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Identification of Language Impairment in Three-year-old Children

Using a Parent Report Questionnaire

Chung Hoi Ting

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, 2008.
Abstract

A questionnaire was developed to identify language impairment in 3-year-old Cantonese-Speaking children. The accuracy of the questionnaire and the usefulness of teacher’s and parent’s concerns were investigated. In Stage I, the questionnaires were distributed to the caregivers of 171 children studying in K1 and 84 (49.1%) caregivers completed and returned the questionnaire. Class teachers of the participants completed the teacher questionnaire. All 11 screened-positive children and 11 randomly selected screened-negative children received a clinical language assessment during Stage II. Results of the screening and clinical assessment were compared in a double-blinded fashion. The questionnaire was found to have poor accuracy with a sensitivity value of 71.4% and specificity value of 60%. Inclusion of teacher’s concern slightly and partially improved the discriminant accuracy of the questionnaire but inclusion of parent’s concern did not. Further research is recommended to develop a valid and accurate screening tool for identifying language impairment in preschool children in Hong Kong.
Introduction

*Importance of Screening and Identification of children with language impairment*

The aim of early intervention for children with language impairment is to bring about short-term change that will influence long-term progress (Olswang, Rodriguez, & Timler, 1998). Intervention provided in the early years helps prevent, or reduce, the language and communication difficulties these children might encounter when they start formal schooling. Early intervention can only be possible, however, if children also receive early screening for language impairment.

There are two ways in which language impairment is identified in preschool children (Klee et al., 1998). One is indirect screening, in which concerned parents, teachers or health care professionals made referrals to the speech therapist for formal assessment. The effectiveness of these referrals is questionable. Children with severe language problems, or those with a language delay secondary to a general developmental delay or autistic spectrum disorder are the ones who are often referred early as toddlers (Rescorla, Ratner, Jusczyk, & Jusczyk, 2005). However, detection may be delayed for those children whose language problems are mild or without any obvious physical or cognitive disabilities (McCauley, 2001). This indicates the need for another route of identification of language impairment. An alternative is direct screening. Direct screening involves the use of a formal procedure to identify individuals from the general population requiring further assessment,
which might then result in intervention or monitoring of progress (Klee et al., 1998). It allows the therapists to determine if specific areas of a child’s communication need in-depth testing or if referral to other specialists is required (McCauley, 2001). Screening can be conducted via different procedures including direct assessment, observations, developmental checklist, and parent report questionnaire (Klee et al., 1998). Among all of these, the use of parent report questionnaire may be the most efficient and valid way of screening (Klee et al., 1998; Law, 1992).

**Parent Report Questionnaire**

Parent report questionnaires usually contain questions seeking information on the background of the children and their family and questions related to the language development of the children. Parents are required to fill in the questionnaire based on their knowledge and experience with their children. This contributes to one major advantage of these questionnaires. They can provide comprehensive and representative information about the language ability of the children across a variety of settings that the parents have accumulated over time which may not be found from direct observation or testing in a clinical session (McCauley, 2001). Also, cooperation of young children is required in direct testing. Even for children who are amenable to interact with the therapist, a child’s behavior may be affected in a subtle ways by the more formal, task-oriented, and adult-directed context of interaction during formal testing (McCauley, 2001). Parent report questionnaires
are less influenced by performance factors such as word frequency which could be prominent in language sampling where information is only collected within a short period of time and higher-frequency words are more likely to be observed (Dale, 1996). Furthermore, the use of a parent report questionnaires can motivate the parents to actively participate in follow-up assessments or treatment programmes since they have been involved in the identification process (Stokes, 1997). They are also more likely to be involved in their children’s intervention as collaborators (Dale, 1996). As parent report questionnaires are representatives as well as cost-effective, they are suitable to be used for clinical and research purposes (Dale, 1996; Fong, 2007). Nevertheless, there are some reservations about the use of parent report questionnaires as a screening tool. Parents may not have adequate training for the accurate reporting of some items (Thal, O’Hanlon, Clemmons, & Fralin, 1999), especially those more subtle aspects of the language structures that are developed in a later stage (Dale, 1996). Despite these observation, many studies reported good validity and reliability of using parent report questionnaires for the identification of children with language impairment, particularly those learning to speak English (Klee et al., 1998; Klee, Pearce, & Carson, 2000; Rescorla et al., 2005).

Screening in Hong Kong

In Hong Kong, children receive regular screenings of their language and communication abilities under the Developmental Surveillance Scheme of the Integrated Child Health and
Development Programme at 12 months, 18 months and 48 months with additional visits provided for those who require closer monitoring (Tso, 2005). Hence, children who do not receive any screening at 12 and 18 months or whose language impairment is not identified in these two screenings may only be identified at 4-years of age. There is a 30 month time gap between the last two screenings, during which signs of language impairment might appear for some children. These children will have to wait till they are 4-years of age before their impairment are identified under the Surveillance scheme. Opportunities for them to receive early intervention are therefore dissipated.

