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Comprehension of Lies and White Lies in Cantonese-speaking Children

Lui Man Yi, Louie

A dissertation submitted in partial fulfillment of the requirements for the Bachelor of Science (Speech and Hearing Sciences), The University of Hong Kong, June 30, 2009.
Abstract

The development of comprehension of lie and white lie between 5 to 10 years of age were examined. Children were asked to judge if the characters in 12 stories were lying and provide justifications after each story was presented. Both pre-primary and primary children were able to make correct judgments about lies and white lies. Older primary children were able to provide correct justifications concerning character’s intention for both the lying and white-lie telling behaviour, while younger children tended to restate the lying behaviors. Children’s ability in comprehending lies and white lies increased with age. This ability was moderately correlated to their second-order false belief understanding. Language skill was necessary for the comprehension of lies while higher level social skill played a more important role for white lies comprehension. Cantonese-speaking children develop this nonliteral language comprehension at a slower rate than the western children. Given this observation, curriculum policy makers should consider incorporating training on social pragmatic skills in the educational programme.
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Introduction

Daily communication not only involves what is said, and what is understood factually, but also the underlying figurative or nonliteral meaning. Figurative or nonliteral speech refers to words, phrases or clauses whose interpretation different from straight word language. Earlier research in child language acquisition mainly focuses on the development of linguistic form and meaning in a literal sense. Relatively little attention has been put in nonliteral language development. Only until the recent decades do researchers devote more attention to this later aspect of language development (Nippold, 2007).

Lie and White Lie

Lying is a kind of many figurative language forms, it is an act by oneself who intentionally makes an untrue statement to mislead the recipient (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996). This kind of communication is intended to deceive, and mutual understanding cannot be elicited (DePaulo & Kashy, 1998). Children’s knowledge about lies emerges as young as 3 years of age and develops rapidly (Talwar, Lee, Bala, & Lindsay, 2002). However, at this early stage, young children are not yet skillful in telling lies because of their immature semantic leakage control, which refers to the ability to be consistent between the initial false statement and the subsequent statement (Talwar, Gordon, & Lee, 2007). For example, children denied they had peeked at a toy, but they tended to blurt out the toy’s name afterwards. School-age children tend to be better at concealing their violation of
rules when follow-up questions were asked.

At about six years of age, children’s pro-social behaviors start to develop rapidly. These behaviors are intended to benefit others. They begin to take other’s feeling into account before they say something. Telling white lies, as a contrast to lying, is an example of pro-social behaviors which aims to maintain amicable social relationships (DePaulo & Kashy, 1998). White lies serve to protect the listener’s feelings and to avoid the unwanted reactions that may arise from the listener if the truth is being told (Broomfield, Robinson, & Robinson, 2002).

Studies found that white lie-telling also appeared in preschool children. Talwar and Lee (2002b) suggested that children as young as 3 years of age can tell white lies successfully in a politeness situation. Another study also supports the early emergence of white-lie-telling development, yet with additional findings that older children were more likely to tell a white lie than the younger children did (Talwar, Murphy, & Lee, 2007).

Theory of mind

Both the development of lying and white-lie telling do not occur suddenly during the early years. Rather, they build on or grow hand in hand with other social cognitive ability such as theory of mind skills or the false belief understanding as mentioned before. Children undergo rapid development of theory of mind from age 3 to age 6 (Tardif, Wellman, & Cheung, 2004). False belief understanding which refers to the ability in predicting other people’s behavior based on the false belief, is often taken as the manifestation of early theory
Comprehension of both lies and white lies require one to go beyond the literal meaning and make inference, with the latter requires more sophisticated social cognition skills. Happé (1994) examined the role of the classic theory of mind competence in comprehension of more naturalistic nonliteral language, which includes lies and white lies, by comparing individuals with autism spectrum disorders and normally developing children. Happé (1994) argued that this nonliteral language skill requires one’s ability to attribute other’s mental state and claimed it as a kind of advanced aspect of theory of mind. In the study, Happé compared individuals with autism spectrum disorders and normally developing children. The results not only attested the importance of this first-order theory of mind skills in the comprehension of lie and white lie, but also the second-order false belief skills. This higher order false belief skill requires one individual to believe in the beliefs of another person (Perner & Wimmer, 1985) and was essential in the advanced task of theory of mind. Related finding was also reported in subsequent study on normally developing children. For lie-telling, Polak and Harris (1999) reported that the ability to tell lies in 3 and 5 year old children require the understanding of first-order false belief. In addition, the more “skillful” lying behaviors observed in older children may also be ascribed to their mastery of second-order false belief understanding (Talwar & Lee, 2002a).

However, studies on normal development of white lie appear to be less clear. Talwar et al.
(2007) found that 3 years old children can tell white lies successfully. This is the age when second-order false belief understanding is yet to develop. This finding appears to be incongruent to the importance of second-order theory of mind skills in figurative language comprehension claimed by Happé (1994).

