REVIEW OF INTERNATIONAL ADOPTION LITERATURE

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Introduction

The purpose of this document is to provide a review of recent research investigating speech and language development in internationally-adopted children. As a relatively new research area, there is currently a lack of literature on this subject. However, interest in this subject area has grown in recent years and more information is becoming available.

The first portion of this document includes individual summaries of fifteen research articles conducted within the last five years. Each summary includes a brief description of the study's purpose, participants, methods and results. If appropriate, the general theme of the article is highlighted in italic text. Following these summaries is a synopsis of the key findings organized by general themes that commonly appear. Within this summary, information is referenced to the corresponding articles (by number) containing evidence for the findings. Additionally, commonly used vocabulary items, as well as the names of assessment tools appearing in bold text, are included in a glossary following the discussion of general themes. Finally, a complete list of references is provided so the reader can locate each article for further reading.

1. **Title:** Early Language Growth in Children Adopted from China: Preliminary Normative Data
Author(s): Karen E. Pollock
Published in: Seminars in Speech and Language (2005)

Purpose: The purpose of this study was to begin the development of normative data for language development of children adopted from China. In order to establish these developmental norms, a longitudinal survey is currently being administered to over 150 participants. Surveys are repeated every 3 months or until the child reaches 3 years of age (or 600 words on the **MCDI**). This study reports the preliminary data that has been collected using this tool.

Subjects: 140 children, between 7 and 43 months at the time of adoption; most had been in their permanent homes less than one year when they entered the study. Children were grouped into the following categories based on age at time of adoption:

- 7-12 months: 78 children
- 13-18 months: 47 children
- 19-24 months: 11 children
- Greater than 24 months: 5 children

Method: Parents completed a survey which included a language development checklist. Additionally, these children's parents filled out the **MCDI**

which included an infant form (words and gestures) and a toddler form for older children (words and sentences).

Results:

- Younger groups showed slow development at first with a rapid acceleration around 9-12 months post-adoption
- Older age groups had more words at each time period of measurement
- Oldest age group showed dramatic growth 3-6 months post-adoption and acquired words more quickly, but had the largest gains to make
- These are similar to the results of Glennen & Masters (2002) for children adopted from Eastern Europe
- Also looked at the length of the three longest utterances (**ML3**):
    - The older age groups produced longer utterances soon after adoption
- *General theme is variety; not all individuals conformed to the reported group means*

2. **Title:** Language Development of Chinese Adoptees 18-35 Months Old
Author(s): Tony Xing Tan & Yi Yang
Published in: Early Childhood Research Quarterly (2005)

Purpose: The purpose of this study was to find out, from a large sample of children, expressive language status and factors that might help explain development after children have lived with their adoptive families for an extended period of time. The authors predicted that the adoptees' language skills would gradually improve and that they would eventually reach the level of their non-adopted peers.

Subjects: 186 girls living in the U.S. adopted from China, all 18-35 months old; age at adoption was between 3 and 27 months.

Method: Parents were asked to fill out a demographic survey as well as the **CBCL**. The **CBCL** includes the **LDS** which looks at vocabulary size as well as average phrase length.

Results:

- 18-23 month group had a smaller vocabulary and shorter phrase length than the norm. This group showed the highest rate of delay
- 24-29 month group showed mixed results: they surpassed the national norms in terms of phrase length but did not show a significantly higher number of vocabulary items
- 30-35 month group showed a general trend of outperforming the normative sample
- *The authors state that it took, in general, approximately 16 months for the children to catch up with native speakers in terms of the vocabulary and average phrase length expressive language variables*

3. **Title:** Language Development in Preschool-Age Children Adopted from China

Author(s): Jenny A. Roberts, Karen E. Pollock, Rena Krakow, Johanna Price, Kathleen C. Fulmer & Paul P. Wang

Published in: Journal of Speech, Language, and Hearing Research (2005)

Purpose: The purpose of this study was to determine whether variables such as medical history, age at time of adoption, parent education, and socioeconomic status affect language development in internationally-adopted children.

Subjects: 55 children (54 girls and 1 boy) adopted from China between the ages of 6 and 25 months. At the time of the study, all of the children were between the ages of 3 and 6 years.

Methods: A number of variables were evaluated including the child's age at the time of adoption, medical history, hearing status, time spent in their permanent home, parent profiles, non-English language exposure in the permanent home, and early intervention services. Assessments of their language development were then administered which included a standardized language test, as well as measures of behaviour, cognitive abilities, preliteracy skills, and a language sample.

