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<th>The development of concrete noun and abstract noun definition</th>
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<td>Other Contributor(s)</td>
<td>University of Hong Kong</td>
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<tr>
<td>Author(s)</td>
<td>Chau, Ching-shui, Water; 周靑水</td>
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THE DEVELOPMENT OF
CONCRETE NOUN AND ABSTRACT NOUN DEFINITION

CHAU Ching Shui, Water

A dissertation submitted in partial fulfillment of the requirements for the Bachelor of Science
(Speech and Hearing Sciences)
The University of Hong Kong
May 4, 2001
Abstract

This study charts the development of the ability to define. A total of 70 participants (20 at each of the ages of 8, 11 and 14; 10 at the age of 23 years) defined eight concrete and eight abstract nouns. Each definition was coded to identify the types of responses present in it. Results indicated that there was age-related change in definition content.

All four age groups defined concrete nouns and abstract nouns mainly by characteristic responses. Results showed that 8-year-old children defined nouns differently from other age groups. With increasing age, there was a trend of using more characteristic and class responses. Negation and co-ordinate responses were infrequent in both noun types at all ages. The development of abstract noun definitions follows the development of concrete noun definitions. Definition changes in concrete nouns and abstract nouns across age would be discussed in this study.
Introduction

The most formal types of definition was so-called “dictionary” definition or Aristotelian, which was “a type of definition that mentions both the superordinate category term and one or more characteristics of the word” (Nippold, Hegel, Sohlberg & Schwartz, 1999). It could be expressed as a formula containing two essential elements, the genus and the differentiae, which helped to distinguish one thing from another (e.g., “Man is an animal which is two-footed and featherless”). Such definitions could be written symbolically as “X is a Y that Z,” where X was the definiendum, Y was its superordinate category, and Z was one or more characteristics of X (Markowitz & Franz, 1988). Other types of definitions, which were more naturalistic, include operational, where a term was defined in relation to a specific situation, or involve negation, comparison, or example, etc.

Previous researches on the development of definitions mainly focused on two different aspects, content and form. Content referred to the semantic information given in a definition (i.e., whether a definition included different types of information, for example, functional and relational) and form referred to the linguistic form in which a definition was presented (i.e., whether a definition included a superordinate term with some other characteristics).

Moreover, the studies also focused on two types of nouns, concrete noun and abstract noun. “A noun can be said to be concrete to the extent that it denotes tangible objects and abstract if it has no tangible objects in its extension” (Flavell, 1970; Klausmeier, Ghatala & Frayer, 1974; cited in McGhee-Bidlack, 1991, p418). However, abstract nouns have been used as stimuli in research on definitions much less often than concrete nouns.

To date, only one published study had systematically examined the content and compared the ability of children and adolescents to define concrete nouns and abstract nouns. In reviewing the literature, McGhee-Bidlack (1991) asked students ages 10, 14, and 18 (n=120) to define eight
concrete nouns (e.g., flower, book) and eight abstract nouns (e.g., wisdom, freedom). Results indicated that, for all three age groups, concrete nouns were easier to define than abstract nouns. Whereas concrete nouns were defined mainly in terms of their class (e.g., “Flower is a kind of plant) and characteristics (e.g., “Book is made of paper), abstract nouns were defined mainly in terms of their characteristics, with their category terms often omitted (e.g., Freedom means you can do what you want to do”). Definitions of both types of nouns gradually improved as student age increased, but even at age 18, definitions of abstract nouns were far less sophisticated than those of concrete nouns, often lacking the appropriate superordinate term. The content of concrete noun definitions is more complex than abstract noun definitions at each age level, and the complexity of definition patterns also increases with age. The author suggested that development of abstract noun definitions follows the development of concrete noun definition.

Another research done by Nippold et al. (1999) focus on the study of abstract nouns without comparison to concrete nouns. 240 subjects were divided into four age groups (12, 15, 18 and 23) and were asked to write down each definition of sixteen abstract nouns. This study only analyzed for the Aristotelian style of the definition (i.e., the form), but not the content or the different information provided in the subjects’ definitions. The study found that there was an increasing tendency for using appropriate category to which a word belongs and core features of the word from late childhood to early adulthood.

Other studies examined word definition in children, mainly by presenting common nouns that referred to tangible objects, i.e., concrete nouns (e.g., Benelli, Arcuri & Marchesini, 1988; Snow, 1990; Wehren, De Lisi & Arnold, 1981). Wehren et al. (1981) had investigated the content and the form of concrete noun definition made by children. The study concluded that an age-related shift form definitions which described only functional properties to definitions which conveyed descriptive as well as functional information.
Moreover, with increasing age, subjects learned to define words using the more mature Aristotelian style, that is, including the superordinate with some addition core characteristics. This study confirmed Litowitz's (1977) predictions: younger children were more likely to use simple lower level forms; older children approximated the more advanced form, and adults used the Aristotelian form consisting of a class name coupled with specific modifications. The forms of definition also reflected a progression from personal experience to more general social information, and towards syntactically more complex sentence frames.