Language and theory of mind development

The interaction between language and the theory of mind development has been discussed by researchers, and many of them argued that it is language which predicts theory of mind rather than the reverse (Miller, 2006). Gleitman (1990) claimed that language is important in providing information about the meaning of the unobservable mental states as one could not learn the mental state words simply by observation. Language exposure appears to be an influential factor affecting theory of mind development. Mothers who often talked about mental state to their children would positively affect the children’s later language development as well as theory of mind development (Ruffman, Slade, & Crowe, 2002). In addition, Astington and Jenkins (1999) found that syntactic abilities could predict theory of mind performance for which children make use of mental verbs for complementation. On the other hand, Ruffman, Slade, Rowlandson, Rumsey, and Garnham (2003) argued that semantic abilities rather than syntactic was the only predictor of theory of mind skills in children. Although there were contradictory findings about which language domains predict the development of theory of mind, it is clear that language skill is inevitable and plays a crucial
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role in the development of theory of mind.

Effect of culture on nonliteral language development

Both lying and white-lie telling are not all about cognitive processes, they are also a sociocultural construct (Lee, Cameron, Xu, Fu, & Board, 1997). The comprehension of lies and white lies would be influenced by the cultural norms of a particular country. A study suggested that Chinese children would rate more positively towards white lie than do the Western children (Lee et al, 1997). This might be due to the fact that China is a collectivist country where people value face management. The use of white lies is a polite way to convey a message to the listener without leading to face-threatening situation (Colston & Katz, 2005). Although children from different countries basically follow similar developmental paths, cultural difference may play a role in affecting the time of onset on false belief understanding (Tardif et al., 2004). It is therefore speculated the difference in culture could be a factor affecting the conceptual development of lies and white lies in children. The development of Cantonese-speaking children may be earlier than that of the English-speaking counterparts.

Aim of the present study

Both lie and white lie are manifested as a form of inauthentic communication but the latter possesses a kind intention. It appears that the latter would build on the former and should be acquired later. However, no previous study directly compares these two types of ability. The present study, therefore, aimed to examine the development of comprehension of
lie and white lie and compare the age of onset in normally developing individuals. The second aim of the present study is to investigate the role of language in comprehension of lie and white lie since some researchers suggested that the comprehension of figurative language, like lie and white lie, is merely a result of ‘advanced’ language skills (Miller, 2006). Finally, the present study aimed to explore the relationship between second-order false belief with lie and white lie comprehension since its role in both lie and white lie comprehension is unclear as reviewed above.

The findings of the present study were compared with the English-speaking counterparts in order to examine if there was commonality or any remarkable discrepancy. This study would therefore contribute to the understanding of the figurative (non-literal) language comprehension, an imperative component of later language development, in Cantonese-speaking children.
Method

Subjects

Thirty-eight Cantonese-speaking children aged from 5 to 10 participated in the study. There were six children in each group of five- (mean age= 5;3, range from 5;0 to 5;6), six- (mean age= 6;4, range from 5;10 to 6;7), eight-(mean age= 7;10, range from 7;8 to 8;5), and ten-year-old (mean age= 10;6, range from 9;11 to 10;11) while seven children in each group of seven-(mean age= 7;0, range from 6;8 to 7;4), and nine-year-old (mean age= 9;2 range from 8;11 to 9;5). There were a total of 18 boys and 20 girls with 3 boys and 3 to 4 girls in each group. Subjects were recruited randomly from private nurseries and youth centers in different districts of Hong Kong. All of the children speak Cantonese as their mother tongue. School teachers and staff of youth centre reported no problem in intelligence, hearing acuity and speech and language ability in these children and no history of speech therapy. Ten native Cantonese-speaking adults (5 women and 5 men) participated in the study as the control subjects for developmental comparison and they served as the informant of the end-status responses.

Materials

Twelve stories comprising lies and white lies were constructed (see Appendix A). There were two characters in each story, one was a liar while the other was not. Each story was composed of a daily life scenario and ended up with one sentence which was either a lie or a
white lie. For the stories comprised of lies, the liar did something wrong which upset the other person. So he/she intended to lie in order to cover his/her own mistakes. For those of white lies, one of the characters told a white lie so as to protect the other character’s feelings or to maintain a social relationship between the two characters. The stories were standardized by reading out by a female voice and recording onto an ipod (MP3). The stories were presented to each child from the ipod and accompanied by a picture to aid their comprehension. Two test questions were asked following each story. One was a comprehension question “Was it true, what X said?”, while the other one was a justification question “Why did X say that?” which indicated how the children came up with the responses of the comprehension questions.

