported that children acquired the resultative particle *dou2* at the age of three, and the verb used with the resultative particle *dou2* tended to be achievement verbs (e.g., *wan2*, “find”). She also suggested that input frequency was not a major factor that could account for children’s initial preference for achievement verbs in acquisition of resultative particle *dou2*, although no input data was presented to support this claim.

Chan (2003) studied the development of dative constructions with the verb *bei2* (give) in eight aged 1;5 to 3;4 Cantonese-speaking children longitudinally from CANCORP database (Lee, et al., 1996). However, contrary to findings reported for the English dative (Campbell & Tomasello, 2001), input frequency did not support the acquisition of dative construction in Cantonese-speaking children. It was found that the non-canonical *bei2*-dative [*bei2*-recipient-theme] form (e.g., *bei2 ngo5 syu1*, “give me book”) and non-canonical serial verb [*bei2*-theme-*bei2*-recipient] form (e.g., *bei2 syu1 bei2 ngo5*, “give book give me”) were acquired earlier and used more frequently than the canonical form of *bei2*-dative [*bei2*-theme-recipient] form (e.g., *bei2 syu1 ngo5*, “give book me”), although the canonical *bei2*-dative [*bei2*-theme-recipient] form was used more often than all of the non-canonical forms in the adult input.

Based on the usage-based theory of language acquisition (Tomasello, 2003), Chan (2003) proposed that the consistency of functional items in the input would entrench the acquisition of specific constructions. Through a process that is known as schematization, children abstract a
construction after an abundant exposure of that construction in the input. Although different lexical items were used in the constructions, children’s learning would be facilitated if functional items were always present and appeared consistently in the same position. Chan’s (2003) input properties hypothesized stated that: “Children find it easier to abstract from a linguistic environment structures whose functional items consistently occur in a particular position” (Chan, 2003: 41).

To find out whether the input properties hypothesis explained the developmental findings, Chan (2003) completed a descriptive analysis of the adult bei2-dative utterances. The analysis revealed that Cantonese adults frequently omitted or displaced one of the arguments in the canonical bei2-dative [bei2-theme-recipient] form (e.g., bei2 syu1 ngo5, “give book me”). As the full canonical form was not often available for the children, it was difficult for the children to abstract this form from the input. Thus, she suggested that the input properties hypothesis accounted for the use of non-canonical bei2-dative [bei2-recipient-theme] form (e.g., bei2 ngo5 syu1, “give me book”) and non-canonical serial verb [bei2-theme-bei2-recipient] form (e.g., bei2 syu1 bei2 ngo5, “give book give me”) before canonical bei2-dative [bei2-theme-recipient] form in children.

Motivation of Study

Little research has examined the effect of input frequency and input properties on the development of linguistic constructions in Cantonese-speaking children. The current study aimed at extending the emerging research on the role of input to the development of Cantonese locative constructions. There were two reasons for the choice of locative constructions. First, it is an important notion to talk about and children talk about locations early (Tang, 1999). Children need to learn to talk about locations regardless of what language they are exposed to.
Thus, studying how children learning different languages learn to express locations allow us to examine how the nature of language affects the development course. Second, various forms are used to express locations. Tracking how each of these forms emerges will inform us what factors determine their order of development.

A number of studies have reported on the acquisition order of different prepositions (or called localizer in Cantonese) in Cantonese-speaking children, using production and/or comprehension tasks. These localizers included *loe5min6* (in), *soeng6min6* (on), *haa6min6* (under), *hau6min6* (behind), *cin4min6* (in front of) (Ho, 2000; Tang, 1999; Cheung, 1999; Chin, 1996). While these earlier studies examined the expression of location in Cantonese from a semantic/cognitive perspective, the current study aimed at investigating the development of locative expression from a syntactic perspective.

**Locative Construction in English and Cantonese**

English and Cantonese use different forms to indicate location. In English, locative expressions are indicated mainly by (a) preposition (e.g., at, in, on, under) plus a noun phrase; and (b) deictic terms (here/there):

(a) There is a suitcase at the corner of the corridor.

The dog is in/on/under the bed.

(b) Come here / Sit there.