Results:

- Majority of the children (94.5%) were within or above the normal range after two or more years of English language exposure
- 27.3% of the children excelled on at least two standardized tests, scoring significantly higher than the mean
- Only three children (5.5%) scored below average on two or more tests
- *Age at time of adoption predicted performance on all three language measures*
    - *Those adopted earlier had an advantage in terms of speech and language development*
- *Those children with the greatest amount of exposure to English were among the higher performers*

4. **Title:** Speech-language Acquisition in Children Adopted from China: A Longitudinal Investigation of Two Children

Author(s): Karen E. Pollock, Johanna R. Price & Kathleen C. Fulmer

Published in: Journal of Multilingual Communication Disorders (2003)

Purpose: The purpose of this study was to chart the course of early language and phonological acquisition of two children adopted from China. Additionally, the authors were interested in the relationship between early speech-language development and later language skills as well as identifying the potential predictive factors of later speech and language performance.

Subjects: Two children adopted from China

- MX: adopted at 13 ½ months, produced lots of babble
- GY: adopted at 20 months, produced almost no babble and received early intervention from 21 – 25 months of age

Methods: The two children were followed longitudinally for 9 months after their arrival. They were given the **MCDI** looking at the number of words in their lexicons and investigating their 3 longest utterances as well as spontaneous speech samples. Then, the two children were given follow-up tests 27 months post-adoption; the battery included the **CELF-P**, **PPVT**, **EOWPVT**, **GFTA-2** and another spontaneous language sample.

Results:

- MX: 19 months – almost 50 words, 22 months – over 200 words, **ML3** = greater than 3.0 by 22 ½ months
- GY: 29 ½ months – almost 50 words, 33 ½ months – over 200 words, **ML3** = greater than 3 by 33 ½ months
- MX tended to exceed GY on all measures however all of GY's scores were in the normal range except the **EOWPVT**
- MX showed faster acquisition than GY in the first year post-adoption
- At 27 months post-adoption, both MX and GY were within or above the normal range on all measures
- *The general theme is early variability with gradual catch-up, even for the child who was initially slower*

5. **Title:** Starting Over: A Preliminary Study of Early Lexical and Syntactic Development in Internationally Adopted Preschoolers

Author(s): Joy Geren, Jesse Snedeker & Laura Ax

Published in: Seminars in Speech and Language (2005)

Purpose: The purposes of this study were to: (1) to gather information about the acquisition of vocabulary and grammar by preschool children within the first year of adoption, and (2) to determine whether language acquisition in internationally-adopted children follows the same patterns observed in the typically-developing population.

Subjects: 14 children adopted from China into the United States between the ages of 2 years 7 months and 5 years 1 month. All had been in the United States for anywhere from 3 to 16 months. Parents were asked to participate in the study until their child had been in the United States for 18 months.

Methods: Parents were asked to collect data in their home once every three months. At each time interval, parents completed three different measures: (1) a background questionnaire covering such topics as the child's history, health, native language development, adoptive family, current use of language, and their current language environment, (2) the **CDI-2**, and (3) a one-hour language sample on videotape.

The researchers then compared the language sample on videotape to the reports of parents on the **CDI-2** to ensure that both measures were consistent. An analysis was also carried out on the language sample to determine the child's **MLU**.

Results:

- Vocabulary size increased with the length of time that the child had been in the United States
- The child's age at adoption did not predict vocabulary size (that is, children adopted at an older age did not acquire vocabulary more quickly than those adopted at a younger age)
- *The early stage of vocabulary growth in the internationally-adopted preschoolers was very rapid*
    - On average, adopted preschoolers in the United States for only 3 months had already acquired a vocabulary equivalent in size to that of a typically 24-month-old infant. The 24-month-old infant would have been speaking for at least a year to acquire the same vocabulary size.
- Between 3 and 9 months post-arrival, adopted children progressed as much as typically-developing children between the ages of 24 and 30 months
- *The pattern of acquisition was the same for adopted preschoolers as for typically-developing infants*
    - Initially, children learned a large quantity of nouns
    - When the vocabulary reached about 200 words, the proportion of nouns decreased
    - Verbs and adjectives gradually increased at that time
- *There was a correlation between vocabulary size and complexity of children's utterances, as is true in the typically-developing population*
    - When the vocabulary was between 50 and 200 words, the infants began to combine words

6. **Title:** Acquisition of English Vocabulary by Young Chinese Adoptees

Author(s): Rena A. Krakow & Jenny Roberts

Published in: Journal of Multilingual Communication Disorders (2003)

Purpose: The purpose of this study was to document the acquisition of English vocabulary by young Chinese adoptees.

Subjects: 15 female Chinese adoptees ranging in age from 7 months, 22 days to 11 months, 17 days. Age at adoption ranged from 7 months, 23 days to 8 months, 14 days.

Methods: The children's expressive vocabularies were measured using two parent report instruments: **MCDI** and **LDS**. The parents also completed a set of questionnaires requesting background information on the parents and child, including interaction and exposure to other languages.

