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Young Chinese Children's Acquisition of How and Why: shenme, weishenme, weileshenme, zenme and zenmeyang

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ABSTRACT

Based on the previous studies (i.e. Li 1992; Lin 1992; Tsai 2000), different wh-questions like weishenme and zhenmeyang had been studied in the field of syntax and semantics; however, few studies examined such wh-questions in the aspect of language acquisition (Li, Chen & Yang 2015). This study aims to examine and compared the most commonly used wh-question – how and why – words in Mandarin to observe the occurring period of how and why, and investigate the correctness of different types of how and why questions in the development of native Mandarin-speaking children's acquisition. Therefore, this study investigates four groups of people by a comprehension test with two tasks: one task is to judge the acceptability of questions, and the other task is to answer different types of questions. Each group has the number of five participants: one group is early schoolers, one is middle schoolers, another group is late schooler, and the other is graduate students; the first three groups are experimental groups, and the last one is the control group. From the result of the experiment, children develop their acquisition of how and why in Mandarin in different period of age, and also have different percentage of correctness in answering types of questions.

Introduction

According to some researches (i.e., Cheng 1991; Chang 1992; Lightbown & Spada 2011), there is a universal grammar of acquisition for children of the order of acquiring questions. These researches find out that children start acquiring and comprehending question words around one to two years old, and that children learn words in questions step by step and from simplicity to complexity of the logics. That is, children produce question words from 'what' to 'how' and 'when'. In other words, the emergence of wh-question words also reflects the cognitive development of language acquisition, concerning on place, object, people, reason, and method and so on.

Compared to English and other languages (i.e., Ervin-Tripp 1970; Tyack & Ingram 1977), questions seem to be simpler in Mandarin, and many words in Mandarin have similar functions or interpretations to English words sometimes; for example, *shenme*[1] has the function as the English question word *what* (e.g. *What* did Linda do?), and *zenme* plays the similar as the English question word *how* (e.g. *How* did Linda do?).

Such cross-language comparisons, especially on different question wh-questions like *weishenme* and *zhenmeyang*, had been studied in the field of syntax and semantics (i.e. Li 1992; Lin 1992; Tsai 2000) for several years; however, few studies examined such wh-questions in the aspect of language acquisition (Li, Chen & Yang 2015). Moreover, to the best knowledge of acquisition of question words in Mandarin, no research focuses on the sequence of wh-questions on *how* and *why* in detail as children acquired the language. In Mandarin, *how* and *why* have some alternations to express the same meaning; that is, there are some words that sometimes can replace the position of the original words. Therefore, this study tends to examine two types of wh-words *how* and *why* in Mandarin – *zenme* and *weishenme* – and takes their semantic meanings into account, and also tends to figure out the order of questions：*shenme*[2]，*zenme*，*zenmeyang*，*weishenme* and *weileshenme*.

The structure of this research is organized as follows. Some previous researches are reviewed in the section two. The Section three describes the methodology of the experiment, including the participants, materials and procedure. Result and discussion is in section four. Finally, section five is the conclusion.

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[1]In accordance with the semantic explanation in the online dictionary, provided by the Ministry of Education, Taiwan (R.O.C.) as well as edited by National Academy for Educational Research (NAER), the word *shenme* has two alike written forms but only with a different Mandarin Chinese character between the two forms. One is written in the form of "什"麼, and the other is written in the form of "甚"麼.

[2]According to experiences, second language learners of Mandarin Chinese are sometimes confused the words *shenme* and *zenme*, and even misuse these two words when producing sentences in conversations or making sentences in written texts

Literature Review

According to Tsai (1999；2000)，there is an ambiguity among Chinese wh-words *zenme*，*zenmeyang*，*weishenme* and *weileshenme* in the interface between semantics and syntax, and those function as adverbs. The wh-word *zenme* sometimes can be used as another word *weishenme*, and also sometimes can be replaced by *zenmeyang*；in some cases, *weishenme* has the function as the form of *weileshenme*．To be more detailed, *weishenme* is cause-effect relationship; *weishenme* is mainly asked for reasons, and *weileshenme* is mainly for purposes[3].