The “ice-cream van task” developed by Baron-Cohen (1989a) and the “balloon selling task” developed by Perner & Wimmer (1985) were used as the second-order false belief task. Three pictures were drawn to support children’s comprehension of each story. The subjects were asked 6 questions in this task, including two comprehension questions (e.g. Did Ming hear the conversation between the ice cream man and Siu Fan?), a belief question (e.g. Where does Siu Fan think Ming has gone to buy an ice-cream?), a justification question (e.g. Why would she think he has gone to that location?), a reality control question (e.g. Where did Ming really go to buy an ice-cream?), and a memory control question (e.g. Where was the ice-cream van at the beginning?).
Procedures

All subjects were tested individually in a quiet room in the school or youth centre. Children were assessed on their language ability by using the subtests (Narrative Test) from Hong Kong Cantonese Oral Language Assessment Scale (HKCOLAS) (T’sou, Lee, Tung, Chan, Man, & To, 2006), and it was used as the language measure. Afterwards, each child was presented with the second-order false belief task. The three pictures were presented in front of the children as the story was being told. The six questions (two comprehension questions, a belief question, a justification question, a reality control question, and a memory control question) were asked for each of the second-order belief task. If the answer was wrong for any of the two comprehension questions, a cue question was then asked (e.g. Was X present when Y and Z were talking?) until the child answered correctly, however, only the first response to the questions was recorded. For the third to the sixth question, the answers were recorded in full for later analysis.

Finally, 12 testing stories consisted of lies and white lies were presented to the subjects in randomized order. Each story was played to the subject from the ipod and the story picture was put in front of the subject to reduce the memory requirement. The subjects were asked two test questions. The first one was a comprehension question “Was it true, what X said?”, and the second one was a justification question “Why did X say that?” at the end of each story. No feedback was given on the correctness of the answers, but verbal reinforcement was given
throughout the session as an encouragement to the subjects. All the responses were recorded with a digital voice recorder for later analysis.

**Scoring Procedure**

Adults’ responses to the questions of each story aided in construction of the scheme for scoring the children’s responses. In the second-order false belief task, two marks were given to children who could correctly answer the justification questions as the adults’ form while one mark was given to the partially correct answers. For the justification questions, two marks were given to answers which involved the prediction of another character’s thought. For example, in the ice cream van story, justifications like “Siu Fan believed that Ming did not know the ice cream seller has gone to the church” and “Siu Fan did not know the ice cream seller had told Ming he would go to the church” would score two marks as both justifications clearly stated out Siu Fan’s mental state towards the other characters. One mark was given to justifications which involved the ice cream seller’s or balloon seller’s initial ideas or place of selling, for example, “The ice cream seller said he would stay in the park for the whole day”. No mark was given for incorrect answer such as “He wanted to buy ice cream” which was unrelated to the question. Incorrect answers for the belief questions would also lead to zero mark for the justifications.

In the 12 stories comprise of lies and white lies, a maximum of one mark and two marks were given to comprehension question and justifications respectively. For responses in the
“lie” stories, justifications were given two marks if they involved any possible unfavorable consequences. For example, in the story where Siu Ming broke the music box of her sister and Siu Ming blamed the dog for the act, two marks were given to a justification like “she was afraid her sister would blame her” or “she may get penalty from the sister”. One mark was given to answers which stated the characters’ unwillingness to tell the truth. For example, in the story where KiKi picked some flowers from a garden and she told her mother she got them from her friends, the justifications “she lied to the mother” or “she did not want to let her mother know” would score one mark. For answers that did not explain the reasons for lying or irrelevant responses, such as “she picked the flowers intentionally” was rated as incorrect and were scored zero mark.

For the justifications given in response to the “white lie” stories, two marks were scored for involving the attempt of protecting other’s feelings. For example, in the story where a father bought a story book to the son who did not like it, but lied to his father that he liked it very much, the justification “He did not want to upset his father” scored two marks. One mark was given to answers which involved the physical consequence of the act, such as “He was afraid his father would scold/beat him”, and answers which did not explicitly show the attempt of not hurting other’s feeling, such as “He did not want to let his father know he did not like it”. No mark was given to answers that did not explain the reasons for telling white lies.
Reliability

The experimenter randomly chose 20% of the responses (8 samples) from the 38 subjects two weeks later after the experiment. Another independent scorer also took part in re-scoring 20% of the responses. Both the experimenter and the independent scorer followed the scoring criteria mentioned previously. The intra-rater reliability for scoring the yes/no questions was 100% while that of the inferential questions was 98%. For the inter-rater reliability, the scoring for the yes/no questions was 100% while that of the inferential questions was 93%.
Results

To examine the comprehension of lie and white lie in the children and the relation to theory of mind, a series of analyses were conducted. Descriptive statistical results on different tasks performed by the adults and the children were first obtained. Then, in order to examine the age of acquisition of second-order false belief, lie and white lie, the children’s mean scores were converted into percentages with reference to the mean scores of the adult group. In addition, ANOVAs were conducted to examine the difference of the children’s performance in the measures of lies and white lies across different age groups given that there was no major outlier. The role of language was explored by putting the raw score of HKCOLAS as the covariate and performed another ANCOVA and compare with the result with the ANOVA without using language as the covariate. This procedure aimed to remove the variance brought by language skills to the comprehension of lies and white lies. Furthermore, Pearson’s correlation coefficients were then calculated to examine if second-order false belief scores was associated with the scores of lie and white lie.