Results:

- **LDS**: 2-year-olds
  - 60% of children had an expressive vocabulary that was at or above the mean
  - 20% of children performed slightly below the mean
  - 20% of children performed well below the mean
  - One child was at or below the 15th percentile
- **MCDI**: 2 year-olds
  - Most of the children performed within normal limits
  - Four children were at or below the 15th percentile
  - Nearly half of the children never showed a delay based on the 15th percentile criterion
  - Four children appeared to be delayed early on but no longer showed a delay at the last assessment
  - Three of the children consistently scored below the 15th percentile but acquired vocabulary rapidly in later assessments
- Maternal education level was found to be the factor most related to differences in group performance

7. **Title:** Continued Catch-Up and Language Delay in Children Adopted from China
Author(s): Jenny A. Roberts, Karen E. Pollock & Rena Krakow
Published in: Seminars in Speech and Language (2005)

Purpose: The purpose of this study was to investigate the long term speech and language developmental implications for children adopted from China. This included an examination of language development of children whose scores in a previous study, completed two years earlier, were found to be low. The authors wanted to investigate whether or not increased exposure to English resulted in better performance on language tests.

Subjects:

- 10 low performing children from the original sample (60-84 months of age)
- 17 adopted peers with average performance from the original sample, matched for age

Method: The same tests were given to the children from the original sample. The first test included the **PPVT-III**, the **EOWPVT-R**, the **GFTA-2** and the **CELF-P**. Given the ages of the children at the second testing time, the **CELF-3** was used for 3 children and one was tested with the **CELF-4**.

Results:

- Five children showed significant gains on the **PPVT-III** or the **EOWPVT-R**
  - One child showed gains on both tests
- Three children showed significant gains on the **GFTA-2**
  - One child's score on the **GFTA-2** declined
- Three children showed gains on the receptive portion of the **CELF** test
  - Of these, two showed gains on the expressive portion
  - One additional child showed gains on the expressive portion of the **CELF** test
- Two children's scores remained the same
  - One on the **GFTA-2**
  - One on the expressive portion of the **CELF**
  - However both had severe articulation difficulties
- Overall, 9 out of 10 children made clinically significant gains on at least one measure
- *Vocabulary and expressive language tended to improve*
- Gains were seen overall but this group continued to perform significantly below the other children in their peer comparison group

8. **Title:** Adoption Age Effects on English Language Acquisition: Infants and Toddlers from China
Author(s): Rena A. Krakow, Shannon Tao & Jenny Roberts
Published in: Seminars in Speech and Language (2005)

Purpose: The purpose of this study was to compare the language development of two groups of children adopted from China. The children were all adopted from the same orphanage but one group was adopted as infants, and the other group was adopted as toddlers. The authors investigated how the abrupt shift to English differs in regards to how language emerges in infants as compared to older children.

Subjects: 2 groups, all girls from China from the same orphanage:

- Infant group: 7 to 9 months at the time of adoption, 6 children
- Toddler group: 24 to 32 months at the time of adoption, 6 children

Methods: The infant group was tested until they turned 2 years old whereas the toddler group was tested until they were one year post-adoption. All children were given the **MCDI** (approximately once a month) and the **LDS** (administered 1-2 times over the course of the study)

Results:

MCDI

- Toddlers:
  - Higher **MCDI** vocabulary scores 1 year post-adoption
  - Good expressive vocabularies
  - But, they were behind when based on age match comparison
  - After approximately 6 months post-adoption they were moving towards age appropriate vocabulary size
- Infants:
  - Limited vocabulary
  - There were exceptions to the group norms

LDS

- Toddlers:
  - Delayed at the first time of measure and one year post-adoption
  - However, performing fairly well later, but this group was still considered below their infant group counterparts when age is considered
- Infants:
  - At the second time of measure (2 and 2 ½ years) this group was performing very well
- *In general, the older the child the greater the delays that can be expected*
- *Most delays appear to be catching up by about one year post-adoption*

9. **Title:** New Arrivals: Speech and Language Assessment for Internationally Adopted Infants and Toddlers within the First Months Home
Author(s): Sharon Glennen
Published in: Seminars in Speech and Language (2005)

Purpose: The purposes of this study were to: (1) determine the pattern of language development in internationally-adopted toddlers, (2) assess whether adopted children with medical or developmental risk factors have poorer language outcomes, and (3) to evaluate whether infants adopted at younger ages perform better on language assessment tasks than those adopted at older ages.

Subjects: 28 children (16 girls and 12 boys) adopted from Eastern European countries including Russia, Kazakhstan, and Romania. The children were between the ages of 11 and 23 months at the time of adoption.

Methods: Parents completed a questionnaire regarding the child's medical and developmental history, as well as parental concerns regarding speech and language development. The children were then assessed using a variety of parent questionnaires (**MCDI**, **CSBS-DP**), a behavioural assessment (**CSBS-BS**), a language sample analysis and a middle ear screening to assess current status.