However, only Johnson and Anglin (1995) focused on different types of words such as nouns, verbs, adverbs, adjectives and even idioms. They also studied the effect of part of speech and morphological composition on children's ability in defining words. It was found that children generally were more successful in expressing precise semantic content than in using conventional form.

Although the results obtained from the research on the development of definitions are consistent, there are some methodological problems or limitations. Firstly, subjects were not given the opportunity to generate more than one definition responses (e.g. Litowitz, 1977; Watson, 1985) and this may have led to an underestimation of their ability. Secondly, in some studies the categories used to classify definition were not mutually exclusive and too simple (e.g. Benelli et al, 1988; Wehren et al., 1981). For instance, the scoring system of Wehren et al. (1981) was only divided into functional (an object's use of an action it could perform), concrete (an object's descriptive, perceptual attributes), relational (use of an analogy) and combinatorial (any combination of the three major categories) responses. This resulted in a loss of valuable information concerning the subjects' definitions. Lastly, not many studies compared across school-age children's and young adult's ability to define, which do not give a clear picture on the developmental trend of making definition (e.g., McGhee-Bidlack, 1991; Watson, 1985). In the
McGhee-Bidlack (1991) study, even the oldest adolescents, at age 18, experienced difficulty defining abstract nouns. For this reason, it was important to determine what improvements might occur beyond the adolescent year.

Being inspired by McGhee-Bidlack’s (1991) study, the present investigation focused on the changes in content of the concrete nouns definition and abstract nouns definition made by Cantonese-speaking subjects across school age children to young adults. The present investigation was an attempt to overcome the above methodological difficulties in order to clarify developmental trends in word definition. Firstly, all subjects were encouraged to provide more than one definition per word. Secondly, the classification system of definitional responses was based on the study of McGhee-Bidlack (1991) which designed with a more complete coding. Thirdly, a 23-year-old age group was included in order to find the trend of definitional skills beyond late adolescent.

**Aims of Study**

The purpose of this study is to chart the development of both concrete and abstract noun definitions given by 8-, 11-, 14- and 23-year-olds and to discover whether abstract and concrete nouns were defined in a parallel fashion at a given age. We would like to find out whether the Cantonese-speaking subjects had the similar developmental trend with the researches done by other language (e.g., McGhee-Bidlack, 1991).

The present study aimed at the followings:


2. Determining if there was a difference of different types of responses produced by each age group in defining concrete and abstract nouns.
Hypothesis

Word definition requires an individual to reflect on the lexicon and to state explicitly what is known implicitly (Watson, 1985). Thus, defining is a metalinguistic skill, which refers to “the ability to reflect upon language and includes monitoring one’s linguistic productions, making spontaneous repairs, and otherwise showing awareness of language in itself as a medium of expression comprising sounds, words, and sentences” (Franklin & Barten, 1988, p299). Giving formal definitions constitutes a metalinguistic task in which both analysis of knowledge and control of processing (Snow, Cancino, De Temple & Schley, 1991). It is hypothesized that the metalinguistic ability of children should be similar across culturally. With reference to the results of research on the development of noun definitions done by McGhee-Bidlack (1991) and Wehren et al (1981), the predicted results might be:

The content of definition would be more complex with increasing age, that was, the smaller school-age children tended to provide few types of definition response as their limited metalinguistic ability. With development, older children and adults were expected to use more different types of definition responses in both concrete and abstract nouns.

Specifically, smaller children tended to provide characteristic responses, while older children and young adults began to provide more category (class) and characteristic responses in defining both concrete nouns and abstract nouns.

Moreover, in comparing the results between concrete nouns and abstract nouns, participants should gave more category and characteristic responses to concrete nouns than they gave to abstract nouns.

Method

Subjects

Subjects were 70 native Cantonese-speaking children and adults. They were divided into
four age groups: twenty primary three students (ten boys, ten girls; mean age: 8;06); twenty primary six students (ten boys, ten girls; mean age: 11;05); twenty form three students (ten boys, ten girls; mean age: 14;07); ten university students (five males, five females; mean age: 23;00). These groups will henceforth be termed the 8-year-old, 11-year-old, 14-year-old and 23-year-old. Subjects were selected from three churches and two universities.

**Stimuli**


To ensure the youngest subjects to be familiar with the target stimuli, ten 8-year-old subjects participated in the pilot study and were asked the question of “你知道什麼是X?” [Do you know what is X?] All subjects demonstrated understanding of all the sixteen stimuli.

Moreover, the clear distinction between noun and adjective in English (e.g. freedom and free) does not appear in Cantonese (e.g. the word 自由 can be a noun 我擁有自由 “I have freedom” or an adjective 我自由了 “I am free now” in Cantonese). As a result, the stimuli of abstract nouns were selected carefully by making sure that they only served as noun.

**Procedure**

Each subject was interviewed individually and asked to define eight concrete nouns and eight abstract nouns in random order. Each subject was given the following instruction before the task: 一陣姐姐會問你一 D 問題, 個時就答我, 盡量講啦 “I am going to ask you some questions. You can give me the answer when you are ready, try your best.” Subjects were instructed and given the opportunity to provide as much definition for a word as they knew. Subjects were then
asked the following question: 问 “What is an X?” for each noun. If the subjects failed to give any definition for a stimulus, it would be regarded that the subjects did not know the definition of that target stimulus. He/she would be told to state that he/she did not know the definition. The subjects would be given a second trial for those items that he/she failed to define at the end of the task. All responses were tape-recorded.