In Cantonese, *hai2* (at) functions as a coverb rather than as a preposition, but it often corresponds to a preposition in English semantically (Matthews & Yip, 1994). A number of different constructions involve the coverb *hai2* (at) to indicate the location of an object in space without movement. According to Matthews and Yip (1994), the coverb *hai2* (at) could (a) occur alone with the name of a place; (b) be followed by another verb in a serial construction; (c) occur
with a localizer (e.g., soeng6min6, [on]) alone; and (d) occurs with a noun phrase followed by a localizer, in the pattern coverb hai2 (at) + noun phrase + localizer. An example of each of these hai2 (at) locative constructions is illustrated as the following:

(a) keoi5 ji4gaa1 m4 hai2 hoeng1kong2
   s/he now not at Hong Kong
   ‘She is not in Hong Kong at the moment.’

(b) keoi5 hai2 uk1kei2 tai2syu1
   s/he at home read-book
   ‘S/he is reading at home’

(c) gaa3 ce1 hai2 coet1min6
   CL car at outside
   ‘The car is outside [something].’

(d) keoi5 hai2 gaan1 uk1 coet1min6
   s/he at CL home outside
   ‘She/he is outside the house.’

The coverb hai2 (at) also occurs with the ‘where’ question word, bin1dou6 or bin1:

(e) nei5 hai2 bin1 aa3 ?
   you at where PRT
   ‘Where are you?’

nei5 zyu6 hai2 bin1dou6 gaa3 ?
   you live at where PRT
   ‘Where do you live?’

In this study, the use of coverb hai2 (at) in a serial verb construction (b) was not
examined as a separate type of hai2 (at) locative constructions. The use of coverb hai2 in a serial verb construction could be re-classified into either one of the remaining types of hai2 (at) locative construction, if the lexical verb was not considered. For example, with the verb tai2syu1 (read-book) in (b) was not considered, hai2 uk1kei2 (at home) actually belongs to category (a), that is, hai2 (at) occurring with the name of a place.

Research Questions and Hypotheses

The following research questions were examined in the present study:

1. What were the different types of the hai2 (at) locative constructions? What was the frequency of the different types of hai2 (at) locative constructions? What was the frequency order of the different types of the hai2 (at) locative constructions? These questions were examined both in children’s and in parents’ productions.

2. How did the frequency order of the different types of hai2 (at) locative constructions in children’s production correspond to the frequency of hai2 (at) locative constructions in parents’ input?

3. How were the properties of these hai2 (at) locative constructions in the input related to the development of hai2 (at) locative construction in young Cantonese-speaking children?

Based on the input frequency proposal, it was predicted that the more frequent a specific hai2 (at) locative construction was found in the parents’ samples, the more frequent that particular hai2 (at) locative construction occurred in the children’s samples. Based on the input properties proposal, the more consistent a specific hai2 (at) locative construction occurred in adult input, the easier the children could abstract that particular hai2 (at) locative construction and the more frequent that particular hai2 (at) locative construction occurred in the children’s samples.
Methodology

Nature of Data

Data for this study came from the corpus of language samples collected for a longitudinal project on the development and early literacy in Cantonese-speaking children in Hong Kong (McBride, Tardif, Shu, & Wong, 2003-2008). The corpus consisted of 268 samples of conversations between children and their parents. The parents were asked to engage their children in a conversation like they normally would. Each child-parent conversation lasted for ten to fifteen minutes. These conversations developed around a standard set of objects including a cook set, some building blocks and two cars. Samples from 101 child-parent pairs were transcribed orthographically from audio-records. They were entered in CHAT format by trained research assistants. The author and another student who used this data set cleaned up all the format errors and each transcribed four samples from children who were identified as late talkers (but not included in the 101 subjects) as a contribution to the data-base.

Table 1

The 101 children age range and their distribution

<table>
<thead>
<tr>
<th>Age range</th>
<th>No. of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>3;01 - 3;06</td>
<td>22 (21.8%)</td>
</tr>
<tr>
<td>3;07 - 4;00</td>
<td>49 (48.5%)</td>
</tr>
<tr>
<td>4;01 - 4;06</td>
<td>28 (27.7%)</td>
</tr>
<tr>
<td>4;07</td>
<td>2 (2.0%)</td>
</tr>
</tbody>
</table>

Table 1 showed the age distribution of the 101 children. There were 44 female and 57 male. Majority of the children (nearly 80%) were 3;07 years old or older. All of the children
were native Cantonese speakers and no diagnosis of language impairment was reported by their parents.