Results:

- The children had a high reported incidence of growth, medical, or developmental concerns
- The majority of parents expressed mild concerns (50%), followed by moderate concerns (32%), no concerns (14%), and severe concerns (4%)
- 27 of 28 children understood simple phrases and words
- Most of the children were producing English words at the time of their assessment
- Five children were not yet talking (they were the youngest) at the time of their assessment
- Majority made immediate gains in speech and language abilities and most scored within the normal limits
- No correlation was found between assessment results and the factors being investigated (medical risks, parent concerns and age at adoption)
- *Researchers determined that a cut-off score of the 20th percentile should be used when determining which children need intervention*

10. **Title:** Typical and Atypical Language Development in Infants and Toddlers Adopted from Eastern Europe
Author(s): Sharon Glennen & M. Gay Masters
Published in: American Journal of Speech-Language Pathology (2002)

Purpose: The overall purpose of this study was to develop guidelines to identify those internationally adopted children that are in need of speech and language services. This included developing guidelines applicable to this population in terms of English language development, monitoring parental concerns about language development as well as an examination of the children's medical and developmental histories to determine the existence of potential predictive factors for speech and language development.

Subjects: 130 children adopted from Eastern Europe (59 girls, 71 boys) divided into four age-at-adoption groups:

a) less than 12 months
b) 13-18 months
c) 19-24 months
d) 25-30 months

Methods: The survey that was developed by Glennen and Masters included developmental scales, an expressive language survey, and the development of four grammatical morphemes (past tense -ed, -ing, plurals and possessives), the **LDS** as well as medical and developmental factors. The parents of the children were sent an initial survey and a follow-up survey 3 months later. Children who had not yet reached 36 months of age were mailed an additional survey every 6 months until the child had turned 3 years old.

Results:

- In general:
  - Group A: delayed by 5-6 months and reached average by approximately 2 years post-adoption
  - Group B: still showed delays at 36 months
  - Group C: only 1-3 months delayed after 1 ½ years
  - Group D: 8-10 months delayed at 37-40 months
- Expressive language as measured by the **LDS** showed:
  - Language emerged quickly for all groups once the first words developed, but lagged incrementally with each increase in age at adoption
- **MLU**:
  - Growth lagged slightly behind and increased with each increase in age at adoption
- Grammatical morpheme development:
  - Followed the same developmental patterns but lagged slightly with each increase at age of adoption
- *In general, the children followed the same developmental growth patterns but lagged behind*
- *The acquisition of English came quickly and progressed quickly post-adoption*

11. **Title:** Linguistic Interference between L1 and L2 in Internationally Adopted Children
Author(s): Sharon Glennen, Ariella Rosinsky-Grunhart & Rachel Tracy
Published in: Seminars in Speech and Language (2005)

Purpose: The purpose of this study was to determine whether development of English morphemes follows the same general pattern for internationally-adopted children as for monolingual English speakers. It also aimed to identify aspects of the Russian and English languages that may facilitate or interfere with development of the second language. Finally, it sought to determine if differences in morpheme development exist between children adopted between 11 to 17 months, and those adopted between 18 and 23 months.

Subjects: 23 children (14 females, 9 males) adopted from Russia or Kazakhstan between the ages of 11 and 23 months. All of the children had Russian as their native language and lived in orphanages before being adopted.

Methods: The children were seen within the first 3 months of adoption, as well as at 6 month intervals for the following year. Thereafter, the children were assessed on a yearly basis until they reached the age of 73 months. Language samples were collected during 30-minute play session and were later coded using the **SALT** program.

Results:

- Morpheme development followed the same sequence as for typically-developing, English-speaking children:
    - V + ing
    - Articles
    - Contracted copula
    - Contracted auxiliary
    - Uncontracted copula
    - Uncontracted auxiliary
- *Internationally-adopted children acquired these morphemes more slowly than typically-developing children*
- *On average, they exhibited a 9-month delay in the acquisition of grammatical morphemes*
- There was no evidence of facilitation or interference between the two languages with respect to acquisition of grammatical morphemes
- The two age groups did not differ in their acquisition of morphemes

12. **Title:** Five Years Later: Language in School-Age Internationally Adopted Children
Author(s): Sharon Glennen & Betsy J. Bright
Published in: Seminars in Speech and Language (2005)

Purpose: The purpose of this study was to determine whether internationally-adopted children from Eastern European countries had language and social skills similar to their non-adopted peers in the early school years. This was accomplished through surveying children who had previously participated in the Glennen & Masters study. Additionally the researchers were interested in identifying particular areas of strength or weakness and whether age at adoption was predictive of development in language, social skills and problem behaviors.