The word in different positions of structure of wh-questions would be interpreted as different meanings. For example, the interpretation of *zenme* could be interpreted as casual reading or event when *zenme* is in the initial position of sentence, or when *zenme* appears before an auxiliary verb. The interpretation of the word *zenme and zenmeyang* is asked for the method, manner or style of action especially when *zenme* or *aenmeyang* is in the position between an auxiliary verb and a verb. The interpretation of *zenmeyang* could be resultative or style of resultant state when *zenmeyang* is after a verb. In addition, *weishenme* is similar with *zenme* in the sentence structure, and *weileshenme* and *zenmeyang* are as well.[4]

As for the acquisition in Mandarin (Erbaugh 1992), both yes-no questions and wh-questions are the same in the emergence of period for Chinese children. Those questions match the order of declarative sentences, especially for wh-question, and are high frequency. Among wh-questions, 'what' is the earliest form and the most frequent in the language use. Also, children develop 'when' and 'where' questions early. Then, *shei* 'who' and *zenme* 'how' questions appear later, and they are less frequent than 'what' questions. The wh-question 'why' merges much later because of the cognitive complexity. Erbaugh (1992) also mentions that questioning is easier than answering for children.

Lightbown & Spada (2011) mentions that there is a predictable order in the emergence of wh-words as children acquire languages. Thus, 'what' appears first and early, which are learnt by chunks. Then, 'where' and 'who' appear at the similar period because children have the ability of identifying and locating people and objects. Finally, children have cognitive difficulty of understanding 'why', 'when' and 'how' sometimes, but these three words emerge when children have better understanding of manner and time. From the proposal of Tyack & Ingram (1977), 'why' and 'how' emerge infrequent but increased with ages; furthermore, the frequency of correct answers increases with the age of children (Ervin-Tripp 1970).

When it comes to children's language acquisition of questions, the investigation of children's linguistic knowledge in questions often considers some aspects that children's comprehension on questions correlates to their linguistic knowledge of syntax and semantics, and sometimes even of pragmatics (Wagner

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[3] In certain cases, *weileshenme* plays the same function as *weishenme* for asking reasons.

[4] According to Tsai (1999; 2000), he mentions if in different perspective to examine these two wh-words, the latter one could be separated into two phrases. For instance, *weileshenme* could be two phrases *weile* and *shenme*, which are combined together as one word. Then, *zenmeyang* could be two words *zenme* and *yang*, which are tied together as a word.

2010). Therefore, apart from the aspect of language acquisition of syntax mostly mentioned above, children acquire question words with their semantic knowledge. As for the semantic knowledge, Chinese wh-questions are with an overt indefinite quantifier wh-something, as compared with English, which contain a universal quantifier *every* (Foryś-Nogala et al. 2017).

This Study

From the previous theoretical background and the literature review, the process for understanding and clarifying the different appliance in questions experiences might be relative to the cognitive development and the language learning, particularly in the aspect of wh-questions. Besides, in the literature (Lightbown & Spada 2011), the difficulty in distinguishing the how and why do occur in child's language development. Thus, this study builds on the previous works, and specifically focuses on the five different wh-question words – shenme, weishenme, weileshenme, zenme, zenmeyang – in Mandarin for examining Chinese-speaking children's acquisition of questions. Therefore, the specific research questions are listed as follows.

(1) Which meaning of wh-words is difficult for Chinese-speaking children to acquire or recognize?
(2) Which phrase among these five wh-words are most common to use in child's language?
(3) Based on the above two research questions, what is the order of these five wh-words?
(4) What is the tendency for children to misuse or misunderstand these wh-words?
(5) At what age or at which stage do children mostly acknowledge the difference of wh-words?

Methodology

The method of the experiment was designed for young Chinese children in order to examine their comprehension of five different Mandarin question words, and then the result of the experiment might suppose the young children's acquisitional period of question words. The design of the experiment is described in details as follows.