General trends

The responses in the adult group were very uniform such that all justification responses to the “lie” were possible unfavorable consequences and those to “white lies” stories involved the attempt of protecting other’s feeling. The mean scores and standard deviations on lies and white lies were calculated in percentages with reference to adult’s mean scores and
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It showed that children’s ability in comprehending lies and white lies generally increase with increasing age.

Table 1. Percentages derived from the mean scores and standard deviations on lies, white lies and false belief task

<table>
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<tr>
<th></th>
<th>5;0</th>
<th>6;0</th>
<th>7;0</th>
<th>8;0</th>
<th>9;0</th>
<th>10;0</th>
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<td>Lies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Yes/No</td>
<td>94.44 (8.61)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
<td>97.22 (6.80)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
</tr>
<tr>
<td>Justification</td>
<td>34.72 (43.60)</td>
<td>90.28 (20.01)</td>
<td>69.44 (14.59)</td>
<td>83.33 (20.41)</td>
<td>72.62 (21.36)</td>
<td>94.44 (6.80)</td>
<td>100.00 (0.00)</td>
</tr>
<tr>
<td>Total</td>
<td>54.67 (30.82)</td>
<td>93.50 (13.20)</td>
<td>79.50 (9.48)</td>
<td>87.83 (15.56)</td>
<td>81.71 (14.00)</td>
<td>96.17 (4.58)</td>
<td>100.00 (0.00)</td>
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<td>White lies</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes/No</td>
<td>97.22 (6.80)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
<td>100.00 (0.00)</td>
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<tr>
<td>Justification</td>
<td>12.50 (20.92)</td>
<td>65.28 (20.01)</td>
<td>63.89 (20.86)</td>
<td>79.17 (20.92)</td>
<td>65.48 (17.63)</td>
<td>88.89 (14.60)</td>
<td>100.00 (0.00)</td>
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<tr>
<td>Total</td>
<td>40.67 (14.95)</td>
<td>77.00 (13.32)</td>
<td>75.83 (13.88)</td>
<td>86.17 (13.75)</td>
<td>77.00 (11.50)</td>
<td>92.50 (9.71)</td>
<td>100.00 (0.00)</td>
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<tr>
<td>False belief</td>
<td>40.67 (9.56)</td>
<td>57.17 (15.07)</td>
<td>78.67 (21.69)</td>
<td>78.50 (21.30)</td>
<td>78.57 (22.97)</td>
<td>83.33 (20.64)</td>
<td>100.00 (0.00)</td>
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</table>

The results of the comprehension of lies and white lies were further analyzed by examining the yes/no answers and the justification answers. Figure 1 summarizes the percentages of the mean scores on yes/no questions and justifications of lie and white lies across all age groups. The mean scores of yes/no questions of both lies and white lies reach the ceiling nearly in all groups. As expected, many children could answer yes/no questions but unable to offer appropriate justification in both types of lies. For the justifications, there was a
great leap from age 5 to 6 showing the increased ability in understanding the intention for both lie and white lie. After age 6, this ability tended to fluctuate and continued to age 10. Children in all groups performed better on lies than that of white lies when providing justification. Since the percentage is calculated against the adult means, the higher score in answering lie-related questions than those of white lie surmise that the ability in comprehending lies developed at an earlier age than that of white lies.

In order to examine the difference of the children’s performance on lie and white lie, two separate one-way ANOVAs were performed on each of the two dependent variables. There was a significant difference across different groups for lie, $F(5, 31) = 4.87, p = .002 < .05, \eta^2$
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= .44. Post-hoc comparisons using Turkey Test revealed that the mean percentage score for age 5 (M=54.67, SD=30.82) was significantly different from age 6 (M=93.50, SD=13.20), age 8 (M=87.83, SD=15.56), and age 10 (M=96.17, SD=4.58). There was also a significant difference across different age groups for white lie, $F(5, 31) = 11.63, p = .00< .05, \eta^2 = .65$. Turkey post-hoc analyses indicated that all age groups were significantly different from each other. Children who scored 70% or over in each of the tasks were considered as acquired the particular comprehension ability. Children who were in their early 5-year-old started to comprehend lies while comprehension of white lies started at about 6-year-old.

Role of language in comprehension of lie and white lie

Since the present study is to examine normally developing children, children who have suspected language disorder were excluded from the study. One child from the group of eight-year-old scored below -2.0 SD in the Narrative Test from the Hong Kong Cantonese Oral Language Assessment Scale (T’sou et al., 2006) was discarded. The rest of the 37 children were considered as having normal language development and their mean raw scores and standard deviations of the narrative test were summarized in Table 2. It shows that children’s narrative language ability generally increases as they get older. A few of the children from the group of 6-year-old scored over 90 marks which contributed to the relatively high score for this group. Some children from the group of 9-year-old scored below 90 marks which lowered the mean raw scores for the group.
To examine if language plays a significant role in the comprehension of lie and white lie, children’s language ability in terms of the narrative raw score was then treated as a covariate. Two separate one-way ANCOVAs were performed. No significant difference was found among different groups for lie, $F(5, 31) = 1.44, p = .24 > .05, \eta^2 = .20$. For white lie, there was still significant statistical difference across all age groups, $F(5, 31) = 3.40, p = .02 < .05, \eta^2 = .36$ even after controlling for language skills.