The Developmental Language Screening Scale (DLSS) was the first language screening measures developed in Hong Kong (Lee, Luk, Yu, & Bacon-Shone, 1985). The DLSS is divided into six subscales (A-F) investigating verbal comprehension, verbal expression, non-verbal comprehension, non-verbal expression, interest in communication, and abnormalities of speech respectively. The parents were asked to complete the questionnaire through interview with a trained investigator. In a follow-up study, 226 3-year-old children were examined by Wong et al. (1992) to determine the prevalence of behavioral disorder and language delay in 3-year-old Chinese children in Hong Kong. The prevalence of language impairment in the sample of 36-48 month-old children was 3.4% with more boys diagnosed to have a language delay than girls (Wong et al., 1992). The children were identified as having a language delay using the Cantonese version of the Reynell
Developmental Language Scales (RDLS-C) (Reynell & Huntley, 1987) with a criterion of language age of less than or equal to two-thirds of the chronological age. However, the accuracy of DLSS as a screening measure for each of the participants was not known as it had not been validated against a gold standard measure. Given the unknown validity of DLSS as a screening tool, there is a need to develop a screening tool for identifying language impairment in 3-year-old children.

Concerns from Teachers

Hall (1989) suggests that besides parents, developmental disabilities of children may also be detected by teachers, child health nurses and general practitioners. As preschool children spend a significant amount of time with their classroom teachers, preschool teachers may be able to provide useful information about their language development. A study conducted by Whitworth, Davies, Stokes, and Blain (1993) compared the accuracy of different questionnaires completed by parents and teachers in the identification of language impairment in 5-year-old children. Over-referral rate was found to be lower using teacher questionnaire. The opinion of teachers and speech therapists had also been compared with the result of formal language assessment (Botting, Conti-Ramsden, & Crutchley, 1997). Botting et al. (1997) collected the opinions of teachers and speech therapists of language impaired school-age children on four separate subtypes of language impairment including articulation, phonology, syntax and/or morphology, semantics and/or pragmatics Their goal
was to examine which group’s opinion was more consistent with the results of formal assessments. The study demonstrated that teachers’ and speech therapists’ opinions in articulation, phonology and syntax related strongly with the language impaired children’s performance in formal assessment (Botting et al., 1997). These reports suggest that information from teachers may improve the discriminant accuracy of the questionnaire.

**Concerns from Parents**

Parental concern is referred as one of the important factors for identifying children with language impairment (Klee et al., 2000; Stokes, 1997). Olswang et al. (1998) also considered parental concern as one of the risk factors of language impairment. Parental concern is influenced by parents’ own cultural, religious, education and socioeconomic background (Olswang et al., 1998). It may arise when the communicative interaction of parents and children are interrupted so that their interaction becomes increasingly burdensome (Olwang et al., 1998). Hence, parent’s concern may indirectly reflect the communicative ability of children. In the study by Klee et al. (2000), parental concern is one of the additional criteria used in revising his screening criterion. Results indicated that inclusion of this information improves the screening value of the questionnaire (Klee et al., 2000).

The aim of the present study was to develop a parent report questionnaire for identifying language impairment in 3-year-old Cantonese speaking children. The accuracy of the
questionnaire were examined by calculating some basics indices of discriminant metrics, including sensitivity, specificity, positive likelihood ratio, and negative likelihood ratio. The changes of accuracy of the questionnaire after inclusion of teachers’ and parents’ concerns were investigated. This study aimed to examine: 1) The accuracy of the developed parent report questionnaire in identifying language impairment in 3-year-old children, and 2) The effect of inclusion of the teachers’ and parents’ concerns on the accuracy of the questionnaire for identifying language impairment in 3-year-old children.

Method

Stage I Screening

Procedures.

One hundred and seventy one first-year kindergarten children from three kindergartens, their parents and class teachers were invited to participate in the study. The three kindergartens were located in different district including Kwun Tong, Kowloon City and Hong Kong East. A letter explaining the purpose of the study, a parent consent form, a case history form (Appendix A) and a parent report questionnaire (Appendix B) were distributed to the caregivers via the kindergartens. The same letter, a teacher consent form and a teacher report questionnaire (Appendix C) were distributed to the class teachers of the children who participated in the study. The case history form (Fong, 2007) was used to obtain background information of the children and their caregivers including parent’s concern, previous speech
and language service children had received, and the primary language used at home. The parent report questionnaire contained 37 items and it was developed using information from several parent report forms for the identification of language impairment in 3-year-old English-speaking and Dutch-speaking children (Dale, Price, Bishop, & Plomin, 2003; Luinge, Post, Wit, & Goorhuis-Brouwer, 2006; Paul, 2007) as well as information of language developmental milestones observed in children in Hong Kong (Heep Hong Society, 1998; Ze, 2006). The questionnaire was divided into the receptive and expressive section. Examples were given for several items in order to ensure that parents had unambiguous understanding of what was being asked. The teacher report questionnaire was adapted from Dale et al. (2003) which asked teachers if they had any concern of their students’ language development and to specify their concern if they had. Parents and teachers who were willing to participate in the study were asked to complete the consent forms and the questionnaires and return to their kindergartens within one week after they had received the questionnaire.