Data Analysis

The children and parents utterances containing the coverb *hai2* (at) were identified by the CLAN commands (MacWhinney & Snow, 1985) \([\text{kwal} + \text{s'□'} + \text{t*CHI}]/[\text{kwal} + \text{s'□'} + \text{t*MOT}]/[\text{kwal} + \text{s'□'} + \text{t*DAD}]\). Given that the coverb *hoeng2* (at) is a variant of *hai2* (at) in Cantonese (Matthews & Yip, 1994), the number of children and parents utterances containing the coverb *hoeng2* (at) were also identified.

The coverb *hai2* (at) can occur with the general locative particle *dou6* before the main verb to describe an action in progress. In such circumstances, *hai2dou6* (at here/ASP) functions as an aspect marker (Matthews & Yip, 1994), as illustrated below:

\[
\text{ngo5 hai2dou6 waat6 gan2 waa2}
\]

I ASP draw ASP picture

‘I’m drawing picture’

The CLAN command \([\text{kwal} + \text{s'□'} + \text{t*CHI}]/[\text{kwal} + \text{s'□'} + \text{t*MOT}]\) were used to extract all utterances containing the word *hai2dou6* (at here/ASP) from the children and the parents separately for later decision on its locative function or aspect marking.

After all these target utterances were extracted, some of the utterances were excluded for the following reasons:

1. Utterances containing unintelligible words (coded as xx or xxx) (e.g., *baai2 hai2 bin1 xxx ?*, “where to put xxx?”).
2. Incomplete utterances (coded as +/. or +…) (e.g., *baai2 hai2 +..., “put at +…”*)
3. Direct or partial imitations of the preceding 3 adult turns
4. *hai2dou6* which demonstrated the aspectual meaning rather than the prepositional meaning (e.g., *ngo5 hai2dou6 cai3 gan2 ze4ze1 go3 wun6geoi6*, “I’m building sister’s toy”)

Eventually, only complete and intelligible utterances were included for the present study. Some utterances showed production errors such as retracing (coded as [\[/\]] or [\[\]/\]] or [\[[\]]] (e.g., *baai2 hai2 <ni1>[\[/\]] ni1dou6*, “put at <here>[\[/\]]here”). In such situation only the final version of the utterances was included and analyzed (i.e., *baai2 hai2 ni1dou6*, “put at here”).

Different types of *hai2* (at) locative construction used in children and parents were categorized and counted. The 4 types were:

1. Type 1: occur alone with the name of a place (e.g., *hai2 hoeng1kong2*, “at Hong Kong”)
2. Type 2: occur with a localizer alone (e.g., *hai2 coet1min6*, “at outside”)
3. Type 3: occur with a noun phrase followed by a localizer (e.g., *hai2 gaan1 uk1 coet1min6*, “at home outside”)
4. Type 4: occur in a context with ‘where’ question word (e.g., *hai2 bin1dou6*, “at where”)

The uses of *hai2* (at) locative constructions were examined. According to Cheung (1990), locative constructions could be classified as (a) static location (LOC\(_{at}\)) (e.g. *ngo5 hai2 ni1dou6*, “I am here”); (b) locative source (LOC\(_{from}\)) (e.g. *ngo5 hai2 ni1dou6 paa4 soeng5 hoey3*, “I crawl from here”); and (c) locative goal (LOC\(_{to}\)) (e.g. *ngo5 paa4 soeng5 so1faa2 dou6*, “I crawl to sofa”). In her classification, the coverb *hai2* (at) can appear in LOC\(_{at}\) or LOC\(_{from}\) constructions.

In addition, analyses were conducted to examine plausible errors in the use of the *hai2* (at) locative constructions. Initial observation of the utterances indicated that the construction “*hai2 …… dou6*” appeared frequently in both the children’s and parents’ utterances. Therefore, CLAN commands [kwal +s’xx’ +t*CHI] were used to extract utterances containing these *dou6* (general locative particle), *nei1dou6* (here) and *go2dou6* (there) in both children and parents.
sample. Each of these utterances was examined by hand to identify situations in which children and parents did not use the coverb *hai2* (at) with these words.

Another plausible error in the use of the *hai2* (at) locative construction is the omission of the general locative particle *dou6*. In Cantonese, general locative particle *dou6* was required to turn a noun which is not the name of a place to a noun for denoting as a place (e.g., *hai2 maa1 mi4 dou6*, “at Mum’s place”). Other error patterns of the *hai2* (at) locative constructions were noted in children’s utterances.

**Reliability**

Ten percent of utterances from the children and parents were randomly selected for inter-rater and intra-rater reliability check. Two students from Division of Speech and Hearing Sciences were trained to categorize the different types of *hai2* (at) locative constructions. By calculating the percentage agreement (Shaughnessy, Zechmeister, & Zechmeister, 2003), the reliability for the two inter-rater and the intra-rater were 100%.