**Relationship of second order false belief and comprehension of lie and white lie**

Table 1 also summarizes the descriptive statistics of the second order false belief task. There was a sharp increase in mean scores of the second-order false belief tasks from age 5 to 7 with 93% of increase, while only 6% increase in mean scores was found from age 7 to 10. It showed relatively abrupt improvement in comprehension of second-order false belief tasks during early preschool years and plateau off after age 7. Among the six questions in the task, children at age 5 showed the most difficulty with the comprehension questions, belief question and the justification question. The ability in answering these questions increased greatly during the period of age 5 to 7. For the reality and memory questions, 89% and 95% of all the children were able to give correct answers respectively. Two children at 10-year-old

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**Table 2. Mean raw scores and standard deviations in the narrative test**

<table>
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<tr>
<th>Age</th>
<th>5:0</th>
<th>6:0</th>
<th>7:0</th>
<th>8:0</th>
<th>9:0</th>
<th>10:0</th>
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<tbody>
<tr>
<td>Mean</td>
<td>42.00</td>
<td>86.83</td>
<td>76.50</td>
<td>94.00</td>
<td>91.00</td>
<td>123.83</td>
</tr>
<tr>
<td>(Standard deviation)</td>
<td>(12.01)</td>
<td>(13.40)</td>
<td>(15.40)</td>
<td>(23.96)</td>
<td>(9.52)</td>
<td>(15.97)</td>
</tr>
</tbody>
</table>
were not able to answer the belief questions and the justification questions correctly which contradicted with many of the previous findings that children were able to attribute second-order false belief during the elementary school years (Talwar et al., 2007; Sullivan, Zaitchik, & Tager-Flusberg, 1994). Figure 2 compares the children’s performance on the two types of lies and second-order belief across different age groups. Only until 6 and a half year olds, children’s ability in comprehending second order false belief emerged. This may suggest that the second-order false belief task was more difficult than that of the lie and white lie task.

In order to examine the association of second-order false belief understanding with lie and white lie, Pearson correlation coefficients were calculated. Despite of the small sample size, there is a significant moderate positive correlation between second-order false belief and lie \((r = .45, p = .006 < .05)\), and white lie \((r = .44, p = .006 < .05)\).
Discussion

The present study revealed that children’s ability in comprehension of lie preceded that of white lie. Language skill has a significant impact on one’s ability in comprehension of lie while its effect on white lie was less remarkable. In addition, the second-order false belief understanding was significantly associated with the comprehension of lie and white lie. Each of these observations was discussed in detail as follows.

Age of acquisition for lie and white lie

The current study found that children acquired the ability in comprehending lie at about 5 years old. Most of the children among different age groups were able to tell that the story’s characters were lying. The result was consistent with the available literature that the ability in comprehension of lie emerged at about three years of age. Talwar, Lee, Bala and Lindsay (2002) claimed that lie judgment develops early as many of the 3 years old were able to tell if the speaker was lying. However, when it came to the justification, Maas (2008) found that most children at age 5 were yet to develop rationales for the lying behaviour while children at age 10 were more likely to interpret the lying behaviour correctly. Children from age 6 to 9 showed similar ability in providing correct justification. As age increases, children are better at justifying lying behaviour.

Similar pattern was also observed in comprehension of white lie which develops one year later at about 6 years old. Similar to that of lie, children as young as 5 years old were
better at judging the lying behaviour but unable to provide the reason for white-lie telling.

Older children were better at attributing the kind intention while younger children only stated
the physical consequences of not telling white lie (e.g. may be scolded or punished by the
mother).

By comparing the two sets of data from the same subjects, it can be concluded that
children had a better idea about what a lie was and it was easier for them to explain people’s
lying behaviour than the white-lie telling behaviour. This finding is consistent with the
previous prediction as white lie requires more sophisticated social cognitive involvement such
as kind intention and social skills in addition to the realization of the underlying real meaning.

The finding on the emergence of white-lie comprehension, however, appears to be
considerably later than those reported in previous studies in which children develop white
lie-telling with elaborated answers as young as 3 years of age (Talwar et al., 2007; Talwar &
Lee, 2002b). It even contradicts with the previous prediction that Chinese children would
have an earlier development in comprehension of white lie than that of their English
counterpart due to cultural factor. Chinese face management culture within the Hong Kong
community alone does not speed up children’s development of white-lie telling. Instead,
certain factors may indeed delay the development of white lie comprehension in Hong Kong
children. The observation on delayed development of this kind of prosocial behavior among
the Hong Kong children is not a novel idea. Liu, Wellman, Tardif and Sabbagh (2008)
compare the theory of mind development among Canada, United States, Mainland China and Hong Kong children and Hong Kong children was the slowest among the four. Such a belated mastery may ascribe to the rapid growing economy of Hong Kong. The whole society becomes very competitive and people, including students, are more goal-oriented. Taking other’s perspective or feeling is no longer the priority to maintain the social relationship with other people in the community. Moreover, the family structure in Hong Kong family has been changed. Hong Kong people tend to keep a small family size with many single children or only one to two siblings at most. They also tend to live with their own nucleus family instead of the extended family members like grandparents, aunts and uncles. The reduced interaction with other family members may also lead Hong Kong children to be more self-centered and ego-centric. They are therefore unlikely to take others’ perspectives and feeling into account even in school years.