Classification of definitional responses

Based on the classification systems by McGhee-Bidlack (1991) and Wehren et al. (1981), six main types of definition responses were identified. This included: class; characteristic; coordinate; extension, negation and miscellaneous responses. Moreover, as pilot study indicated that Cantonese subjects would use classifier to describe the nouns, a sub-category of classifier was added under the characteristic responses.

The description of each type of definition response and their respective examples were given below:

1. Class: definition referring to the superordinate class to which the definiendum belongs. It is divided into two subcategories:

   (a) Implicit class – “蘋果係食得既野” [An apple is something for eating]; “時間係好抽象
       既野” [Time is something very abstract]

   (b) Explicit class – “蘋果係一種生果” [An apple is one kind of fruit]; “味道係一種感官”
       [Taste is one kind of sensation]

2. Characteristic: definition referring to the properties or attributes of the definiendum. It is subdivided into eight subcategories:

   (a) Function – “蘋果係用嚟食” [Apples are to eat]; “時間係俾你用” [Time is for you to spend]

   (b) Feature – “蘋果係紅色” [Apples are red in color]; “英雄係好大隻” [Hero is very
strong

(c) Origin – “蘋果生長長樹上” [Apples grow on trees]; “規則係人定出” [Rules are made by people]

(d) Action – “花會生長” [Flowers grow]; “時間係會流逝” [Time will past]

(e) Ideation – “花好靚” [Flowers are beautiful]; “英雄係好勇敢” [Hero is brave]

(f) Composition – “車係由鐵造成” [Cars are made of iron]; “時間係由時分秒而成”

Time contained hours, minutes and seconds"

(g) Part – “車有車輪” [Cars have wheels];

(h) Time/Space – “夜晚我地訓係床度” [We sleep on the bed at night]; “當你係學校, 你係守規則” [When you are in school, you have to obey the rules]

(i) Classifier – definition referring to the use of any Cantonese classifier. For example, “花係一朵朵”; “食得既一種味道”

3. Coordinate: definition referring to the definiendum is identical or similar to another word or concept. For example, “公仔 (definiendum) 即係洋娃娃(coordinate of 公仔)”; “規則 (definiendum) 即係規條 (coordinate of 規則)” [Rules are statements]

4. Extension: definition referring to the subordinates (that is, examples, kinds and instances) of the definiendum. For example, “玫瑰花, 菊花都係花” [Rose, Daisy are some kind of flowers]; “假期好似係聖誕節, 新年” [Christmas, Lunar New Year are some kind of holiday]

5. Negation: definition expressing what the definiendum is not rather that what it is. For example, “如果無規則, 世界就會好亂” [Without rules, the world will become a mess]; “禮貌係唔粗魯” [Manners is not rude]

6. Miscellaneous: subject fails to give any information concerning about the meaning of the
definiendum or fails to respond. It is subdivided into four subcategories:

(a) Structural statements – “工作即係好辛苦咩去去做野，咩就係工作” [Job is doing something hard, that’s what job is]

(b) Simple repetition – “蘋果即係蘋果...” [Apples are apples...]

(c) Unpredictable comments – “Ah...我喺...或者係...Ah” [Ah...I think...may be...Ah]

(d) Task comments – “好似嘅，時間好難解釋...” [It is hard to explain what time is...]

(e) No responses

Scoring

Each definition was coded according to the types(s) of responses present in it. The following example illustrates the coding:

Example 1. Interviewer: “i3KF#lI:^?” [What is an apple?]

Subject: “蘋果即係 一種生果， 圓形既， 紅色既

[An apple is /a kind of fruit/ that is /round/ and /red/.

/(Class: explicit/; /Characteristic: feature/; /Characteristic: feature/;

蘋果係 食得同埋 好好食”

Apples are /to eat/ and it is /delicious/]

/(Characteristic: Function/; /Characteristic: Ideation/)

Example 2. Interviewer: “乜野係規則?” [What is rule?]

Subject: “規則 係規條或者係界限， 人類定出來的

[Rule is a /statements or limitations/ /made by people/,

/(Co-ordinate/ /Characteristic: Origin/;

俾人去遵守， 如果無規則， 世界就會好亂”

and /let the people to obey it/; /If without rule, the world will become a mess/]
Every time a subject gave one of the sub-category responses (among the six broad types of
definition responses) in a definition it was counted as 1. Example one illustrated one class
definition response and four characteristic definition responses (2 features + 1 function + 1
ideation). Example two illustrated two characteristic definition responses (1 function + 1 origin),
one co-ordinate and one negation definition responses.

A checklist (shown in Appendix 1) was used to record and classify the subjects’ definition
responses according to the categories mentioned above. All miscellaneous definition responses
were excluded from the calculations as they only represented a noise factor.