Subjects: Participants were recruited from the previous Eastern European study by Glennen & Masters; all children were less than 30 months at the time of adoption

- The children in this study were surveyed 5 years later
- There were 46 who completed the surveys: 21 girls and 25 boys
- Age range: 6 years 1 month to 9 years 1 month in Kindergarten to grade three

Method: An informal parent and teacher questionnaire was sent out. Additionally, the families were asked to complete the **CCC-2** and the **SSRS** (parent and teacher forms).

Results:

- **CCC-2**:
  - The children demonstrated appropriate use of language structure for communication purposes
  - They were within the average range on subtests examining syntactic and semantic skills
  - They scored lower on subtests examining pragmatic use of language in social situations
- **SSRS**:
  - Parent form: the children were found to be slightly below average
  - Teacher form: the children's mean scores were in the average range
- **MLU** & Vocabulary:
  - Those children with higher scores performed better overall on the **CCC-2** and the **SSRS**
- The most commonly received support service in this population was speech-language services

13. **Title:** A Few New Children: Postinstitutionalized Children of Intercountry Adoption
Author(s): Ruth Lyn Meese
Published in: The Journal of Special Education (2005)

Purpose: The purpose of this study was to review current knowledge regarding growth and development of institutionalized children after adoption. The author also reviewed literature on the effect of language shift, as well as provided recommendations for future research.

Method: Systematic review of the available literature from empirical studies and articles from peer reviewed journals as well as parent organizations and their websites.

Results:

- Language delays are among the most common developmental delays noted in the internationally-adopted population
- Results are variable regarding the speed with which children acquire English as well as the percentage of delays reported
- There is a lack of research available on the long-term effects of these delays on academic performance in the later school years

14. **Title:** Language Development and Delay in Internationally Adopted Infants and Toddlers: A Review
Author: Sharon Glennen
Published in: American Journal of Speech-Language Pathology (2002)

This article was written to provide a review of the recent research investigating language development in the internationally-adopted population. First, the author described the unique language environment that internationally-adopted children encounter. These children do not fit into the categories of simultaneous bilingualism (i.e., learning two languages at the same time) or successive bilingualism (i.e., learning a second language after the first has already been acquired). Rather, these children experience an abrupt stoppage of language learning as exposure to the birth language ceases and exposure to the adopted language emerges. This increases the risk that the child may experience a phenomenon known as "semilingualism" – the failure to develop proficiency in either language.

Because of these risks for difficulties with language development, speech and language development is often the primary concern of families who adopt internationally. Oftentimes, these children appear to be language-delayed or disordered in both their birth and adopted languages. Unfortunately, assessment tools developed for either of those languages cannot be used to determine the presence or absence of a language disorder. As a result, speech-language pathologists are challenged in determining which children need direct intervention, which should be closely monitored, or which are developing normally and do not require services.

Another of the challenges that these children face is that the birth language may affect development of the adopted language. If the two languages are very similar, exposure to the first may facilitate development of the second. However, if the adopted language is very different from the birth language, interference may occur, causing language development to be more problematic. Children who are internationally adopted often spend the early part of their lives in institutions. The conditions present in many of these orphanages also place the child at risk for development delays. Many children are born with very low birth weights as a result of poor prenatal care. Some countries, particularly in Eastern Europe, have a high prevalence of alcoholism, increasing the risk of medical conditions such as fetal alcohol syndrome. Living in an orphanage also carries with it the risk of infectious and parasitic diseases. Children in orphanages also do not experience the same amounts of social interaction as those raised in homes with their parents. Oftentimes, children are grouped with peers of the same age, resulting in little opportunity to have older children around as language models. Language directed at the children from caregivers often consists only of simple comments and questions**.** Pediatricians estimate that, for every 4 to 5 months spent in an orphanage, a child averages 1 month of developmental delay.

Upon arrival in their new homes, many of these children respond positively to better nutrition, health care, and social interaction with their families.

15. **Title:** Phonological Skills of Children Adopted from China: Implications for Assessment
Author(s): Karen E. Pollock & Johanna R. Price
Published in: Seminars in Speech and Language (2005)
(Note: This paper is a summary of data from several other studies)

Phonological skills of children adopted from China may follow a pattern of early delay followed by a rapid period of catch-up. The reason they may exhibit this pattern is that there are large differences in the phonological systems of Chinese and English. Therefore, interference may occur between the languages during acquisition of speech sounds. Parental reports have indicated that articulation and phonology is an area of concern for many children adopted from China. These children often exhibit speech patterns that are "choppy" or "sing-songy", as though children are applying Chinese stress patterns to their English words.