Contribution of language in the comprehension of lie and white lie

The current study also demonstrated that language skills do affect one’s ability in comprehending lie while the effect on white lie was not obvious. By comparing the results of the ANOVA and ANCOVA, we found that the age groups did not differ in comprehension of lie after controlling for the effect of the language skill. On the other hand, the age group difference still existed after language skill was controlled for white lie comprehension. This suggests that white lie comprehension require more than mere “language skill”.

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In other words, comprehension of white lie was also governed by other factors.

Comprehension of advanced nonliteral language requires not only linguistic and cognitive involvement but also social pragmatic skills (Bernicot, Laval & Chaminaud, 2007). As children grow older, they would be exposed to more opportunities of social interaction, and they will have a greater need to maintain social relationships. Only when children develop better social skills and inferencing skills, they can avoid hurting others’ feelings as well as telling the difference between what the speaker said and what it actually meant (Bernicot et al., 2007). Therefore, comprehension of white lie requires one to have social pragmatic knowledge rather than just advance language skills.

*Relationship between second-order false belief, lie and white lie*

From the findings of the current study, second-order false belief understanding is significantly correlated to the comprehension of lie and white lie although the magnitude of the association is only moderate. The association of second-order belief understanding on lie and white lie was very close. This finding is consistent with many of the previous studies which suggested a strong relationship between lying or white-lie telling and theory of mind (Talwar et al., 2007; Maas, 2008; Broomfield, Robinson & Robinson, 2002). This may indicate that second-order belief understanding might contribute equally to the comprehension of lie and white lie in children. However, such a speculation requires more powerful statistical analysis such as regression analysis as evidence and this requires a larger-scale study for
sufficient statistical power.

On the other hand, the present findings was not enough to support the claim that second-order false belief task is a pre-requisite for the comprehension of lie and white lie as suggested by previous studies. Children at about 6 and a half years old started to have the second-order mental state understanding and some children as old as 10-year-old were not able to attribute second-order false belief. By comparing the percentage of accuracy in these three tasks, it can be observed that children in general performed better in the lie and white lie comprehension tasks than the second order false belief task regardless of their age. One explanation is that comprehension of lie and white lie is not built on this higher order false belief task but rather develops well before this kind of theory of mind skill. Another possible explanation for this associated but later emerging second-order mental state in the present study may be due to the methodological difference in carrying out this task. In the present study, the task lacked an overview introduction of the characters and the key locations at the beginning which might make the stories more difficult to comprehend. In Sullivan, Zaitchik and Tager-Flusberg (1994), they presented the “ice cream van” story with one additional procedure, that is, before the story was orally presented to the children, the characters of the story and the named key locations were shown on a picture and introduced to the children at the beginning. This additional procedure which the present study did not take into consideration could be the reason why the children found the task the most difficult among
the three. For meaningful comparison of results, such a methodological issue should be
considered in future study.

Limitations of this study and further study

Firstly, the second-order false belief task used in this study did not incorporate an
introduction of the task to facilitate children’s comprehension. This might have affected
children’s performance in comprehending the stories. It might also have masked the real
relationship between second-order belief understanding and the two types of lies. Second, the
children’s language skills did not show an upward sloping trend right from age 5 to 10. Rather,
some children in the group of age 6 showed relatively outstanding language performance
which was comparable to children of age 8. This might affect the interpretation of the
relationship between the age groups. The current study did not take into account of the effect
of the socioeconomic status of the children on the theory of mind development. Some recent
studies suggested the role of socioeconomic status on theory of mind development, it is
worthwhile to examine the underlying relationship between these two variables (Liu et al.,
2008).

Clinical implications

The present study provided some insight on the nonliteral language development of
Cantonese-speaking children. It suggested that younger children may comprehend lie and
white lie based on their own physical experience while older children would attribute more of
their sophisticated social pragmatic knowledge and offer a more pro-social type of explanation. Children in Hong Kong seem to be developing this ability in a relatively slower pace when compared with those in the western countries. Instead, some factors in the Hong Kong culture may slow down the development. The discrepancy appears to be noteworthy. Without proper education, such a delay may become even alarming. Therefore, it is suggested that local primary schools should consider incorporating the training on nonliteral language as well as social pragmatic skills into the current educational program in order to foster a whole person development for the Hong Kong children rather than merely focusing on academic and literacy skills which the current curriculum emphasized. Teaching nonliteral language comprehension not only improves children’s inferential skills and facilitate other discourse comprehension but also enhances their social interaction skills.
Acknowledgments