Two independent coders (WS Chan and MY Lau) which were the students of Department of
Speech and Hearing Sciences, coded the same randomly selected 35 concrete nouns and 35
abstract nouns definitions. They classified the definition responses into categories in order to
ensure the reliability of the study. The interrater reliability index was 0.88 for the concrete nouns
and 0.81 for the abstract nouns. A third rater (WF Leung) was introduced to resolve the
disagreement between the two raters’ classification.

Data Analysis

The data obtained was analyzed in three ways:

1. For every subject, the percentage of each type of the definition responses for all the eight
congete nouns and all the eight abstract nouns out of the total number of that particular
definition response was calculated. The percentages of each of the five types of definition
response by each subject for the eight concrete nouns and the eight abstract nouns were the
dependent variables

2. For each age group, the percentage of each type of definite response used (that is, the total
number of definition responses for a particular types was divided by the total number of all
definition responses of a particular noun types was calculated;

3. The percentage of each of the five types of definition response out of the total number of definitional responses was calculated by age for both concrete and abstract nouns. The percentages of each of the types of definitional response are the dependent measures in a (4) age x (2) type of noun factorial design.

**Results**

There were a total of 2578 responses provided by 70 subjects for all the eight concrete nouns and eight abstract nouns. Excluding all 205 miscellaneous responses, subject form the ages 8, 11, 14 and 23 provided 358, 406, 347, 332 definition responses for concrete nouns and provided 279, 314, 294, 264 definition responses for abstract nouns, respectively.

Table 1 shows the percentage of each type of the definition responses obtained in the four age groups.

**Table 1 Percentage of different types of definition response by age**

<table>
<thead>
<tr>
<th>Concrete Noun</th>
<th>Age Group</th>
<th>Class</th>
<th>Characteristic</th>
<th>Coordinate</th>
<th>Extension</th>
<th>Negation</th>
<th>Total % (Total Number)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8-year-old</td>
<td>11.7%</td>
<td>65.9%</td>
<td>0.6%</td>
<td>21.8%</td>
<td>0.0%</td>
<td>100% (358)</td>
</tr>
<tr>
<td></td>
<td>11-year-old</td>
<td>17.2%</td>
<td>72.9%</td>
<td>1.0%</td>
<td>8.1%</td>
<td>0.8%</td>
<td>100% (406)</td>
</tr>
<tr>
<td></td>
<td>14-year-old</td>
<td>20.2%</td>
<td>72.3%</td>
<td>0.3%</td>
<td>7.2%</td>
<td>0.0%</td>
<td>100% (347)</td>
</tr>
<tr>
<td></td>
<td>23-year-old</td>
<td>15.1%</td>
<td>73.5%</td>
<td>0.6%</td>
<td>10.8%</td>
<td>0.0%</td>
<td>100% (332)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>16.1%</td>
<td>71.2%</td>
<td>0.6%</td>
<td>11.9%</td>
<td>0.2%</td>
<td>100% (1443)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abstract Noun</th>
<th>Age Group</th>
<th>Class</th>
<th>Characteristic</th>
<th>Coordinate</th>
<th>Extension</th>
<th>Negation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8-year-old</td>
<td>3.9%</td>
<td>37.3%</td>
<td>5.8%</td>
<td>50.5%</td>
<td>2.5%</td>
<td>100% (279)</td>
</tr>
<tr>
<td></td>
<td>11-year-old</td>
<td>10.2%</td>
<td>58.0%</td>
<td>3.8%</td>
<td>26.8%</td>
<td>2.2%</td>
<td>100% (314)</td>
</tr>
<tr>
<td></td>
<td>14-year-old</td>
<td>18.0%</td>
<td>52.7%</td>
<td>6.1%</td>
<td>21.4%</td>
<td>1.7%</td>
<td>100% (294)</td>
</tr>
<tr>
<td></td>
<td>23-year-old</td>
<td>14.1%</td>
<td>50.0%</td>
<td>4.2%</td>
<td>31.0%</td>
<td>0.8%</td>
<td>100% (264)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>11.6%</td>
<td>49.5%</td>
<td>5.0%</td>
<td>32.2%</td>
<td>1.8%</td>
<td>100% (1151)</td>
</tr>
</tbody>
</table>
Definitional responses to concrete nouns (Fig.1)

Concrete nouns were defined mainly by characteristic responses which comprised 71.2% of the total number of all definitional responses in concrete noun. Following were class responses and extension responses with 16.1% and 11.9% respectively. Co-ordinate and negation responses were given less frequently with only 0.6% and 0.2% respectively. Characteristic and class responses were the predominant responses for all age groups except for the 8-year-old children. They rather used extension (21.8%) instead of class (11.7%) responses. There was a trend in using more characteristic and class with increasing age.