Participants.

As the present study aimed to investigate the accuracy of the parent report questionnaire in identifying language impairment in 3-year-old children, children who were younger than 36 months or older than 47 months, and those who had previously received speech and language assessment or intervention were excluded. Because the standardized reference
tests used in Stage II of the study were designed for assessing children with Cantonese as their primary language, participants who were bilingual (indicated by a rating of six or less out of ten in the proportion of time spent using Cantonese in the case history form) were also excluded (Fong, 2007). The completed questionnaires were scored by a colleague of the principal investigator to avoid bias in her administration of the reference tests.

**Stage II Clinical diagnosis**

**Participants.**

There were 37 items in the questionnaire with each item carrying one mark. Children who scored less than 70% of the total score (i.e. less than 26 items) were considered a positive screen while children who scored above that cut-off were considered a negative screen. A total of 22 children were invited to participate in Stage II which included all the screened positive cases and the same number of randomly selected sample of screened negative cases. Children were regarded as having teacher’s and/or parent’s concerns if their teachers and/or parents selected the box “yes” for the questions “Do you feel concerned about the language development of your children/student?” These criteria were not used for classifying screened positive and negative case initially and were used for later analysis.

**Procedures and Measures.**

The follow-up clinical assessment was conducted one week after the questionnaires were collected. The test administrator and the caregivers were blind to the screening results at this
stage to avoid any bias and subjectivity that may influence the result of the study. Each
assessment session lasted about one hour and fifteen minutes in which two reference tests
were administrated to the participants. The receptive scales of RDLS-C (Reynell & Huntley,
1987) was used to assess the receptive language of the children as it was the only general
language test which has been standardized for preschool children in Hong Kong. A delayed
sentence imitation task using stimuli from the Cantonese Adaptation of the Test for
Reception of Grammar (CTROG) (Mok, 1995) was used to assess the children’s expressive
language. The Expressive Scale of the RDLS-C was not used as Edwards, Garman, Hughes,
Letts, & Sinka (1999) criticized that the English version of the Expressive Scale of RDLS
(Reynell & Huntley, 1985), on which the Cantonese version was based, was difficult to
administer objectively and obtained informative results (Fong, 2007). On the other hand, the
imitation task developed by Mok (1995) enables sampling of children’s ability to produce a
variety of grammatical structures within a short time which may not be possible using a
language sample. Furthermore, the task had demonstrated a high inter-rater reliability,
test-retest reliability and construct validity (Mok, 1995). A 0-3 scoring method was used in
this study for assessment purpose (Mok, 1995).

The assessment was conducted by the principal investigator who was a final fourth year
undergraduate Speech and Hearing Science student at the University of Hong Kong. In
order to ensure proper administration and scoring of the two reference tests, a pilot session
was carried out with the supervisor of this study, who is a practicing speech therapist, observed and provided feedback on the principal investigator’s pilot session with a 4-year-old child.

Due to the small sample size, a cut-off point of one standard deviation below mean was used. Children who scored more than one standard deviation below mean in either one, or both of the measures were diagnosed to have language impairment. After completion of Stage II, the parents of Stage I participants were notified of the screening results with a reply slip. Parents of Stage II participants were informed of the assessment results via telephone conferencing. The principal investigator and her supervisor discussed the assessment findings and recommendations for the children before the conference. Resources for further assessment and treatment options were provided to the parents for participants who failed Part II.

Inter-rater Reliability of Reference Test Scores

The principal investigator’s reliability in the scoring of the tests was evaluated by having another fourth year student rescored 10% of the total amount of test results. The percentage agreement by items on RDLS-C was 100%. As for the delayed imitation test, the percentage agreement by items was 92.5%. Such figures indicated strong inter-rater reliability.

Consistency of the Parents Reports

Three randomly selected caregivers were asked to complete another copy of the same
questionnaire after two weeks. The scores of the two questionnaires were compared using item-by-item agreement. The consistency of the parents' report for completing the same questionnaire was 88.3% (98/111). This indicates moderately good stability of the parents in observing their children’s performance on the items in the questionnaire.

Results

Outcomes from Stage I

One hundred and seventy one questionnaires were distributed to parents in three kindergartens in Stage I and 84 questionnaires were completed and returned. The responses rate was 49.1%. Of the 84 questionnaires, 32 were excluded because 27 of them involved children who had received previous speech and language assessment or intervention, two involved bilingual children and three involved children older than 47 months. Out of these 52 questionnaires, 33 were for boys and 19 were for girls. Eleven children (21.1%) scored 25 or below, with a mean score of 20.3, were screened positive and they were all boys. The remaining 41 children, with a mean score of 34.3, were screened negative.