**Result**

Forty-four of the 101 children and fourteen of the 101 parents did not produce any *hai2* (at) locative constructions in the samples collected. The remaining 57 children used between 1-7 tokens of these constructions and the remaining 87 parents used 1-14 tokens of these constructions. There were 5 child-parent pairs who did not produce any *hai2* (at) locative constructions.

The children and the parents produced 110 tokens and 366 tokens of *hai2* (at) locative constructions respectively. Although, according to Cheung (1990), the coverb *hai2* (at) can indicate static location (*LOCat*), or locative source (*LOCfrom*), all of the productions using the
coverb *hai2* (at) was LOC\textsubscript{at} in both children and parents. When children’s utterances were examined, out of the 110 tokens, only 2 tokens were considered as non-adult patterns. Both of them were utterances without the general locative particle *dou6* where it was needed (see Appendix A).

*Four Types of Locative Constructions with Coverb hai2 (at)*

The children and parents produced 110 tokens and 366 tokens of *hai2* (at) locative constructions. Both children and parents produced all four types of *hai2* (at) locative constructions. The children’s and parents’ frequency of use of the different types in descending order were: Type 1, Type 4, Type 2 and Type 3. The majority of children (72.4%) and parents (66.9%) used Type 1 (occur alone with the name of a place) *hai2* (at) locative constructions. The number of tokens and the percentage of different types of *hai2* (at) locative constructions in the children and parents samples are shown in Table 2.

**Table 2**

*The number of tokens (and the percentage) of different types of hai2 (at) locative constructions in children and parents*

<table>
<thead>
<tr>
<th>Type</th>
<th>Children (n=110)</th>
<th>Parents (n=336)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 (Occur alone with name of place)</td>
<td>80 (72.7%)</td>
<td>245 (66.9%)</td>
</tr>
<tr>
<td>Type 2 (Occur with a localizer alone)</td>
<td>10 (9.1%)</td>
<td>36 (14.7%)</td>
</tr>
<tr>
<td>Type 3 (Occur with noun phrase followed by localizer)</td>
<td>3 (2.7%)</td>
<td>17 (4.6%)</td>
</tr>
<tr>
<td>Type 4 (Occur in a context with “where” question word)</td>
<td>17 (15.5%)</td>
<td>68 (18.6%)</td>
</tr>
</tbody>
</table>

*Further Analysis of Type 1*

The children and parents produced 80 tokens and 245 tokens of Type 1 (occur alone with
the name of a place) *hai2* (at) locative constructions. The number of tokens and the percentage of different noun phrase used to specify place in children and parents samples are shown in Table 3.

Table 3

*The number of tokens (and the percentage) of different noun phrase used to specify place in Type 1 *hai2* (at) locative constructions*

<table>
<thead>
<tr>
<th>Different noun phrase used</th>
<th>Children (n=80)</th>
<th>Parents (n=245)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deictic term “here” (e.g., <em>hai2 nil dou6</em>, “at here”)</td>
<td>61 (76.3%)</td>
<td>162 (66.2%)</td>
</tr>
<tr>
<td>Deictic term “there” (e.g., <em>hai2 go2 dou6</em>, “at there”)</td>
<td>5 (6.3%)</td>
<td>12 (4.9%)</td>
</tr>
<tr>
<td>Specific place name (e.g., <em>hai2 fong2 dou6</em>, “at room”)</td>
<td>6 (7.5%)</td>
<td>36 (14.7%)</td>
</tr>
<tr>
<td>Others (e.g., <em>hai2 fong2 go2 dou6</em>, “at room over there”)</td>
<td>8 (10.0%)</td>
<td>35 (14.3%)</td>
</tr>
</tbody>
</table>

Table 3 showed that both children and parents used different noun phrases in Type 1 (occur with the name of a place) *hai2* (at) locative constructions. The children’s and parents’ frequency of different types in descending order were: deictic term “here”, specific place name and deictic term “there”. The majority of children (76.3%) and parents (66.2%) used deictic term “here” in the noun phrase of Type 1. Ten percent and 14.3% of tokens in children and parents used other noun phrase to specify the place.