Definitional responses to abstract nouns (Fig.2)

Abstract nouns were also defined mainly by characteristic responses which comprised 49.5% of the total number of all definition responses in abstract noun. Extension at 32.2% was the second most frequently given response, while class responses dropped to third place at 11.6%. Co-ordinate and negation were 5.0% and 1.8%, respectively. Characteristic and extension responses were the predominant responses for all age groups. However, when compared the definition responses of the age 8-year-old to another three ages 11-, 14- and 23-year old, it was found that the definitional responses of class, characteristic and extension changed greatly. The class responses increased from 3.9% at age 8 to 18.0% at age 14 (14.1% at age 23). This gap between the age 8 and age 14 indicated that the category for abstract noun was not developed well until age 11. The characteristic responses increased from 37.3% at age 8 to above 50% at other three age groups (58.0%, 52.7%, 50.0% at age 11, 14, 23 respectively). In contract to the class and characteristic responses, extension decreased form 50.5% at age 8 to 21.4% at age 14 (31.0% at age 23). These results indicated that the definition responses of abstract noun developed qualitatively from 8-year-old age group to elder age groups, as the distribution of definition responses was more evenly at 11-, 14- and 23-year-old, that is, they used more different types of
responses to define the abstract nouns.

**Concrete and abstract noun responses compared**

The most frequently given response to both concrete and abstract nouns at all age levels was characteristic and the most infrequently given responses was negation. With the exception of characteristic and negation, the rank order of responses for concrete and abstract nouns differs. The second most frequent response to concrete nouns was class, with extension, co-ordinate and negation following in that order. In contrast, the second most frequent response to abstract nouns was extension, with class, co-ordinate and negation following in that order. In addition to the rank order differences, participants gave considerably lower proportions of class and characteristic responses and considerably higher proportions of co-ordinate, extension and negation responses to abstract nouns than they did to concrete nouns.

3-way analysis of variance (ANOVA) with repeated measures revealed significant main effects of age ($F(3, 66) = 19.066, p=0.0000$), type of definitional response ($F(4, 264) = 251.618, p=0.0000$). There were also significant two-way interactions between type of definitional response and age ($F(12, 264) = 11.208, p=0.0000$), and type of noun (concrete and abstract) and type of definitional response ($F(4, 264) = 65.735, p=0.0000$). And finally there was a significant three-way interaction among type of noun (concrete and abstract), type of definitional responses, and age ($F(12, 264) = 3.164, p=0.0003$). The above results were similar to the previous study done by Bidlack (1991).

**Further analysis**

As characteristic responses formed the core of the concrete and the abstract noun definitions in all age groups, further analysis was carried out to investigate if there was any development trend or differences on the sub-categories of characteristic definition responses used across age. There were 1027 characteristic responses in concrete nouns and 570 characteristic responses in abstract
nouns for all age groups. The percentage of each sub-category was then calculated by age and illustrated in table 2.

Table 2. Percentage of different sub-categories of characteristic response across age

<table>
<thead>
<tr>
<th>Concrete Noun</th>
<th>Age</th>
<th>Function</th>
<th>Feature</th>
<th>Part</th>
<th>Composition</th>
<th>Action</th>
<th>Time/Space</th>
<th>Origin</th>
<th>Ideation</th>
<th>Classifier</th>
<th>Total</th>
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<tbody>
<tr>
<td>8</td>
<td>55.9%</td>
<td>14.0%</td>
<td>9.3%</td>
<td>1.7%</td>
<td>6.8%</td>
<td>3.8%</td>
<td>0.4%</td>
<td>3.0%</td>
<td>5.1%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>43.6%</td>
<td>21.0%</td>
<td>14.2%</td>
<td>2.7%</td>
<td>2.4%</td>
<td>2.4%</td>
<td>2.0%</td>
<td>8.1%</td>
<td>3.7%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>53.8%</td>
<td>12.4%</td>
<td>6.8%</td>
<td>2.8%</td>
<td>5.6%</td>
<td>2.4%</td>
<td>1.6%</td>
<td>11.6%</td>
<td>3.2%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>31.6%</td>
<td>25.4%</td>
<td>13.9%</td>
<td>7.4%</td>
<td>2.5%</td>
<td>0.8%</td>
<td>2.1%</td>
<td>13.9%</td>
<td>2.5%</td>
<td>100%</td>
<td></td>
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<td><strong>18.2%</strong></td>
<td><strong>11.1%</strong></td>
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<td><strong>4.3%</strong></td>
<td><strong>2.3%</strong></td>
<td><strong>1.5%</strong></td>
<td><strong>9.1%</strong></td>
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<td><strong>100%</strong></td>
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<tr>
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<th>Part</th>
<th>Composition</th>
<th>Action</th>
<th>Time/Space</th>
<th>Origin</th>
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<th>Classifier</th>
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<td>11</td>
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<td>3.4%</td>
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<td>2.8%</td>
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<td>15.5%</td>
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<td>6.1%</td>
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<td>18.9%</td>
<td>33.3%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>36.6%</strong></td>
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<td><strong>1.1%</strong></td>
<td><strong>18.9%</strong></td>
<td><strong>3.2%</strong></td>
<td><strong>12.6%</strong></td>
<td><strong>22.2%</strong></td>
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The data showed that function was prominent among all subcategories for all age groups for both types of noun and comprised 46.2% in concrete noun and 36.6% in abstract noun of the total number of characteristic definition responses of the particular noun types.

However, with the exception of function, the rank order of subcategories differed between the concrete noun and the abstract noun. For the concrete noun, the second most frequent subcategories was feature (18.2%), with part (11.1%), ideation (9.1%), action (4.3%), composition (3.6%), classifier (3.6%), time/space (2.3%) and origin (1.5%) following in that order. On the other hand, the second most frequent subcategories for abstract nouns was ideation (22.2%), with action (18.9%), origin (12.6%), time/space (3.2%), classifier (3.1%), feature (2.2%), composition (1.1%) and part (0.7%) following in that order.