Outcomes from Stage II

All 11 children who were screened positive and 11 children (four boys, seven girls) randomly selected from the 41 screened negative cases participated in Stage II of the study. The mean age of children on the day of the follow-up clinical assessment was 40.9 months. Using a cut-off of one standard deviation below mean in either or both of the reference tests,
seven of the 22 participants (five boys, two girls) were diagnosed to have a language impairment. Five of the 11 screened positive cases were true positives and nine of the 11 screened negative cases were true negatives. True positives are children who are screened positive in the questionnaire and failed in either or both of the reference tests. True negatives are children who are screened negative in the questionnaire and passed both of the reference tests.

_Discriminant Accuracy of the Questionnaire_

A discriminant analysis was conducted to examine the accuracy of the parent report questionnaire in identifying 3-year-old children with language impairment and ascertaining the language status of typically developing children. Metrics of discriminant accuracy, including sensitivity, specificity, positive likelihood ratio (LR+), and negative likelihood ratio (LR-), of the questionnaire were calculated. Sensitivity refers to the extent to which participants who are true positives are also screened as positive in the questionnaire. Specificity refers to the extent to which true negatives (normal-developing) are also screened negative in the questionnaire. LR+ is an index of the degree of confidence that a screened positive case truly has a language impairment (sensitivity/(1-specificity)), whereas LR- is an index of the degree of confidence that a screened negative case truly does not have any language impairment ((1-sensitivity)/specificity). As suggested by Plante and Vance (1994), a diagnostic measure is considered of clinical value only if it receives at least
80% for both sensitivity and specificity. Dollaghan (2007) suggested that an accurate
diagnostic measure should have high LR+ and low LR-. A LR+ of 10 or more and a LR- of
0.2 or less indicates a high likelihood of true positive and true negative results respectively.
On the contrary, a LR+ of 4 or less and a LR- of 0.4 or more indicates intermediate results
only in which additional testing is required to confirm the diagnosis (Dollaghan, 2007). The
discriminant accuracy of the questionnaire revealed a sensitivity of 71.4%, specificity of
60%, LR+ of 1.8, and LR- of 0.5 which suggested that the it should not be recommended
for clinical use at its present form.

The mean scores on the reference tests of the screened positive and screened negative
group were compared using the non-parametric Mann-Whitney U test with statistical
significance set at p< 0.05. Results were presented in Table 1.

Table 1. Comparison of two groups’ performance in the questionnaire and reference tests

<table>
<thead>
<tr>
<th>Measures</th>
<th>Screened Positive Cases (n=11)</th>
<th>Screened Negative Cases (n=11)</th>
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<tbody>
<tr>
<td></td>
<td>mean</td>
<td>SD</td>
</tr>
<tr>
<td>RDLS-C—Receptive Scale</td>
<td>39.27</td>
<td>6.71</td>
</tr>
<tr>
<td>Delayed Sentence Imitation</td>
<td>63.18</td>
<td>33.48</td>
</tr>
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</table>

RDLS-C= Cantonese version of Reynell Developmental Language Scale, *p<0.05, two tailed.

The mean score of the two groups in both the reference tests showed statistically significant
difference. This reveals that most children who were screened positive also performed poorly in both reference tests and most children who were screened negative had a better performance than their screened positive peers.

**Items Analysis of the Questionnaire**

As the questionnaire was developed from several parent report forms (Dale et al., 2003; Luinge et al., 2006; Paul, 2007; Stott et al., 2002) and included information on children’s developmental milestones in Hong Kong (Heep Hong Society, 1998; Ze, 2006), an item analysis was carried out to examine which items were more discriminative for identifying 3-year-old children with language impairment. Parental ratings for a subset of children including the nine true negatives and five true positives were examined. Items which more than six true negatives could perform and less than four positives could perform were considered discriminative. There were 19 of these items, and they included comprehension of different concepts such as locatives and shape, comprehension of “how” and “when” questions, comprehension of sentences with four-elements and three-step commands; production of adverbs, classifiers and shapes; production of “how” and “why” questions, production of four-element sentences and sentences with conjunction “and”, “but”, “because”. These items are marked with an asterisk in Appendix B.

**Effect of Teachers’ Concern on the Accuracy of Questionnaire**

In order to determine the effect of including teachers’ concern on the accuracy of the
questionnaire, children were classified as screened positive cases only if they were screened positives in the questionnaire and their teachers indicated concern about their language development. The remaining children were classified as screened negative cases. Using these criteria, the screened positive case reduced from 11 to seven and the number of false positive screens dropped from six to three. However, one true positive case was reclassified as a false negative case. Result of discriminant analysis revealed a sensitivity of 57.1%, specificity of 86.7%, LR+ of 4.29, and LR- of 0.49. This combined criteria decreased the sensitivity although it increased the specificity of the questionnaire. Such findings again did not indicate that the questionnaire should be used for clinical purposes.