*Further Analysis of Type 3*

The children and parent produced 3 tokens and 17 tokens in Type 3 (occur with noun phrase followed by localizer) *hai2* (at) locative constructions. The children barely used the Type 3 (with a noun phrase followed by localizer) *hai2* (at) locative constructions and the children used deictic term “here” in the noun phrase for 2 out of 3 tokens. When parents used Type 3
(occur with noun phrase followed by localizer) hai2 (at) locative constructions, the majority (82.4%) used specific place name in the noun phrase and a few (11.8%) used deictic term ‘here’ in the noun phrase. The number of tokens and the percentage of different noun phrase used in children and parents samples are shown in Table 4.

Table 4

The number of tokens (and the percentage) of different noun phrase used to specify place in Type 3 hai2 (at) locative constructions

<table>
<thead>
<tr>
<th>Different noun phrase used</th>
<th>Children (n=3)</th>
<th>Parents (n=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deictic term “here”</td>
<td>2 (66.7%)</td>
<td>2 (11.8%)</td>
</tr>
<tr>
<td>(e.g., hai2 ni1dou6 loe5min6, “at here outside”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deictic term “there”</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>(e.g., hai2 go2dou6 loe51min6, “at there outside”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific place name</td>
<td>0 (0.0%)</td>
<td>14 (82.4%)</td>
</tr>
<tr>
<td>(e.g., hai2 fong2 loe5min6, “at room outside”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>1 (33.3%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td>(e.g., hai2 fong2 go2dou6 loe5min6, “at room over there outside”)</td>
<td></td>
<td></td>
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</table>

The Use of Coverb hai2 (at) in hai2 (at) Locative Constructions

In order to examine whether children omitted the coverb hai2 (at) in hai2 (at) locative constructions, 53 utterances with the general locative particle dou6, 322 utterances with the deictic term ni1dou6 (here), and 31 utterances with the deictic term go2dou6 (there) were extracted. Out of the 53 utterances with dou6, 322 utterances with ni1dou6 (here) and 31
utterances with go2dou6 (there), 18 utterances with dou6, 57 utterances with ni1dou6 (here) and 9 utterances with go2dou6 (there) were used to express location. Table 5 shows the breakdown of these numbers into whether the coverb hai2 (at) was found in these locative constructions.

Table 5

The number of general locative particle dou6, and deictic terms ni1dou6 (here) and go2dou6 (there) and the number of tokens with or without coverb hai2 (at) in locative construction of children

<table>
<thead>
<tr>
<th>Presence of hai2 (at)</th>
<th>dou6 (n=18)</th>
<th>ni1dou6 (n=57)</th>
<th>go2dou6 (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locative construction with coverb hai2 (at)</td>
<td>12</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>Locative construction without coverb hai2 (at)</td>
<td>6</td>
<td>25</td>
<td>3</td>
</tr>
</tbody>
</table>

where it was needed

A total 50 locative constructions with dou6, ni1dou6 (here) and go2dou6 (there) included the coverb hai2 (at). However, children used 34 locative constructions without the coverb hai2 (at) to express the static location (LOCat). Among the 34 locative constructions without the coverb hai2 (at), 27 of them followed the lexical verb baai2 (put). Such a baai2 (put) without coverb hai2 (at) in locative construction was found in 21 children (e.g., baai2 ni1dou6, “put here”).

Given that the author, a native Cantonese speaker, sometimes used the verb baai2 (put) without the coverb hai2 (at) in locative constructions, a simple judgment task was given to examine the use of baai2 (put) in these contexts in a larger group of Cantonese speakers. Ten native Cantonese speakers were invited to judge if the sentences were acceptable and to suggest a correction if they were unacceptable. These judges first read 10 written sentences, in which
two were locative constructions extracted from the children samples. They were (a) \textit{baai2 nildou6 laa1} (put it here), and (b) \textit{nil go3 hai6 baai2 go2dou6} (this is put there). These locative constructions contained the verb \textit{baai2} (put) without coverb \textit{hai2} (at). The remaining eight sentences were sentences of unrelated constructions and served as distractors (see Appendix B).

The majority of judges (70\%) considered the use of the verb \textit{baai2} (put) in the two locative constructions without the coverb \textit{hai2} (at) acceptable. For those who considered the utterances unacceptable, all would suggest that the coverb \textit{hai2} (at) should be added after the verb \textit{baai2} (put).