3-way analysis of variance (ANOVA) with repeated measures revealed significant main effects of age ($F(3, 66) = 19.714, p=0.0000$), type of subcategories response ($F(8, 528) = 134.443,$
p=0.0000). There were also significant two-way interactions between type of subcategories response and age \((F (24, 528) = 5.877, p=0.0000)\), and type of noun (concrete and abstract) and type of subcategories response \((F (8, 528) = 42.413, p=0.0000)\). And finally there was a significant three-way interaction among type of noun (concrete and abstract), type of definitional responses, and age \((F (24, 528) = 5.415, p=0.0000)\).

Wehren et al. (1981) divided the characteristic responses into two types: concrete (reference to a noun's descriptive, perceptual attributes) and functional (reference to a noun's use or an action it could perform). When combining the data of function and action as a category of functional response and combined the remaining sub-categories into a category of a category of feature response (in order to avoid any confusion of the concrete noun and the concrete response, the concrete response would change to the name as feature response). The results were showed in Table 3.

**Table 3. Percentage of characteristic response across age**

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<td>40.6%</td>
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<td>23</td>
<td>34.1%</td>
<td>65.9%</td>
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<td><strong>Total</strong></td>
<td><strong>55.5%</strong></td>
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<td>Functional (%)</td>
<td>Feature (%)</td>
<td>Total (%)</td>
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<td></td>
<td>8</td>
<td>64.4%</td>
<td>35.6%</td>
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<td>57.6%</td>
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<td><strong>55.5%</strong></td>
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</table>

The percentages of functional responses of concrete nouns for the 8-year-old, 11-year-old, 14-year old and 23-year-old were 62.7%, 46.0%, 59.0% and 34.1% respectively and that of feature
responses were 37.3%, 54.0%, 40.6% and 65.9% respectively. The percentages of feature responses of abstract nouns across the four age groups were similar to the results of concrete nouns at 64.4%, 57.6%, 60.7% and 39.4% for functional responses and 35.6%, 42.4%, 39.3% and 60.6% for feature responses.

The finding reflected that 8-year-old gave more functional information in both concrete nouns and abstract nouns, while 11-year-old and 14-year-old gave the functional and feature responses with more closely percentages, finally 23-year-old gave more feature information than functional information. There was a trend of using more feature information and less functional information with increasing age.

**Discussion**

The finding of the present study parallels that of the previous studies (Benelli et al. 1988; McGhee-Bidlack, 1991; Wehren et al, 1981) on the development of noun definitions in that characteristic definition responses were given most frequently in both noun types by all age groups.

Characteristic responses formed the core of concrete nouns (71.2%) and abstract nouns (49.5%) definition for all age groups. A noun could usually be defined by only one class but could defined by many characteristic responses, for example, the definition of a flower could be:

"花係一種植物，會開花，會結果。

[Flower is /a kind of plants/, it will /open/ and /become fruits/. It

(/Class: explicit/ /Characteristic: action/ /Characteristic: action/

/has stems/ and /leaves/, it is /beautiful/ and /for people to appreciate/]
As the above example showed, the definition of a flower could be made up of six characteristic and one explicit class definition responses. Since each noun could be defined by an unlimited characteristic responses as many as one could think of but a limited number of class name, the percentage of characteristic definition responses given when defining a noun was therefore much more higher than the other categories of definition responses.

When compared the percentage of characteristic response by age, there was a slightly increase for concrete nouns from 65.9% at age 8 to 73.5% at age 23. For abstract nouns, the percentage was increasing from 37.3% at age 8 to over 50% at other three age groups. These results showed that there was a trend of using more characteristic response either in concrete nouns or abstract nouns with increasing age.

According to Johnson and Anglin (1995), young children tend to provide a particular, contextualized example or illustration of a word’s meaning that seems closely tied to personal experience (e.g., 公仔我可以抱住睡覺 “Doll can let me hold and sleep with it”). Older children describe observable perceptual or functional features of the word’s referents, but do not necessarily mention key defining attributes (e.g., 公仔係軟綿綿, 好得意 “Doll is soft and cute”). With further development, young adolescents and adults become more likely to specify core defining attributes in an expression that can precisely capture word meaning (e.g., 公仔係用布造的玩具, 好俾細路玩 “Doll is a kind of toy made of clothes and for children to play with”).

Watson (1985) stated that this transition was referred to variously as reflecting a conceptual shift from the individually experienced to the socially shared; from conceptual shift from the individually experienced to the socially shared; from the particular instance to the general type; form the concrete (functional) to the symbolic (abstract). As a result, with increasing age, subjects tended to give more characteristic responses in order to exclude other similar words in defining both concrete nouns and abstract nouns.
Although the characteristic response was the most predominant definition responses in both concrete nouns and abstract nouns, the gap of the total percentage between them was 21.7%. Even across age, the differences range from 14.9% to 28.6%. What reason caused such a great difference between concrete nouns and abstract nouns?