Effect of Parents’ Concern on the Accuracy of Questionnaire

A final analysis on the discriminant accuracy of the questionnaire involves the inclusion of parents’ concern. Children were classified as screened positive cases only if they were screened positives in the questionnaire and their parents expressed concern about their language development. The remaining children were classified as screened negative cases. Using these criteria, the screened positive cases reduced from 11 to nine. A false positive case was reclassified as true negative case but a true positive case was reclassified as false negative case. Result of discriminant analysis revealed a sensitivity of 57.1%, specificity of 66.7%, LR+ of 1.71, and LR- of 0.643. This combined criteria decreased the sensitivity with only a slight increase in the specificity of the questionnaire. Such findings again did not
indicate that the questionnaire should be used for clinical purposes. Discriminant accuracy of the three criteria in identifying 3-year-old children with language impairment were compared and presented in Table 2.

Table 2. Discriminant accuracy of different criteria in capturing children’s language ability

<table>
<thead>
<tr>
<th></th>
<th>Questionnaire only</th>
<th>Questionnaire with teachers’ concern</th>
<th>Questionnaire with parents’ concern</th>
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<tr>
<td>Sensitivity (%)</td>
<td>71.4</td>
<td>57.1</td>
<td>57.1</td>
</tr>
<tr>
<td>Specificity (%)</td>
<td>60</td>
<td>86.7</td>
<td>66.7</td>
</tr>
<tr>
<td>LR+</td>
<td>1.80</td>
<td>4.29</td>
<td>1.71</td>
</tr>
<tr>
<td>LR-</td>
<td>0.50</td>
<td>0.49</td>
<td>0.64</td>
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**Discussion**

**Discriminant Accuracy of the Questionnaire**

Both the sensitivity and specificity of the questionnaire were below 80%. According to the benchmarks proposed by Plante and Vance (1994), the questionnaire fails to serve as a screening tool for accurate identification of language impairment in three-year-old children. The low sensitivity indicates that some children with language impairment may not be identified using the questionnaire. Among the seven children who were identified as language impaired by the reference test(s), two of them (28.6%) passed the screening using the questionnaire. These children’s needs for further diagnostic assessment could have been
over-looked if this questionnaire were used as a screening tool. The low specificity suggests that children who do not have language impairment may be referred for formal assessment.

Using this questionnaire, six out of eleven screened positive cases were false positive. If this questionnaire were used as screening tool, it would result in a high referral rate of 54.5%. It will increase the strain on the speech therapist’s caseloads for providing follow-up service which is uneconomical and create unnecessary anxiety in parents (Klee et al., 2000). The low sensitivity and specificity coincides with the low LR+ and the high LR-. An unacceptable percentage of children who were screened positive did not have a language impairment and an unacceptable percentage of children who were screened negative did have a language impairment. Screening tools have to be accurate and economical (Klee et al., 1998). However, this questionnaire does not meet this standard.

There are some reasons that can explain the low discriminant accuracy in this questionnaire. Firstly, some of the items selected in the questionnaire may not be sensitive enough to identify children with language impairment. According to Table 1, although there was a significant group difference in the result of the reference tests, some children who failed the reference test(s) actually passed the questionnaire. This can be a result of the inclusion of non-discriminative items which all of the true positive cases were also able to perform. These include the comprehension of simple adjectives such as long/short, tall/small, comprehension of questions including “binary choice”, “what” and “whose”,
comprehension of three-element sentences; production of verbs related to mental state and three-element sentences. These items generally involved the language forms that appear early in 3-year-old children or even in some 2-year-old children. Some children who failed the reference test(s) might only have a mild language impairment and hence these language forms might also have appeared in their slower language development.

Secondly, the accuracy of the parents report is not known and some parents seem to need training to ensure accurate reporting (Thal, 1999). During a consultation with a parent on the performance of her child, it was found that although the parent had heard the child use an item, she did not check off that item as being present in the questionnaire. Other parents may complete the questionnaire incorrectly. When one of the caregivers was asked to fill in the questionnaire again for parents report consistency calculation, it was found that she completed the questionnaire incorrectly the first time. She asked her child directly if she knew the items instead of using her own observation to make a judgment. Also, several items in the questionnaire concerned about milestones that typically appear much earlier in the development which could affect the accuracy of report (Law, 1992). This is because parent’s report on past behaviors requires greater demands on memory than current language abilities and parents were more likely to have inaccurate report on these items (Dale, 1996). Furthermore, the extent of parent’s opportunity to observe their child may also affect their accuracy of reporting. In this study, the average time that the parents spent with
the children was about 48.9 hours per week. Some of the parents spent even less time with their children especially when their children were taken care by their domestic helper or grandparents. Hence, they might not have observed every aspect of their children’s language development. Besides, many parents did not have specialized training in language development and may be insensitive to subtle aspects of language structure and use (Dale, 1996). All these might affect the accuracy of the questionnaire.

Thirdly, the use of only two reference tests might not truly reflect the language ability of the children. Two standardized assessment was used for diagnostic purpose due to limitation of time and resources. Information on children’s language abilities in naturalistic communicative contexts might not be collected in these structured setting (Mok, 1995). Also, the capabilities of young children may be underestimated using standardized assessment as specific skills may not be demonstrated during a single administration of a structured test (Dale, 1996). Some children were shy and rather reluctant to interact with the principal investigator who was unfamiliar to them. These children may not have demonstrated all they know about language, hence their abilities were underestimated.