Some of the differences between Chinese and English are:

- English has a complex system of final consonants and consonant clusters
- Fricatives and affricates are not often observed in the early phonetic inventory of English, although they are commonly found in the early phonetic inventory of Mandarin

Two studies investigated phonological skills in female children adopted from China between the ages of 9 and 20 months. The first followed two children longitudinally. The first child, MX, frequently babbled and used consonant-vowel syllables. However, the second child, GY, often grunted or whined and used few English consonants. Articulation tests found that both children were within the normal limits by three years of age. Errors observed were commonly found in English-speaking children of the same ages.

Another study followed the development of six girls adopted from China. They were assessed at 6 months post-adoption, as well as at the age of 3 years. All children had reached the canonical babbling stage (using syllables with the C-V shape such as "ba-da-ga") by the time of the 6-month post-adoption visit, although the age of onset was unknown. Age of onset of canonical babbling is an important indicator of speech and language delay. Observed in most typically developing infants between 6 and 10 months of age, it may not be observed until between 11 months and 3 years of age in children with hearing impairment or Down's Syndrome.

The sizes of the children's phonetic inventories were not related to the size of their expressive vocabulary. At age 3, five of the children scored within normal limits on the **GFTA**. The sixth child scored more than two standard deviations below the mean, indicating that she was delayed. However, at 6

months post-adoption, her performance was comparable to the other five participants. Phonological processes most commonly used by the children were cluster reduction, gliding, and stopping.

These studies show that phonological development in children adopted from China can be quite variable. However, most children demonstrate normal phonological abilities by the age of three.

Another study examined in detail the phonological skills of 25 infants and toddlers adopted from China. All of the children were girls and were between ages 3 and 6 at the time of their assessments. All had been adopted before age 2 and had been home for at least 2 years. Furthermore, all of the children had lived in an orphanage, were in good health, and had normal nonverbal IQ scores. The children were assessed using the **GFTA-2**, **KLPA-2**, and **PROPH**. The majority of the children (88%) performed within normal limits**.** Of the four children who scored poorly on the tests, two had poor receptive and expressive language (suggesting the possibility of specific language impairment or SLI), one fit the profile of a "late-talker" (slow to begin talking, but might still catch up), and one appeared to have no receptive or expressive language difficulties (suggesting that their only difficulty was with speech sound production).

Speech and language assessment in the internationally-adopted population is very challenging. To improve assessment, it is important to obtain as much information as possible from the orphanage at the time of adoption. Furthermore, close observation within the first weeks or months home may assist in determining language outcomes. This observation permits collection of data about the quantity and quality of the child's vocalizations. Over the first year, independent phonetic analyses may also be conducted. These examine what sounds are in the child's inventory, how often they are used, what syllable structures are produced, and so on.

By 2 years post-adoption, standardized assessment tools may be used. However, their results must be interpreted with caution, as the norms are obtained on a monolingual English-speaking population.

Older children may be at greater risk for speech and language delays due to the greater amount of time spent in institutions. If possible, assessment of these children should be conducted in the birth language.

General Themes

Following is a synopsis of the key findings organized by general themes that commonly appear. Within this summary, information is referenced to the corresponding articles (by superscript number) included in the previous review.

Factors influencing language development

There are a number of factors that are likely to influence language development in the internationally-adopted population. These include, but are not limited to, age at adoption, amount of exposure to English and effects of institutionalization. Analysis of these factors may improve the ability to predict which children will acquire English given sufficient exposure time, and which children will require speech and language intervention [1].

In general, studies have shown that age at adoption predicts performance on language measures, with children adopted at younger ages having an advantage in speech and language development [3]. A number of factors may explain this trend, including less time spent in institutionalized care, introduction of the new language at an earlier age, and the fact that less language must be acquired for them to match their non-adopted peers. However, one study conducted five years post-adoption found no relationship between a child's age at adoption and their performance on several behavioural, social, and language measures [12].

Research on vocabulary development has been mixed. Some studies have reported that age at adoption does not predict the rate at which vocabulary is acquired (i.e. older children with more language experience do not acquire words faster than children adopted as infants) [5]. However, another study reported preliminary data stating that children adopted at older ages acquire vocabulary more quickly. Despite this increased rate of acquisition, these children are at a disadvantage, having further to go before reaching the same level as their non-adopted peers [1].

Studies investigating language development in preschool-aged children adopted from China have found that those with the greatest amount of exposure to English perform higher on language measures [3]. The amount of exposure to English is often directly related to the amount of time spent in their permanent homes. As a result, the longer they have spent in that environment, the greater gains seen in language development.

Internationally-adopted children often spend the first months of their lives in institutionalized settings. The conditions present in many of these orphanages place the children at risk for developmental delays. It is estimated that for every four to five months spent in an orphanage, they experience approximately one month of developmental delay [14].

Difficult assessment

The internationally-adopted population presents a unique challenge to speech-language pathologists in determining which children require intervention, those who need continued monitoring, and those who will develop normally and

require no service. The children often appear either delayed or disordered in both their birth and second languages [14]. Assessment in the birth language is difficult and unless performed soon after adoption may not be an adequate representation of their language abilities. Furthermore, assessments cannot be conducted in the second language as results would not be considered valid (due to the fact that these tests are normed on a monolingual English-speaking population) [10, 14].