In order to find out the consistency of the use of the coverb \textit{hai2} (at) with the verb \textit{baai2} (put) in static context, the CLAN command [kwal] was used to extract all of the utterances with the verb \textit{baai2} (put) in the children and parents samples. Parents produced 221 utterances with the verb \textit{baai2} (put) and 152 of them (68.8\%) included the coverb \textit{hai2} (at). Children used 75 utterances with the verb \textit{baai2} (put) and 35 of them (46.7\%) included the coverb \textit{hai2} (at). While parents used the verb \textit{baai2} (put) without the coverb \textit{hai2} (at) in one-third (31.2\%) of their utterances, children used the verb \textit{baai2} (put) without the coverb \textit{hai2} (at) in half (53.3\%) of their utterances.

Discussion

In this section, I will discuss findings from this study in relation to the external factors, including input frequency, communication needs and input properties; and internal factors, including linguistic complexity and cognitive ability. In this study, external factor was defined as the environment the children experienced and foster the children language acquisition while internal factor was defined as the children’s own ability or competence.
Input Frequency

Input frequency was considered an external factor of children language acquisition. According to the input frequency proposal, the more frequently a child is exposed to a specific construction, the more frequently the child produces that specific construction (Campbell & Tomasello, 2001).

The present study generally supports the input frequency hypothesis. For the different types of hai2 (at) locative constructions (Table 2), both children and parents used the coverb hai2 (at) with the name of a place (Type 1) most often, followed by hai2 (at) with ‘where’ question word (Type 4), and then hai2 (at) with a localizer (Type 2), and they used the coverb hai2 (at) with a noun phrase followed by a localizer (Type 3) least often. The result showed that the children and parents used these different types of hai2 (at) locative constructions in the same order of frequency. In addition, the relative frequencies of these different types of hai2 (at) locative constructions in the children and parents samples were very similar (reflected by percentage).

When the use of coverb hai2 (at) in each type was examined individually, some of the findings also supported the input frequency hypothesis. For the different types of noun phrase used in the coverb hai2 (at) with the name of a place (Type 1) (Table 3), both children and parents used deictic term nildou6 (here) to signal the places more frequently than the specific name of place (e.g. fong2dou6 [bedroom]) and they barely used deictic term go2dou6 (there) in the noun phrase of Type 1. Their frequency orders are the same.

However, the children used specific place and the deictic term go2dou6 (there) in similar frequency (six tokens in specific place and five tokens in deictic term go2dou6 [there]) while the parents used more specific place than the deictic term go2dou6 (there) (36 tokens in specific
place and 12 tokens in deictic term go2dou6 [there]). This result could not be fully explained by the input frequency hypothesis.

When the use of the coverb hai2 (at) with a noun phrase followed by a localizer (Type 3) was analyzed, the input frequency hypothesis was questioned. For the different types of noun phrase used in Type 3 (Table 4), out of the 17 tokens, the parents used specific place in the noun phrase for 14 tokens (82.4%) while the children did not use specific place in the noun phrase. Instead, the children used deictic term ni1dou6 (here) in the noun phrase for 2 tokens (66.7%) out of the 3 tokens. The children’s frequency of use of this Type 3 hai2 (at) locative construction showed that the frequency orders are different in children and parents.

Findings from Chan’s (2003) study did not support input frequency. Findings from this study generally supported input frequency, although some of the data did not suggest it was the only factor in children’s development of hai2 (at) locative constructions.

In summary, input frequency seemed to play a major role in the production of the different types of hai2 (at) locative constructions. But the effect of input frequency was undermined when we looked into the different words used in the noun phrases in the coverb hai2 (at) constructions.

Other contributing factors

Linguistic Complexity. Linguistic complexity was considered an internal factor of children language acquisition. Bates and MacWhinney (1989) believed functional readiness which included linguistic complexity determined early child language acquisitions. Based on this, it was hypothesized that the more complicated the constructions, the later the children would acquire them, and the less frequently the children would produce that construction.

For the different types of hai2 (at) locative constructions, the coverb hai2 (at) with the
name of a place (Type 1) and the coverb *hai2* (at) with a localizer (Type 2) should be easier than the coverb *hai2* (at) with a noun phrase followed by a localizer (Type 3). It was because Type 3 involved the components of Type 1 and Type 2. Therefore, in order to produce Type 3, the children should have acquired Type 1 and Type 2.

When the results of Type 1 and Type 2 versus Type 3 (Table 2) were examined, out of the 110 tokens, the children produced 80 tokens in Type 1 and ten tokens in Type 2 (accounted for 72.7% and 9.1% respectively), while only three tokens in Type 3 were produced (accounted for only 2.7%). This finding provided initial evidence in support of the linguistic complexity notion. However, the linguistic complexity notion could not explain the large gap between Type 1 and Type 2. The children used Type 1 much more often than the Type 2 (72.7% and 9.1% respectively).