Usefulness of Teacher’s Concern

The specificity, LR+ and LR- were improved after the inclusion of teacher’s concern except for the sensitivity. This indicates that teacher’s concern, to a certain extent, increased the discriminant accuracy of the questionnaire. The partial improvement of the discriminant
accuracy may be contributed by the significant amount of time teachers spent in observing their students. According to Patterson and Wright (1990), teachers are able to observe their students’ performance over time in a variety of activities related to speech, language and hearing abilities. They could provide comprehensive information about their student’s language ability and indicated concern if they had about their student’s language development. Nevertheless, teachers do not have specialized training on speech and language development although they may have received training on general child development. They do not have sufficient knowledge about different types of language disorders and may express concern about their student’s language development based on only certain aspect of language. From the result of this study, it was found that teachers determined a child’s language ability primarily in the basis of his/her expressive skills. One false negative case failed both reference tests but her teacher did not have any concern about her language development. The girl was very active and talkative during the assessment session, which could easily lead one to think that she spoke well for her age. On the other hand, a false positive case was a boy who was quite passive and his teacher showed concern about his language development because he seldom spoke in class. In the formal assessment, this child demonstrated age-appropriate skills. Hence, in-service training of children’s language disorder is recommended to teachers in order to maximize their ability to accurately identify children with language impairment (Whitworth et al., 1993).
Usefulness of Parent’s Concern

The discriminant accuracy of the questionnaire was generally deteriorated after the inclusion of parent’s concern except a slight increase in the specificity. Hence, parent’s concern does not seem to improve the accuracy of the questionnaire. This finding seemed to contradict to a number of studies which have reported on the importance of parental concern in identifying children with language impairment (Klee et al., 2000; Whitworth et al., 1993). This might be because the question of parent’s concern was not posed in isolation but was asked at the same time when the parents were completing the questionnaire (Klee et al., 2000). When the parents were completing the questionnaire and they found that there were some items that their children failed to do, their awareness of how well their children were able to comprehend and speak may be heightened. This may prompt the expression of concern (Klee et al., 2000) and may explain why some parents whose children passed the questionnaire were concerned about their children’s language development. Different factors might affect the expression of parent’s concern including cultural, religious, education and socioeconomic background (Olswang et al., 1998). Some parents might not express any concern of their children’s language ability because they were in denial of their children’s language impairment. A nurse at the Government Maternal and Child Health Clinic (MCHC) had suggested to the parents of one of the true positive cases that their child should be referred for a language assessment at the Child Assessment Centre. However, the
parents declined the offer which might be because the parents were fear that the assessment result would lead to confirmation of their child’s language impairment. Hence, their absence of concern about their child’s language impairment might be due to denial of the problem. Further study is needed to determine which factors could affect parents’ perception of language impairment and their expression of concern. This helps to determine if parents’ concern provides reliable information for identifying children with language impairment.

*Research Implications*

Among the seven children who were diagnosed to have a language impairment in this study, only one of them had received a diagnosis prior to the study from the MCHC. The other six children (86%) have not been identified during their previous visits to the MCHC. One of the true positive cases was even told that it was typical for boys to have slower language development and he was not recommended to have a follow up assessment. As a result, the opportunity of early intervention for this child with language impairment was dissipated. Given the poor accuracy of the present questionnaire in identifying 3-year-old children with language impairment, further research on the development of an accurate and valid parent report questionnaire is urgently needed in order to identify preschool children with language impairment. The following ways are suggested to improve the discriminant accuracy of the parent report questionnaire developed in future study. The discriminative items stated in this study may be adopted while the non-discriminative items should be
eliminated. Examples can be provided to illustrate to the parents how to fill in the
questionnaire correctly in order to increase parents’ accurate report of their children’s
language abilities. The administrator who conducts the screening should also encourage the
parents to ask him or her when they do not know how to complete the questionnaire. In
addition to standardized tests, measures from language samples should also be included in
the diagnostic battery. According to Klee, Stokes, Wong, Fletcher, and Gavin (2004), the use
of language sample in calculating MLU and lexical diversity were found to be an accurate
diagnostic tool in distinguishing children with SLI from normally developing children.
Children’s true language ability are more likely to be revealed in conversation than during
formal standardized test as they would be more willing to speak during play.