Participants

This research involved four groups of participants; each group included five participants, but the number of participants in gender was imbalanced. In addition, three groups were experimental groups, and the other one was the control group. The participants in three experimental groups were studying in Mingdao Elementary School in Wenshan District, Taipei City; the participants in the control group were studying in National Taiwan Normal University in

Daan District, Taipei City. For the first experimental group, the participants were early schooler children，second grade of the school, at the age from 7 to 8. The participants of the second experimental group were the schoolers，fourth graders，at the age of 9 to 10. The participants in the third experiment group were late schoolers, in sixth grade, from the age 11 to 12. Ten graduate students at the age of 23 to 25 participated in the control group in this research. All participants were in Chinese-speaking families, so Mandarin was the primary languages used in their families as well. Besides, all participants were voluntarily to participate in the experiment.

Table 1. *Background of the Participants*

Group	Age	Male	Female
Group 1 (second grader)	7~8	2	3
Group 2 (fourth grader)	9~10	4	1
Group 3 (sixth grader)	11~12	2	3
Group 4 (adult)	23~25	1	4

Materials

The materials used for present research consisted of two sections (two tasks) for the comprehension test on different questions with wh-words in Mandarin．The first section is Task 1, which contained ten questions, and this was designed for participants to judge whether the sentences were right, wrong or strange by marking symbols to differentiate, depending on the knowledge of wh-words in questions participants had in their minds. Then, Task 2 is in the next section, and it has five questions，which were the situational test, and it was designed for the participants to choose one possible answer for each question based on their best of knowledge as well as on their daily life conversations and experiences. The materials were designed in the format of worksheet, especially for the children of elementary school, to attract participants' attention. A list of the target sentences of the worksheet is included in the appendix, and below is the example questions in each section (task).

(1) Task 1

小清什麼拿到禮物？[5]

xiǎoqīng shénme nádào lǐwù[6]

What gift did xiaoqing get?'

(2) Task 2

Q[7]：小櫻(會)怎麼離開？

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[5]The structure of this sentence is not correct, so the participants of this research would use a symbol to mark this sentence wrong based on the knowledge of questions with wh-words.

[6]The spelling is Hanyu Pinyin from the website for revised Mandarin online dictionary made by Ministry of Education, Taiwan (R.O.C.).

[7]The abbreviation Q and A mean question and answer respectively, and in the worksheet for participants, these abbreviations are replaced by a cartoon character for the sake of raising their interests.

  xiǎoyīng（huì）zěnme lí kāi
  How did xiaoying leave?'

A：Ⓐ她搭計程車離開。

  tā dā jìchéngchē líkāi
  She took a taxi to leave.'

  Ⓑ她有事離開。她有事離開。

  tā yǒushì líkāi
  She had something else to do, so she leave.'

Procedure

All participants were asked to listen to the procedure of the test first, and they were tested together in a classroom. Then, there was a warm-up time between the researcher and the participants to appeal participants' attention and to raise participants' motivation. Next, the researcher distributed a worksheet to every participant and asked them to fill in the blanks about their personal information, such as gender and grade. After that, the researcher explained how to answer questions in two sections on the worksheet and checked every participant's reaction so that participants would not misunderstand the context. Then, the participant read the questions one by one with a few-second pause for participants to write down their answers, and each question was repeated one time. In addition, the participants were all encouraged by the researcher after they answered the questions on the worksheets. A total of time would take 15 minutes at most, including the time for explanations of rules for answering questions. Furthermore, all participants would get rewards after the experiment.

Hypotheses

The hypotheses are proposed here in correspondence with the research questions in the previous section. First of all, the expected correct rate of answering the word *zenme*, including other lexical element attached to *zenme*, in different types of sentence structures and with different meanings from high to low is: *zenme* (reason) >*zenme/zenmeyang* (modification to verb phrase)>*zenmeyang* (complement of verb). Here in the semantic aspect, the word *zenme* is expected for reason; as for the syntactic structure, the word *zenme* or *zenmeyang* is to modify the verb phrase, and the word *zenmeyang* is the complement of the verb. Secondly, the expected order of correct rate of answering the word *shenme* in different structures as well as meanings from high to low is: *shenme* > *weilshenme* > *weileshenme*. In the semantic aspect, the word *weileshenme* here is expected for purpose, and *weishenme* is expected for reason; the word *shenme* plays the role of pronoun in the syntactic structure. Finally, the acquisition of wh-words in questions is developed cognitively and gradually by age.