I would like to thank Dr. Carol To and all the teaching staff of the Department of Speech and Hearing Sciences for their valuable comment on this study. I would also like to acknowledge the support from the following school and youth center for their participation in this study: The Boys’ and Girls’ Clubs Association of Hong Kong (Lokman centre) and Martha Boss Lutheran Day Nursery. Last but not least, I would like to express great thanks to Miss Jackie Tang and all my classmates for their support and help in this dissertation.
References


Appendix A—Stories of Lie and White lie

Lies

1. 有一日，小明唔小心打爛咗姐姐心愛嘅音樂盒，小明心谂，姐姐知道，佢一定會好嬲。
   當姐姐返屋企睇到嘅個跌爛咗嘅音樂盒，佢問小明發生咩事，小明話：「係隻狗打爛
   你個音樂盒！」
   Q1. 小明同姐姐講嘅話係咪真架？
   Q2. 點解小明咁講？

2. 有一日，琪琪見到公園裏嘅花開得好靚，於是佢親冇人見到，偷偷摘咗幾朵花。
   返到屋企後，媽媽問琪琪點解有咁靚嘅花，琪琪就話：「係同學俾我嘅。」
   Q1. 琪琪同媽媽講嘅話係咪真架？
   Q2. 點解琪琪咁講？

3. 上中文堂時，明仔問同學借咗支筆，明仔唔小心整爛咗。當佢還返支筆俾個同學，同
   學問佢點解支筆會爛咗，明仔話：「你借俾我嘅時候，佢已經爛咗！」
   Q1. 明仔同同學講嘅話係咪真架？
   Q2. 點解明仔咁講？

4. 有一日，阿俊見到明仔有新玩具，阿俊好想玩，但明仔唔想借俾人玩。於是，阿俊親
   明仔去洗手間，偷偷將明仔的玩具收埋喺自己書包。明仔返嚟嘅時候，發覺唔冚咗心
   愛的玩具，就問阿俊有冇見過佢個玩具，阿俊話：「我冇，我都唔鍾意你個玩具。」
   Q1. 阿俊同明仔講嘅話係咪真架？
   Q2. 點解阿俊咁講？
5. 考試就嚟，嘉嘉仲未溫書，佢一向好懶，而且好討厭考試，到咗考試前一日，佢依然唔溫習。到咗考試嘅日，嘉嘉精神很好，當媽媽問佢點解咁遲都仲唔返學，嘉嘉就話：「媽媽，我覺得好唔舒服。」

Q1. 嘉嘉同媽媽講嘅話係咪真架？
Q2. 點解嘉嘉咁講？

6. 有咗一日，小麗朝早起身，覺得有啲肚餓，佢睇到枱上有一件好似好好味嘅蛋糕，於是就隨手拎嚟食。冇幾耐，媽媽返嚟，佢話今日要為姐姐慶祝生日，所以準備咗蛋糕。當媽媽發覺枱上嘅蛋糕唔見咗，佢就問小麗有冇見到咁件蛋糕，佢對媽媽講：「我冇見過！」

Q1. 小麗同媽媽講嘅話係咪真架？
Q2. 點解小麗咁講？

White lies

1. 樂樂一向都想擁有一個超人模型，佢好希望佢嘅生日快啲到，佢就可以叫爸爸送一個超人模型俾佢。終於到咗樂樂嘅生日，樂樂即刻拆開爸爸送嘅生日禮物，心諗一定係超人模型。禮物拆開咗，原來係一本故事書，樂樂一啲都唔鍾意故事書。當爸爸問樂樂鍾唔鍾意嗰份禮物，佢話：「我好鍾意，我啱啱想要一本故事書！」

Q1. 樂樂同爸爸講嘅話係咪真架？
Q2. 點解樂樂咁講？

2. 同學都知道小悅一向鍾意唱歌，佢一直想向同學表演。今日，佢邀請咗佢嘅好朋友小芬來睇佢表演唱歌。小悅唱完後，小楖覺得小悅的歌聲好難聽，而且有啲刺耳，好可怕。小楖問小楖佢唱成點，小楖就話：「好好聽，唱得真好！」
Q1. 小芬同小悅講嘅話係咪真架?
Q2. 點解小芬咁講?

3. 家俊好注重自己嘅外表，佢好在意人地俾佢嘅意見。今日，佢著咗一件新買嘅衫，周圍問人呢件衫好唔好睇。其實呢件衫好難睇，就連佢嘅好朋友樂樂都覺得好難睇。

但係，當家俊問樂樂嘅意見時，樂樂話：「好好睇，我都想買一件。」
Q1. 樂樂同家俊講嘅話係咪真架?
Q2. 點解樂樂咁講?

4. 今日，媽媽花咗好多時間煮咗一個新菜色俾妹妹試，妹妹食過後，覺得味道唔好，好難食。但係，當媽媽問妹妹好唔好食，妹妹就話：「好好食，我最鍾意食呢個菜色呀！」
Q1. 妹妹同時媽媽講嘅話係咪真架?
Q2. 點解妹妹咁講?