Given the questionable accuracy of the inclusion of teacher’s and parent’s concerns for
identifying children with language impairment, further study is needed to investigate the
usefulness of these information. As teachers could be one of the referral sources for children
with language impairment (Hall, 1989), another direction for future study is to develop a
teacher report questionnaire and to evaluate the accuracy of the questionnaire in the
identification of preschool children with language impairment.
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Appendix A
Case History Form

Adapted from Fong (2007)

Background Information 基本資料
Child Name 學童姓名：_____________ Date 填寫日期：__________________________
Sex 學童性別：_____________ Date of Birth 出生日期：__________________________
Age 年齡：______ years 歲 ______ months 個月
Respondent 填寫人姓名：__________________
Relationship with Child 與學童之關係：__________
Tel 聯絡電話：__________________

Please check (✓) all appropriate items 請在適當的空格內填上“✓”號

Child Background 學童背景
1. Has your child ever received a speech and language assessment?
   貴子弟曾否接受言語評估？
   No 沒有 □ Yes 有 □ (Results 結果：__________________________ )
2. Has your child ever received speech and language therapy?
   貴子弟曾否接受言語治療？
   No 沒有 □ Yes 有 □ (Reason 原因：__________________________ )
3. Has your child ever been diagnosed to have any other problems (e.g. ear infection)?
   貴子弟曾否被診斷患有其他病患 (例：中耳炎)？
   No 沒有 □ Yes 有 □ (Please specify 請註明：__________________________ )

Family Background 家庭背景
1. What language(s) do you use at home?
   在家中使用哪種語言 (可多於一種)？
   
   How much time will you use to speak to your child in Cantonese?
   您會花多少時間與貴子弟以廣東話溝通？
   
<table>
<thead>
<tr>
<th>never 從不</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>always 經常</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1 □</td>
<td>2 □</td>
<td>3 □</td>
<td>4 □</td>
<td>5 □</td>
<td>6 □</td>
<td>7 □</td>
<td>8 □</td>
<td>9 □</td>
<td>10 □</td>
<td></td>
</tr>
</tbody>
</table>

2. How many hours do you spend with your child each week?
   您每週約花多少時間與貴子弟相處？ _______________ hours 小時
3. How many siblings does your child have?
   貴子弟共有多少兄弟姐妹？
   elder brother 兄 ____ elder sister 姐 ____
younger brother 弟 _____ younger sister 姐 _____

4. Who usually take care of your child?
    貴子弟通常由誰照顧？            

5. Has any of your family members been diagnosed to have a speech and language problem?
    家中有沒有成員被診斷患上言語障礙？
    No 沒有 □ Yes 有 □ (Please specify 請註明：__________________ )

Parent Background 家長背景
1. Educational level 教育程度
   Father 父： Primary 小學 □ Secondary 中學 □
            Tertiary 大專/大學 □ Master or above 碩士或以上 □
   Mother 母： Primary 小學 □ Secondary 中學 □
            Tertiary 大專/大學 □ Master or above 碩士或以上 □

2. Occupation 職業 Father 父：__________________Mother 母：______________

Parent’s Concern 家長顧慮
1. Do you have any concerns about your child’s speech and language development?
    你是否擔心貴子弟的言語發展?
    Yes 是□ NO 否□

2. If yes, what are your concerns?
    如是, 你對貴子弟哪方面的言語發展感到擔心:
       His/her language is developing slowly
       他/她的言語發展較慢 □
       It is hard for other people to understand him/her
       別人難以理解他/她的說話 □
       He/she does not seems to understand other people
       他/她不明白別人的說話 □
       He/she pronounces word poorly
       他/她的咬字發音不準 □
       He/she does not hear well
       他/她的聽力不太好 □
       He/she stutters
       他/她有口吃 □

       □ Others 其他: 請註明______________________________
Appendix B
Parent Report Questionnaire

Adapted from Dale et al. (2003), Luinge et al. (2006), Paul (2007), and including information of language developmental milestone of children from Heep Hong Society (1998) and Ze (2006).

Items that were found to be discriminative were marked with an asterisk (*).

Please check (✔) all items that your child is/was able to perform.

Receptive language ability 理解能力

Semantics 詞語

1. Your child understand at least different adjectives such as “long/short”, “tall/short”, “cold/hot” and “fat/thin”....................................................

Concept 概念

*1. Your child can comprehend at least three or above locatives such as above, in front of, beside, behind………………………………………

*2. Your child can comprehend the different colours such as red, yellow, green, black, white……………………………………………………

*3. You child can comprehend different shapes such as circular, triangular, square and rectangular………………………………..

Questions 問題

Your child understands and answers the following types of questions

1. Binary Choice………………………………………………………………
   (e.g. Do you want an orange of apple?)
   二選一
   (例子: 你想要橙定蘋果?)

2. Who………………………………………………………………………
   (e.g. who is he ?)
You child can comprehend the following type of sentences

1. 3-element sentences
   (e.g. Child can go to the bedroom and take a comb and zipper and give that to you when you asked)
   含有三個不同元素的句子（如人物, 動作, 物件, 地方, 概念以上其中三樣）
   例如：媽媽說：去睡房攞梳同拖鞋俾我，小朋友可以自行做到，而不需媽媽指著睡房

2. 4-element sentences
   (e.g. How to cook an apple?)
   點樣煮蘋果？
Development of a Parent Report Questionnaire

Others 其他
1. Your child understand the meaning of “one”. ……………………………... ☐
   e.g. (e.g. if you ask your child to give one piece of chocolate to you, will your child give you only one piece of chocolate and then stop?)
   貴子弟能明白“1”的意思
   例如：如果你叫小朋友俾一粒朱古力你，小朋友是否只俾一粒你便停下來