To improve assessment of this population, it is necessary to obtain, from the orphanage or foster home, as much information as possible about their language development prior to adoption. Close observation of the children during the first months at home may also provide valuable information [15]. When observing, the focus should be on aspects of communication that are not language-specific (e.g., social interaction, play, gestures). When English standardized measures must be used, a cut-off score of the 20th percentile should be used to determine when intervention is needed [9]. It has also been suggested that standardized tests be used as dynamic assessment tools to chart progress and monitor gains over time [10].

With respect to phonological assessment, it may be beneficial to collect data about the quantity and quality of the child's vocalizations during the first months home. During the first year post-adoption, independent phonetic analyses (i.e. phonetic inventory, frequency of sound use, syllable structures, etc…) should be used. By two years post-adoption, standardized tools may be used provided that the results are interpreted with caution.

Rapid catch-up following the typical sequence

In general, research has found that the majority of internationally-adopted children make immediate gains in speech and language abilities and function within the normal limits for their age group [9]. Studies vary in their reports of amount of time and exposure to English required for children to catch-up to their non-adopted peers. A range of 1 to 2 years of English exposure has been indicated as the average time needed [2, 3, 8].

Many studies have indicated that the pattern of language development exhibited by internationally-adopted infants and toddlers closely mirrors that of their non-adopted English-speaking peers [10]. With respect to vocabulary, children acquire a high proportion of nouns, followed by the acquisition of verbs and adjectives once their vocabulary has reached approximately 200 words [5]. When their vocabulary reaches between 50 and 200 words, children begin to combine word into longer phrases and sentences [5]. In addition, morpheme development follows the same sequence as for typically developing English children [11].

Variable outcomes

In general, children tend to perform at or near the group means. However outliers do exist within most studies, some performing significantly above the available norms on standardized measures and others falling further behind [1, 6].

It is important to note that these outliers also exist within the typically-developing population. While some of these individual differences in performance may be explained by factors related to international adoption, some may be a result of individual differences in verbal and nonverbal cognitive skills in general [4].

A study investigating children's performance after an additional two years of English exposure found that the previously low scorers continued to score below average despite improvement overall [7].

Academic language

More complex language is required for students to succeed in the early elementary years. Young children functioning within normal limits may encounter new language-learning and academic difficulties upon entry into school [4]. At this time, reports indicate that vocabulary, semantics, and syntax are not the most problematic areas of language. Rather, the higher-level and more subtle pragmatic use of language, such as making inferences and understanding simple humour, presents the most difficulty [1, 12].

Parent recommendations

Parents often overlook language or cognitive disabilities in internationally-adopted children, attributing their language and behavioural difficulties to the process of adjusting to their new family and learning their new language [13]. Parental concern should arise when rapid gains in language development are not observed, as many studies indicate that rapid growth is common in this population. Guidelines indicating the ages at which specific aspects of language should be acquired are provided for the population adopted from Eastern Europe [10]. Normative data is continuing to be developed for children adopted from other regions, particularly China [1].

Need for Research and Awareness

Standardized assessment tools lack normative data for the internationally-adopted population. To develop norms, it is necessary to conduct large-scale studies with a number of children facing similar challenges in the acquisition of English as a second first language [4]. This lack of valid assessment measures makes it difficult to identify those children requiring intervention. It is of critical importance to determine how to provide assistance as early as possible to those children requiring services [13].

The rate at which internationally adopted children are being identified by schools as having behavioural or academic difficulties is not known. Larger scale studies are needed to investigate these children in the later school years [13].

Professionals such as teachers and speech-language pathologists must be made aware of the unique challenges faced by this population. These children do not fit neatly into the categories of simultaneous or successive bilingualism [14]. Rather, these children experience the process of second first-language acquisition. In addition, these professionals must be aware of the potential impact of developmental problems (due to institutionalization) on language development [2].

Glossary of Terms

General Terms

Articulation

All the motor processes involved in the planning and execution of smooth sequences of highly overlapping gestures that result in speech.

Language

A shared code that people use to communicate with one another. It is comprised of phonology, semantics, morphology, syntax, and pragmatics (see definitions below).

Lexicon

A speaker's mental dictionary, which contains information about the syntactic properties, meaning and phonological representation of a language's words

Mean Length of Three Longest Utterances (ML3)

This is a measure of utterance length included in the MCDI. Parents are asked to report their child's three longest sentences and then the average length is calculated, resulting in the mean length of the three longest sentences.

Mean Length of Utterance (MLU)

A measure of the average length and complexity of the child's utterances. The MLU is the average number of morphemes contained in each of the child's utterances.