*Cognitive ability.* Cognitive ability was considered an internal factor of children’s language acquisition. In order to produce localizer/preposition, the children must be able to conceptualize the position of an object relative to the space created by another referent object (Levinson, 2003). In addition to the combination of linguistic frames required, the children could use the language as a means to express the specific location.

Children expressed location in the form of two-word semantic relations (e.g. action-location) as young as 18-24 months (Brown, 1973; Paul, 2001). To express location, Cantonese speakers used different types of *hai2* (at) locative construction. Cheung (1990), in her experimental research, found that children at age three had mastered the production of LOC\textsubscript{at} (static location) which was equivalent to the *hai2* (at) locative construction in present study. But different localizers emerged between two to five years old (Tang, 1999). The coverb *hai2* (at) with the name of a place (Type 1) did not involve a localizer while the coverb *hai2* (at) with a
localizer (Type 2) and the coverb *hai2* (at) with a noun phrase followed by a localizer (Type 3) involved localizer. In order to produce Type 2 and Type 3, the children needed to have acquired localizer.

Therefore, Type 1 might be easier than that of Type 2 and Type 3. When the results of Type 1 versus Type 2 and Type 3 (Table 2) were examined, the cognitive ability notion could explain the findings that children produced much more tokens of Type 1 (72.7%) than that of Type 2 and Type 3 (9.1% and 2.7% respectively).

*Communication needs.* Communication needs was considered an external factor of children’s language acquisition. To avoid communication breakdown, speakers generally produced sentences with explicit meanings. This affected speakers’ choice of words during the interaction. Hence, children and parents would use less vague sentence.

The present study suggested the possibility that communication needs might also contribute to the findings of the study. For the different types of noun phrase used in the coverb *hai2* (at) with the name of a place (Type 1) (Table 3), both children and parents used deictic term *ni1dou6* (here) to signal the places more frequently than the specific name of place (e.g., *fong2dou6*, [bedroom]) and they barely used deictic term *go2dou6* (there) in the noun phrase of Type 1.

The usage of deictic term *go2dou6* (there) involved the reference point of the speaker and the shifting boundaries of the objects (Clark & Sengul, 1978). During the conversational context, gesture (e.g., pointing) was needed to accompany the deictic term *go2dou6* (there) to prevent communication breakdown (Clark & Sengul, 1978). Therefore, the usage of deictic term *go2dou6* (there) was quite non-specific and could be very vague without gestures. Due to this communicative reason, both children and parents might choose to use the specific name of place
to signal the location, as Levinson (2003) pointed out that named locations can solve the problem of location specification.

Although the usage of the deictic term *ni1dou6* (here), involved the reference point of the speaker and the shifting boundaries, like the deictic term *go2dou6* (there) (Clark & Sengul, 1978), its use was not likely to cause a communication breakdown in a free play conversational context. It was because the joint attention between the interaction of the children and parents, speech context and the activities would add further points of reference (Levinson, 2003) for both the children and parents. Therefore, deictic term *ni1dou6* (here) was used more frequently than name of place and which in turn was used more frequently than the deictic term *go2dou6* (there) in Type 1.

*Input Properties*

According to the proposal, the consistency of the construction used in the adult pattern would affect the children’s acquisition of that construction (Chan, 2003). In other words, if the adult pattern of the particular construction was consistent (the functional items/elements involved in the construction were the same all the time), it would encourage the child to abstract and acquire that construction. In this case, the coverb *hai2* (at) was the functional item in this study.

Both children and parents used the *hai2* (at) locative construction to express a static location (LOC\textsubscript{at}). To examine if the coverb *hai2* (at) appeared consistently in children’s and parents’ samples, an in-depth analysis was carried out. Results from the analysis of *hai2* (at) locative constructions preceded by the lexical verb *baai2* (put) in the parents samples indicated that a majority of these utterances (68.8%) were used with the coverb *hai2* (at) but one-third of these utterances (31.2%) were used without the coverb *hai2* (at). These findings on pattern of
use were consistent with adult knowledge. As reflected from the judgment task by ten adult native Cantonese speakers, out of the 20 tokens, 70% were judged as acceptable with the verb *baai2* (put) without the coverb *hai2* (at) to express a static location. All of those who considered the sentences were unacceptable would correct the sentences and believed the coverb *hai2* (at) was missing. These showed that the parent input in using the verb *baai2* (put) in expression of LOC<sub>at</sub> was not consistent at all.