5. 明仔一直想買一個keroro公仔，今日佢終於儲夠錢去玩具店買。去到玩具店，只剩一個keroro公仔，明仔即刻買咗咗佢。當佢離開玩具店時，有一個小朋友咸著要買keroro公仔。但係，最後一個已經被明仔買咗。於是，明仔同老闆講：「我唔想要呢個keroro，我唔鍾意keroro！」
Q1. 明仔同老闆講嘅話係咪真架?
Q2. 點解明仔咁講?

6. 小麗好鍾意畫畫，而且很想人讚佢。今次佢花咗好多心機同時間畫咗一幅畫，佢問妹妹佢畫成點，妹妹睇過後，覺得有咩特別，而且唔靚，但係妹妹話：「呢幅畫好靚，好
有特色!』

Q1. 妹妹同小麗講嘅話係咪真架?

Q2. 點解妹妹咁講?
Appendix B—Consent Forms

Dear Sir/Madam,

We are now conducting a study on the development of figurative language in Cantonese-speaking children, which is part of my Bachelor degree at University of Hong Kong. It investigates children’s ability in comprehension of lie and white lie. This study will contribute to the understanding of the non-literal language comprehension in Cantonese-speaking children and allow better planning for school curriculum.

We would like to seek your help in subject recruitment of 40 children from age 5 to 10 (about P.1 to P. 5) with no developmental problems such as language problem, intellectual disability and hearing problem.

We shall work with each child for about 25-30 minutes, during which each child will listen to stories and answer questions about the stories. All the children’s speech production will be audiotaped. All information will be kept highly confidential and are only for research purpose.

We need about forty subjects (twenty boys and twenty girls) in total. I understand that I may not be able to get all children from your center. Yet, we would like to have as many as you could arrange. From 22/12/08 to 31/01/09, I can come on weekdays except Friday afternoon. Please feel free to contact me at 60138160 for any queries about the project. Please complete the reply slip attached and send it to me. A parent consent form is attached for your reference.

When I visit your school I will prepare all the equipment I need. I would be very grateful if you could arrange a quiet place for the administration of the test.

Again please feel free to contact me. I will be happy to discuss with you about the details of the project and arrangement that best fit your school routine. Your help will be greatly appreciated and acknowledged.

Thank you for your kind attention. I look forward to your good news soon!

Yours sincerely,
Louie Lui Man Yi  
Year IV student  
Division of Speech and Hearing Sciences  
Faculty of Education  
The University of Hong Kong

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**REPLY**

Miss Louie Lui Man Yi  
Division of Speech and Hearing Sciences  
5/F Prince Philip Dental Hospital  
34 Hospital Road  
Sai Ying Pun  
Hong Kong

Dear Miss Lui,

Our center *is willing / is not willing* to help in your study on the development of figurative language in Cantonese-speaking children in Hong Kong.

(* Please delete as appropriate)

Name of School: _____________________  
Name of Principal: __________________  
Signature: ________________________  
Date: __________________________

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敬啓者：

本人就讀香港大學言語及聽覺科學系。現擬進行一項有關「香港兒童邏輯推理」的研究。對象為五至十歲操粵語的兒童。此項研究乃本人之畢業論文。是項研究之結果有助於我們了解學齡階段的語言發展，及有助釐訂教學目標。

本人希望邀請貴子弟參與是項研究。屆時會與貴子弟進行一項簡短的活動。需時約二十至二十五分鐘。期間，貴子弟需聆聽一些故事及回答有關問題。此活動過程將會錄音作為日後分析之用，家長可重聽錄音內容，並有權要求刪去部份或全部之內容。本人謹保證所搜集資料將絕對保密，資料將會以不記名的方式保存，而且只作學術研究之用。是次參與屬自願性質，如有需要，貴子弟可隨時終止參與是項活動，有關決定將不會引致任何不良後果。

完成整個活動後，家長可查詢貴子弟於是次活動的表現，瞭解其邏輯推理的能力。懷疑有言語障礙的學童將會通過是項活動得以識別，並會轉告學校，由學校跟進。是項活動將不會對貴子弟造成不良影響。

希望閣下能對此研究給予支持，讓貴子弟參與其中。倘若閣下准許貴子弟參與此研究，請填妥以下回條並交回班主任。如日後閣下對是項研究有任何查詢，請與本人聯絡(60138160)。如閣下想知道更多有關研究參與者的權益，請聯絡香港大學非臨床研究操守委員會(22415267)。

本人承蒙閣下合作，深表謝意。

此致

貴家長

呂敏儀
香港大學言語及聽覺科學系四年級學生
二零零年月日

回條
本人已明白是項研究目的及內容。本人*同意/不同意子女(姓名)（班別）参加上届之研究。

此覆
香港大學言語及聽覺科學系四年級學生
呂敏儀

家長姓名：______________
家長簽名：______________

(*請刪去不適用者)