*2. Your child can follow a sequence of three consecutive commands……... ☐
   (e.g. Get the chopsticks, distribute them, then sit down)
   貴子弟可以明白同埋遵照指示連續做到三樣嘢
   例如：攞 D 筷子出嚟，派俾人，跟住坐好)

Expressive language ability 表達能力
General performance 綜合表現
1. You can understand what your child speaks………………………………... ☐
   你能夠明白貴子弟所說的話

*2. Other family members can understand what your child speaks.............................. ☐
   其他家庭成員能明白貴子弟所說的話

*3. Strangers can understand what your child speaks........................................... ☐
   陌生人能明白貴子弟所說的話

*4. What your child says is usually meaningful and relevant to the ongoing conversation or situation.................................................. ☐
   貴子弟所說的話大多是有意思，並與之前對話的內容相關連

*5. Your child can say more than fifty words................................................... ☐
   貴子弟能說超過 50 個詞語

Semantics 詞語
1. Your child can express his or her mental state using verbs such as “know” and “like”................................................................. ☐
   貴子弟能說出表達思想的動詞，如“知”，“鍾意”
2. Your child is able to use different adjectives such as “good/bad”, “big/small” and “more/less”.

貴子弟能說出不同的形容詞，如“好、壞”，“大、小”，“多、少”

*3. Your child is able to use adverbs such as “just now” and “now”.

貴子弟能說出不同的副詞，如“頭先”，“而家”

4. Your child is able to use the following pronouns including “I”, “You” and “He/She”.

貴子弟能運用以下的代名詞，包括“我”，“你”，“佢”

5. Your child is able to use the following relational pronouns such as “here/there”, “inside/outside”.

貴子弟能說出不同的方位代詞，如“呢度/嗰度”，“出面/入面”

*6. Your child is able to use different classifiers.

貴子弟能說出不同的量詞，如“個”，“隻”，“架”

7. Your child is able to use different aspect markers.

貴子弟能說出不同的助詞，如“緊”，“咗”

*8. Your child is able to name different shapes including “square”, “triangle” and “circle”.

貴子弟能說出不同的形狀，如“圓形”，“正方形”，“三角形”

**Asking questions 問題運用**

Your child can ask the following types of questions.

貴子弟能運用以下字詞問問題

1. “what & where” (e.g. What is this? Where is the duck?)

“什麼”及“邊度”

(例子：依個咩嚟嫁？鴨仔係邊度?)

*2. “why & how” (e.g. Why is he unhappy? How to play?)

“點解”及“點樣”

(例子：點解佢唔開心？點樣玩嫁?)

**Sentence 句子**

Your child can produce the following types of sentences.

貴子弟能說出以下的句子

1. 3-element sentences (e.g. Daddy drinks milk)

含有三個元素的句子（如人物、動作、物件、地方、概念以
上其中三樣）
(例子：爸爸飲牛奶)

*2. 4-element sentences.................................................................
(e.g. Mummy takes the shoes into the room)
含有四個元素的句子
(例子：媽媽攞對鞋入房)

*3. Sentences with the word “because” ........................................
(e.g. Says “because” he/she was hurt when asked why he/she has a plaster)
含有連接詞“因為”的句子
(例子：被問及點解要貼膠布時，回答「因為損咗」)

*4. Sentences with the word “but” ................................................
(e.g. Says “but” I want to play for a longer time when asked to stop playing toys)
含有連接詞“但係”的句子
(例子：叫小朋友收拾玩具時，回答「但係我想玩耐啲」)

*5. Sentences with the word “and” ..............................................
(e.g. Says Mother, Me and “brother” go to the park when asked who go to park with you)
含有連接詞 “同埋”的句
(例子：被問及與誰人去公園時，回答「媽媽，我同埋細佬去公園」)

6. Sentences with the word “if” ...................................................
(Says Teacher will punish me if I do not listen to her when asked why children have to pay attention in class)
含有連接詞“如果”的句子
(例子：被問及上堂為什麼要留心，回答「如果唔聽話，老師會罰」)
Appendix C
Teacher Report Questionnaire

Adapted from Dale et al. (2003)

Child Name 學童姓名：___________ Date 填寫日期：_____________________
Respondent 填寫人姓名：________________

1. Do you have any concerns about this student’s speech and language development?
   你是否擔心這位學生的言語發展?
   Yes 是□ NO 否□

2. If yes, what are your concerns?
   如是，你對這位學生哪方面的言語發展感到擔心:
   - His/her language is developing slowly
     他/她的言語發展較慢 □
   - It is hard for other people to understand him/her
     別人難以理解他/她的說話 □
   - He/she does not seems to understand other people
     他/她不不明白別人的說話 □
   - He/she pronounces word poorly
     他/她的咬字發音不準 □
   - He/she does not hear well
     他/她的聽力不太好 □
   - He/she stutters
     他/她有口吃 □

□ Others 其他：請註明________________________________________
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