When examining the children’s use of the verb *baai2* (put) in expression of LOC<sub>at</sub> in the samples, half of the utterances (46.7%) used the verb *baai2* (put) together with the coverb *hai2* (at) to express the static location. This showed that the children usage was not consistent as well. The inconsistent use of coverb *hai2* (at) with the verb *baai2* (put) in children can be explained by the inconsistent use of parent speech.

In summary, the absence of coverb *hai2* (at) in expression of LOC<sub>at</sub> with the verb *baai2* (put) suggested input properties might play a role in children language acquisition.

**Conclusion**

The results of the present study indicated that although child learning’s is determined by frequency of input, (i.e., the more you hear it, the more likely you will learn it), it is not the only factor. It also depended on the other factors, including the linguistic complexity, cognitive ability, communication needs and input properties. Factors both external and internal to the child would contribute to the early child language acquisition.

**Future Directions**

First, the present study, which examined the effects of input frequency on the child language development, was the first study which used the data-base of parent-child interaction rather than investigator-child interaction data. Using parent-child interaction data can ensure the
adult input was those of children’s caregivers and the researchers can investigate the input more directly. Thus, using parent-child interaction samples was recommended for future studies.

Second, the present study was a cross-sectional design study of short samples with a large group of children. This allowed us to see the general picture of specific construction development in young children. However, it did not provide information about how the children acquire the specific construction. Thus, in order to find out the children’s acquisition pattern of specific construction, future studies could include a longitudinal study of a small group of children. These samples allow the researchers to find out how the construction develops in relative to parental input over time in children, and the error patterns during the emergence of the construction could be marked.

By using a longitudinal design, future studies could also avoid the problem of assuming a group of child-parent pairs as one child-parent pair. In the present study, there were 101 children and parents pairs. However, they were considered as one child and parent throughout the analysis due to the fact that the number of target utterances was too small for individual pair comparison.

Third, children between age 3;01 and 4;07 used the hai2 (at) locative constructions with barely any non-adult patterns. Such a small number of error patterns suggested that children aged 3;01 or above has mastered the use of hai2 (at) locative constructions. In order to capture the children’s production of hai2 (at) locative constructions from the emerging stage to acquisition stage, future studies should consider children below 3;01 as subjects.

In terms of learning, input frequency and consistency of the hai2 (at) locative constructions were important for children to extract the constructions. Also, other factors including linguistic complexity, cognitive ability and communication needs needed to be
considered as well. For those language impaired, the presentation of one construction more frequently, and with fewer varieties within the constructions were recommended.

Acknowledgements

I would like to express my gratitude to my supervisor, Dr Anita Wong for her advice, guidance and support in the study. We also acknowledge the support of the Research Grants Council of the Hong Kong Special Administrative Region (Project reference 4257/03H), and the Chou's Foundation Fund under the Student Campus Work Scheme 2004/05, The Chinese University of Hong Kong (Ref. No. C04154) for the data reported in this project. We also thank Miss Ka-wai Leung and her research colleagues at The Chinese University of Hong Kong for samples transcription, and coordination of the transcription exercise. Also, I would like to thank Miss Agnes Chan and Miss Kobe Lam for performing reliability check and providing spiritual support throughout the year.
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Appendix A

*Non-adult Patterns in Children's Utterances*

1. 12313117TKH, line 413

Child: ngo5 gaa3 ce1 hai2 toi2 aa3

I CL car at table PRT

“My car is at the table”

2. 22418130MKC, line 415

Child: ni1 go3 kau3 hai2 hok6haau6 [//] ni1 go3 kau3 hai2 syu1baau1, dan6hai6 laan6 zo2

This CL hang at school this CL hang at schoolbag but broken ASP

“This hang at the school [//] this one hang at the schoolbag, but it has broken”
Appendix B

The Simple Judgment Task for the Ten Cantonese-Speaker Adult

請判斷以下口語化句子是否正確。如不正確或你認為沒有人會這樣說，請 X 及糾正。

例： 跌公仔
    公仔跌
    婆婆食飯喇 ✓
    妹妹飯 x 妹妹食飯

1. 戴眼鏡啦
2. 去麥當勞早餐
3. 擺呢度呀
4. 我玩緊煮飯仔
5. 哥哥飯食
6. 跌呢度  x
7. 收埋呢度
8. 我有汽水呀
9. 俾餅我
10. 呢個係擺呢度