Morphology

The system of categories and rules involved in word formation and interpretation (e.g., inclusion of plural and past tense endings).

Phonological Mean Length of Utterance (PMLU)

A measure of the child's phonological accuracy and complexity. The PMLU takes into account the average number of both consonants and vowels in the child's words as well as the number of correct consonants produced.

Phonology

The component of a grammar made up of the elements and principles that determine how sounds pattern in a language. The description of the systems and patterns of phonemes that occur in a language.

Pragmatics

Speakers' and addressees' attitudes and beliefs, their understanding of context in which a sentence is uttered and their knowledge of how language can be used for a variety of purposes.

Semantics

The study of meaning in human language.

Speech

A verbal way of communicating with another individual. It includes specific sound combinations, voice quality, intonation, and rate. Speech relies on proper functioning of the speech mechanism, which consist of the respiratory system,

larynx (housing the vocal folds), and oral structures (including the lips, jaw, and tongue).

Syntax

The system of rules and categories that underlies sentence formation in human language.

Specific Language Impairment (SLI)

SLI is a developmental language disorder in the absence of neurological, sensori-motor, non-verbal cognitive or social emotional deficits.

Standardized Assessment Tools

Child Behaviour Checklist (CBCL)

This is a standardized parent survey used to assess behavioral-emotional problems. It includes the LDS to measure vocabulary size and average phrase length.

Children's Communication Checklist-2 (CCC-2)

This is a parent report tool used to distinguish between children with normal language skills, typical specific language impairment and children with pragmatic impairments. The responses are categorized into 10 sub-sections: Speech, Syntax, Semantics, Coherence, Inappropriate, Initiation, Stereotyped Language, Use of Context, Nonverbal Communication, Social Relations and Interests.

Clinical Evaluation of Language Fundamentals – Preschool (CELF-P), Clinical Evaluation of Language Fundamentals – 3 or 4 (CELF-3 or CELF-4)

A measure of both receptive (understanding) and expressive (production) language.

Communicative and Symbolic Behavior Scales Developmental Profile (CSBS-DP)

The Caregiver Questionnaire (CQ) includes questions about the child's social interaction, temperament, play, use of gesture and their sound inventory. The Behaviour Sample (BS) assesses gestural, play and social interaction skills.

Expressive One Word Picture Vocabulary Test (EOWPVT) and Expressive One Word Picture Vocabulary Test – Revised (EOWPVT-R)

A measure of expressive vocabulary (production) for children and young adults between the ages of 2 and 18 years.

Goldman-Fristoe Test of Articulation 2 (GFTA 2)

A measure of articulation (speech sounds produced). A systematic measure of articulation of consonant sounds for children and young adults (ages 2-0 to 21-11).

Khan-Lewis Phonological Assessment 2 (KLPA 2)

A standardized test used to assess the use of fifteen phonological processes by children between the ages of 2 and 21 years. It is designed to supplement the GFTA-2.

Language Development Survey (LDS)

A parent report instrument that includes a checklist of 315 vocabulary items as well as a measure of MLU. This measure was normed on a more diverse sample than the CDI in terms of both ethnicity and socioeconomic status. It is designed for assessment of children ranging in age from 18 to 35 months.

MacArthur Communicative Development Inventory (MCDI)

A parent-report measure which includes both an infant (words and gestures) and a toddler (words and sentences) form. A test of language development including four sections: 1) vocabulary production 2) irregular nouns and verbs 3) grammatical complexity (use of plural, past tense, progressive and possessive inflections) and 4) mean length of utterance (MLU). The measure is designed for assessment of children ranging in age from 16 to 30 months. The CDI-2 (MacArthur Bates Communicative Development Inventory-2) is an updated version of the MCDI.

Peabody Picture Vocabulary Test (PPVT), and Peabody Picture Vocabulary Test – III (PPVT-III)

A measure of receptive vocabulary (understanding of words) appropriate for assessment of all age groups (2 years 6 months through 90+ years).

Social Skills Rating System (SSRS)

This report tool includes both a parent and a teacher form. The parent portion is used to gather information about social skills and behaviors that might influence the student's language or academic skills. It looks at: Cooperation, Assertion, Responsibility, Self Control, Internalizing Behaviours, and Hyperactivity. The teacher form is similar to the parent form and additionally looks at Academic Competence.

Speech and Language Analysis Tools

Profile of Phonology (PROPH)

A computer program that measures percent consonants correct, percent consonants correct revised, percent vowels correct revised, phonological mean length of utterance, proportion of whole word proximity and phonological processes.

Systematic Analysis of Language Transcripts (SALT)

A computer program into which language transcripts may be entered. A means to transcribe language samples into a common format and to compute a series of general analyses of lexical, syntactic, semantic, pragmatic, rate, fluency and error categories.

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