Firstly, according to Clark (1983), concrete nouns referred to stimulus which had distinct boundaries, stable relations among their components, and remained available for inspection. On the other hand, McGhee-Bidlack (1991) stated that abstract nouns did not denote tangible objects, there were fewer perceptual constraints and therefore, more variability on what to conflate. Thus, without clear boundaries and perceptual constraints, participants were difficult to use descriptive to define.

Secondly, children have better established concepts for concrete nouns than they do for abstract nouns. In this study, within 8-year-old group, the number of no responses for concrete nouns was 1 and for abstract nouns was 12. Within 11-, 14- and 23-year-olds, the numbers of no responses for concrete nouns were 2, 0 and 0 respectively, and those for abstract nouns were 20, 4 and 0 respectively. Moreover, the total number of characteristic responses for concrete nouns was 1027 and for abstract nouns was 570. These all indicated that there was a great improvement in understanding concrete nouns rather than abstract nouns. As concrete nouns were learned prior to abstract nouns, it was easier for the subjects to give more descriptive responses in defining concrete nouns.

Among all the subcategories of characteristic definition responses, functional response was the most frequently used responses for all age groups and there was a trend of increasing use of other concrete information with age.

The increase use of feature information across age could be explained by the acquisition of word meaning put forward by Nelson, Rescorla, Gruendel and Benedict (1974; 1978). Nelson et
al.'s (1974, 1978) work indicated that early word meaning was a matter of concept formation and was based on functional as opposed to perceptual information. Therefore, functional information formed the core of the concept of word definition at the early stage of word meaning development (Wehren et al. 1981). Throughout the acquisition process, perceptual information was added to functional information. That is, as stated by Wehren et al. (1981), older subjects used concrete-perceptual information to modify and supplement, but not substitute, functional information while younger children considered functional information sufficient to define an object. This explained an age-related shift form using more functional information to more feature information in making definition while functional information never disappear in adult’s definition responses.

For the five types of definition response, class response was the second most frequently produced response in concrete nouns while it dropped to the third place in abstract nouns. The data indicated that there was an increasing trend of using explicit class responses with age, especially between the 8-year-old and the 11-year-old. The increase in superordinate terms was due to a change in the way that known information is talked about; that is, it appears that implicit knowledge is gradually becoming more explicit and expressible (Watson, 1985).

According to Watson (1985), when children get older, superordinate categories begin to emerge, and their definitions become more elaborated and complete. In this study, class response was subdivided into explicit and implicit. Explicit class referred to the use of superordinate terms (e.g. Apple is a kind of fruit) and implicit class referred to the use of generic terms (e.g. Apple is something for eating). In order to define an object with categorical membership (i.e. superordinate terms), a child must have acquired the concept of classification and superordination.

According to Piaget (1945; cited in Benelli et al, 1988), the development of classification takes place during the concrete operational stage (after age seven to eleven) in which the ability of
reversibility emerges. This ability allows children to viewing an object at different levels of abstraction at the same time, that is, considering the object as subclass (e.g. “apple”) and as more general class (e.g. “food” or “fruit”). As a result, if a child understands that there are more birds than chickens, so that every chicken is a bird but not every bird is a chicken, he or she will be able to cope with the class inclusion rule which, in turn, allows him/her to produce linguistically and semantically appropriate definitions of objects with categorical term (Benelli et al., 1988). Owing to the lack or the emergence of this logical thought, 8-year-old children used less superordinate class names when defining either concrete or abstract nouns as compared with other age.

Furthermore, defining with the response of characteristic and class involve a process of analysis as suggested by McGhee-Bidlack (1991). In order to define a word analytically, one has to determine the nature of the whole, to separate the whole into parts and to examine the parts methodically. The capacity to judge, reflect, and analyze language emerges at around the age of six or seven (Foss and Hakes, 1978). This new ability allows children to make better definitions. Therefore, the 8-year-old children, due to the lack or the emergence of metalinguistic ability, give less characteristic and class responses as compared with other age groups. As a result, the rank order of class definition for the 8-year-old children was lower than extension responses as compared with the other age groups.

Though the proportion of using class response in defining abstract nouns was lower than in defining concrete nouns across age, McGhee-Bidlack (1991) argued that this difference between concrete and abstract noun definitions could not only be attributed to a lack of knowledge of the nouns (one could not state the class or the characteristic of the noun what one did not know). In her study, she suggested that “the ability to define concrete and abstract nouns was obviously dependent upon the child’s or adolescent’s knowledge of the conventional meaning of the word and on their implicit or explicit knowledge of the definitional form.” (p.430)
That was, age-related changes in definitional content were not only a reflection of increased knowledge of object properties or the nouns, but also the knowledge of what constituted an appropriate definition (Wehren et al., 1981).

In this study, the difference of the percentage of class response between concrete nouns and abstract nouns across age was decreasing from 7.8% at age 8 to 1.0% at age 23. The decline of differences of using class response between concrete nouns and abstract nouns might reveal that the participants gained more knowledge of what a definition was.