Results and Discussion

The purposes of this research is to investigate the children's acquisition of different wh-words of how and why in Mandarin, and five wh-words *shenme*, *zenme*, *zenmeyang*, *weishenme* and *weileshenme* are tested in this research. Therefore, the specific research questions are raised, which are restated here and then addressed one by one in this section: 1) among five wh-words being tested in this research, which one is the easiest and the most difficult for children? 2) as for comprehension, what is the order of wh-words for children from the easiest word to the most difficult one? 3) from the data collected, which wh-word(s) is in high tendency of being misused or misunderstood for children? 4) at what age or at which stage do children acquire these five wh-words and can differentiate them?

First, from the Table 2（shown below），the percentage of *zenmeyang* in three experimental group (from Group 1 to Group 3) rise gradually. However, these two wh-words *shenme* and *zenmeyang* are at the peak of 93% in correctness and at the foot of 48% in correctness，separately (see Figure 1). The other three wh-words (*zenme*, *weishenme* and *weileshenme*) percentage of correctness are above 80%, which are 87%, 88% and 80% separately. Thus, in accordance with the frequency and percentage of correctness among five wh-words tested in the research, the easiest one is *shenme* and the most difficult one is *zenmeyang* for participants to answer.

Table 2. *Frequency and Percentage of Correctness in answering Questions by each group*

	Group 1	Group 2	Group 3	Group 4	Total
shenme	13 (87%)	13 (87%)	15 (100%)	15 (100%)	56 (93%)
zenme	9 (60%)	13 (87%)	15 (100%)	15 (100%)	52 (87%)
zenmeyang	8 (53%)	7 (47%)	9 (60%)	5 (33%)	29 (48%)
weishenme	12 (80%)	12 (80%)	14 (93%)	15 (100%)	53 (88%)
weileshenme	13 (87%)	9 (60%)	14 (93%)	12 (60%)	48 (80%)
Total	55 (87%)	54 (60%)	67 (93%)	62 (80%)	238 (80%)

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Figure 1. *Percentage of Correctness in answering Questions with five wh-words*
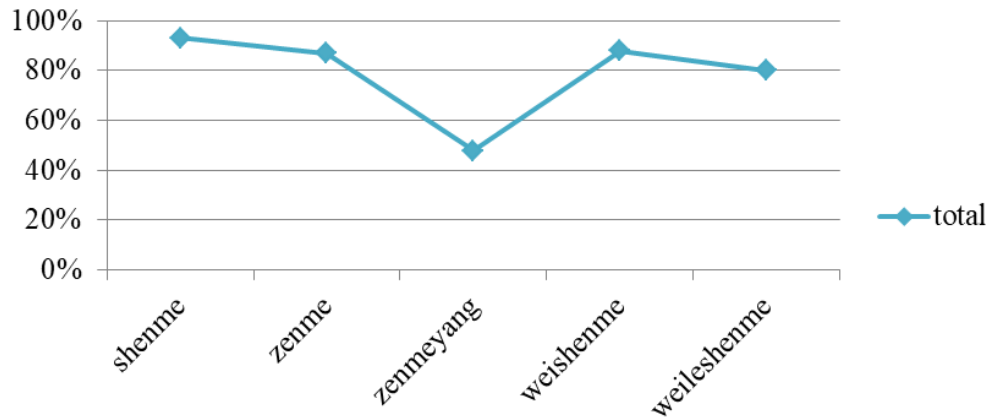
Next, considering with the order of five wh-words, the number of answers for the ambiguity in sentences is taken into account; that is, sentences seem to be partially wrong and partially correct for participants. Therefore, on the basis of previous analysis, aside from the wh-word *shenme*, which is the highest percentage of correctness in answering questions by each group, the rest four wh-words are in frequent for children as well as graduates of being misused or misunderstood when they interpret these four wh-words in questions. Based on the mean score shown in Table 4, *zenmeyang* is the lowest score (1.12), so the order of acquisition for the word *zenmeyang* is the last one for children. The two words *zenme* and *weishenme* have no significant difference on scores, which one is 1.73 and one is 1.77, respectively. The highest score is the words *shenme*, and it is the first one for children to acquire. Thus, the order of wh-words from the easiest to the most difficult one is: *shenme* comes first, *weishenme* and *zenme* might be the same place, *weileshenme* comes next, and finally the last one is *zenmeyang*.