As in the study of McGhee-Bidlack (1991), she argued that a lack of knowledge could not explain why the 8-year-old participants, when they defined abstract nouns, did not often substitute implicit class responses for explicit class responses as they did for concrete nouns. So that, even though they did not know the superordinate term for abstract noun, they still could use a generic term to replace it and thus, the difference of the percentage of using class between concrete noun and abstract noun would be more closely just like 23-year-old group. Stated in another way, the use of implicit class did not require superordinate knowledge, thus, the differences in the percentages of implicit class responses to concrete and abstract nouns in this study could not be fully explained by the lack of superordinate knowledge.

However, when we further looked at the data of implicit class, there was no obvious trend of increasing or decreasing use of implicit class in both noun types across age. It might be due to the linguistic difference between English and Cantonese. In English the sentence “Bed is a thing used for sleeping” was semantically the same as 藍係俾人訓得既野 in Cantonese and they were both composed of function and an implicit class response. However, in Cantonese, the pronoun 野 “thing” could be omitted (Li and Thompson, 1989) without causing any change of meaning. This elliptic form of the noun phrase 訓得既野 “for sleeping” has the same meaning as the associative noun phrase 訓得既野 “a thing for sleeping” are acceptable and commonly used in Cantonese.
However, in terms of response pattern, "for sleeping" was classified as characteristic (function) response only. This language specific characteristic could explain the difference in using implicit class across age with McGhee-Bidlack's (1991) study.

Instead of giving class responses, 8-year-old children tend to define concrete and abstract nouns by giving extension responses which did not involve any process of analysis. The use of specific events or examples to define an object indicates that 8-year-old children focused on the word knowledge with personal events rather than the information required in giving the meaning of that object. Thos semantic information about a word is organized in a semantic network, in which concepts are represented by nodes, and the relations among concepts by links connecting the nodes (Taylor and Taylor, 1991). Semantic information is organized in semantic memory in this form and this form exists in young children, however, it is not as strong and complete as that in the older children and adults (Taylor and Taylor, 1991). Therefore, owing to a weaker semantic network, 8-year-old children when hearing, for example, the term "flower" in a definition task, tended to retrieve for similar terms or concepts with self-related experiences and thereby gave more extension responses like Rose, Daisy, Lily, etc. than the 11- and 14-year-old children and 23-year-old adults.

**Clinical Implication**

The findings of the present study showed the developmental trend of concrete nouns and abstract noun definitions. Skill in word definition is important because it is associated with academic achievement, verb ability, and intellectual performance (Watson, 1985). This knowledge was useful for speech therapists and teachers because it indicates what should be expected form children at different ages when assessing their expressive language ability through asking them to define an object. Moreover, in the course of intervention of assisting
language-impaired children to learn new vocabularies, speech therapists can enhance this process by helping them to associate the nouns with the appropriate information (for example, feature, function, class, extension, etc.) with reference to their age and cognitive ability.

**Further Research**

The current study was a preliminary investigation on the development of concrete nouns and abstract noun definition on Cantonese speaking population. The discrepancy between the ages of 14-year-old to 23-year-old could be investigated. Moreover, the sample size of this study was not representative of the Hong Kong community. As the definition might be affected by academic performance, further study could focus on the effects of educational background. Other study might direct to the investigation of the development of both noun types in Cantonese with respect to form. The difference in syntactic structure between Cantonese and English might cause some variation in the development of definitional form. It was worthy to find out the change in form with age and to figure out the relationship between content and form during development in Cantonese speakers. Furthermore, investigation can also be directed to study the development of noun definitions in bilingual children as some evidence (Taylor and Taylor, 1991) suggests that bilingual children have higher levels of metalinguistic skill than monolingual children. Snow *et al.* (1991) had carried out the bilingual study of English and French on the definition of concrete noun. Thus, it was interesting to find out whether bilingual children with Cantonese and other language define in a way different from monolingual children of the same age.
Conclusion

From the findings of the present study, it was concluded that:

There was an age-related change in the content of concrete nouns and abstract nouns definition in Cantonese as reflected by the difference in the definitional responses being given by different age groups. Characteristic response was the most predominant type of response in both noun types across all age groups. Moreover, the subcategories of characteristic responses: the functional information was supplemented by the feature information with increasing age. For the class response, there was a trend of using more classificatory response with age in both noun types. Finally, it was found that the definition of concrete noun was more advanced than abstract noun.

The development of concrete and abstract noun definition for Cantonese in terms of content follows a similar trend to that of English.

Acknowledgement

I would like to acknowledge my dissertation advisor, Dr. Samuel Leung in providing me so much help and patience all through these months. I would also like to thank the Brothers and Sisters of the Church CCC and KW, and Mrs. Mak for providing subjects in this study. For my friends, especially Catherine and Man Yee, thanks for their enduring encouragement and suggestion. Finally, the most important one I would like to give my millions of thanks, my LORD, that helps me go through the days of pressure and worry.
References


Appendix 1. Record Sheet of eight concrete nouns and eight abstract nouns

<table>
<thead>
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<th>Noun</th>
<th>Class</th>
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Code: Imp – implicit; Exp – explicit; Fu – function; Act – action; Par – part; Co – composition; Fe – feature; T/S – time/space; Ori – origin; Ide – ideation; Cla – classifier