Table 3. *Mean Score of Questions with wh-words in each group*

|	Group 1	Group 2	Group 3	Group 4	Total
shenme	1.73	1.73	2.00	2.00	1.87
zenme	1.20	1.73	2.00	2.00	1.73
zenmeyang	0.80	1.30	1.30	1.07	1.12
weishenme	1.60	1.60	1.87	2.00	1.77
weileshenme	1.73	1.20	1.87	1.60	1.60
Total	1.41	1.51	1.81	1.73	1.62

Both Table 2 and Table 3 also present the frequency for the ambiguity in sentences as interpretation from participants. From the data shown in the tables, two words *zenmeyang* and *weileshenme* have low percentage (48% and 80%) and mean score (1.12 and 1.60). Hence, *zenmeyang* is the word that participants easily misunderstand when they read sentences and that seems to be weird for participants when they read or listen to questions. In addition, *weileshenme* is another word for participants to get the wrong interpretation, or to perceive that the structures of sentences are strange.

According to Table 4 (shown below), each task has a rising percentage of wh-words in questions' acquisition. In average (see Figure 2), Group 1 and Group 2 rise up to the similar percentage of Group 3. Group 3 and Group 4 remain steadily in each task, and both of them are above the percentage of 80. For further explanation, the participants of Group 1 and Group 2 have certain concepts or knowledge of questions with wh-words, and the participants of Group 3 have probably well-established knowledge of wh-words with the high percentage of almost 90%. In other words, the participants of Group 3 are late schoolers, and they can acquire these five wh-words and also differentiate them in different questions. At the stage of early schoolers, in correspondence with Group 1 in the research, the participants have the basic ideas constructed questions with wh-words. As shown in Figure 3, with ages increasing, participants of Group 1 to Group 3 can become much more easily answer wh-questions correctly among five wh-words.

Table 4. *Percentage of Correctness in answering wh-questions in Two Tasks by each group*

	Group 1	Group 2	Group 3	Group 4
Task 1	68%	66%	88%	82%
Task 2	84%	84%	92%	84%
Total	73%	72%	89%	83%

Figure 2. *Percentage of Correctness in answering Questions in Different Tasks by each group*
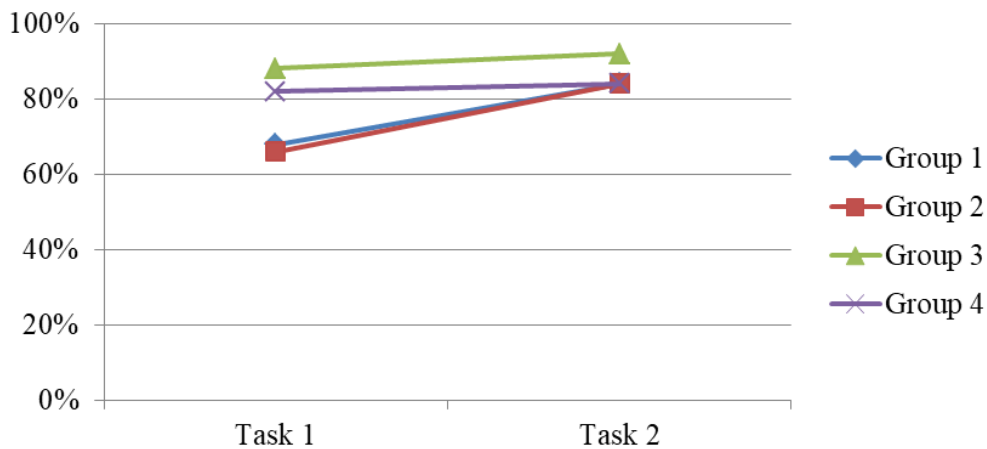
Figure 3. *Total Percentage of Correctness in answering wh-questions by each group*
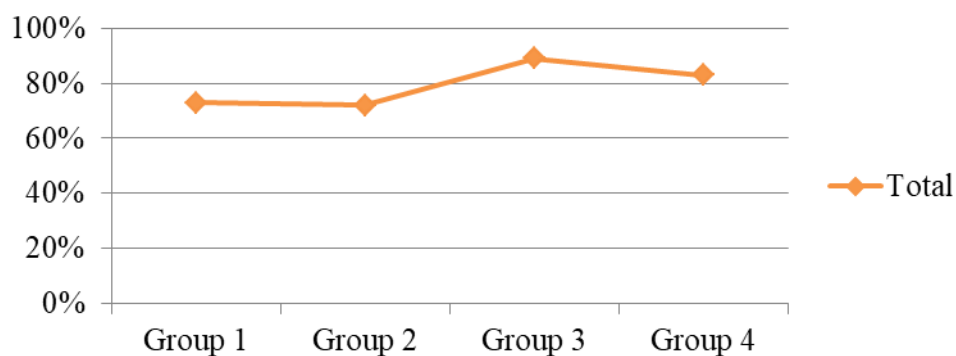
In reference with some literature, regarding for questions with wh-words, especially with why and how, children sometimes have cognitive difficulty in understanding questions (i.e., Lightbown & Spada 2011). As in the stage of fourth grader in elementary school (Group 2), the percentage and frequency of correctness of Group 2 (see Table 3, Table 5 and Figure 3) should rise higher than that of Group 1. Thus, the participants of Group 2 might be on the bridge of miscomprehension. Despite the performance of Group 2 not as expected, the frequency of correct answers of wh-questions increases with the age of children, as shown in Figure 3 (i.e., Tyack & Ingram 1977). However, compared to the concept proposed by Erbaugh (1992), questioning is not easier than answering in terms of two tasks tested in this research, which is illustrated in Table 4 and Figure 2.

Conclusion

In sum, children acquire questions with five wh-words gradually in different stage in average. This reason might be the cognitive development of language acquisition; that is, when children could do more complex reasoning, they would acquire 'how' as well as 'why', which support the concepts proposed from the literature. Also, the wh-words are learnt by children before the stage of being early schoolers because the percentages of some wh-words tested in this research are not low as expected. However, the period children acquire and comprehend the difference between 'why' and 'how' in Mandarin is proximately at the same period; that is, at the stage of late schoolers. Before the stage of late schoolers, children might have difficulty of understanding wh-words cognitively when they might want to correctly apply different question sentences.

Appendix：Targeted questions on worksheets

These are the questions on the questionnaires, which are in the format of worksheets, for participants to answer. Chinese phonetic alphabets (e.g. ㄅ, ㄆ, and ㄇ) are used for children to read in ease.

Task 1 True or False Questions
1. 小清什麼拿到禮物？
2. 小澤怎麼拿到信件？
3. 貓咪怎麼爬上樹？
4. 小狗怎麼樣跳上桌？
5. 小琳為什麼笑？
6. 小美為了什麼哭？
7. 媽媽怎麼樣煮飯？
8. 爸爸為什麼洗車？
9. 阿姨什麼上班？
10. 叔叔為了什麼開會？

Task 2 Situational Questions
1. Q：小櫻(會)怎麼離開？[8]
   A：Ⓐ她搭計程車離開。　Ⓑ 她有事離開。
2. Q：阿原怎麼樣(會)離開？[9]
   A：Ⓐ他搭公車離開。　Ⓑ 他有事離開。
3. Q：小新收到什麼？
   A：Ⓐ他跑去門口簽收。　Ⓑ 他拿到一個包裹。
4. Q：阿彬為什麼高興？
   A：Ⓐ他到處告訴別人。　Ⓑ 他考了一百分。
5. Q：小蘭為了什麼生氣？
   A：Ⓐ她想出門玩。　　Ⓑ 她大聲罵別人。

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[8]The purpose of this sentence is asked for the method, and *hui zenme* is 'how' interpretation (Tsai 1999; Li, Chen & Yang 2015).
[9]The purpose of this sentence is asked for the method, *zenmeyang* is 'how' interpretation although the modal verb *hui* is inserted in the sentence (Lin 1992).

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