Comparing the Children's Communication Checklist to Standardized Tests:

Results from School-age Children Adopted from Haiti

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Assessing Language of Children Adopted from Haiti Using Children's Communication Checklist

Abstract

Although research into the language development of children who were internationally adopted is growing, the body of work continues to show mixed results. Part of the difficulty of determining if children who were adopted internationally are at risk for having a language delay is establishing the best way to assess these children. Studies have varied in the tools they use and the populations to which they compare the children. This project analysed the language scores of 13 school-age children who were previously assessed by Bylsma et al. (2011) using a battery of standardized tests. Their results on the *Children's Communication Checklist – Second Edition* (CCC-2), a parent report measure, were compared to their scores on the *Clinical Evaluation of Language Fundamentals – Fourth Edition* (CELF-4). Although the individual subtests on the assessment were not correlated, the overall structural language composites of the CCC-2 and the CELF-4 were moderately correlated. The CCC-2 and the CELF-4 did not always identify the same children as having language abilities that were of clinical concern. Two possible explanations are the small sample size and the different components of language measured by the CELF-4 and the CCC-2. Ideally, assessment of children who were adopted internationally should include both parent reports, such as the CCC-2, and standardized tests.

Introduction

International Adoption

As the choice for North Americans to adopt children from abroad becomes more popular, research into the development of children adopted internationally gains more interest. The number of international adoptions in Canada averages around 2000 every year (Family Helper, 2011). While China remains the top country of origin for children adopted internationally in all of North America, adoptions from Haiti rose to the second highest country of origin of children adopted into Canada in 2001, 2004, 2005, and again in 2010 (Family Helper, 2011). Although the number of children adopted from each country fluctuates each year, Haiti has remained one of the top five source countries for children adopted into Alberta since 2002 (Family Helper, 2003, 2004, 2005, 2006, 2007, 2008, 2010, 2011). In 2004, the number of children adopted into Alberta from Haiti (26) surpassed that of China (21) (Family helper, 2005).

Parent Demographics

Parents of children who were IA tend to be older, be more educated, and earn more money (Glennen & Masters, 2002). In part this is due to eligibility requirements imposed by the adopting country. In addition, international adoptions cost, on average, $18,000 (Government of Alberta, 2011). For example, parents adopting from China must be married for a minimum of two years, be between 30 to 50 years old, have body mass index under 40, have a minimum family income of at least $10,000 for each family member including the adopted child, have net family assets totaling a minimum of $80,000, have education levels of high school, vocational

training or more, and have no more than five children all over one year old (Government of Alberta, 2007).

A survey of 1,834 parents from Minnesota, US who adopted internationally found that only 15% had a family income of less than $50,000 a year and 83% said they had enough health insurance to cover the medical costs for their adopted child. In addition, 71% of all the mothers and 70% of the fathers had at least a college degree and 30% had a post-Baccalaureate degree. Overall, parents from Minnesota who adopted children internationally tended to be more than a decade older, had higher education, were of higher SES, were less racially diverse (mostly white), and more likely to be married than biological parents (Hellerstedt et al., 2007). In a study conducted by Roberts and colleagues the 85% of the parents of children who were adopted from China were college graduates and 57% of those parents had an advanced degree. Also, the parents in the study were older than parents in the overall population (Roberts, Pollock, Krakow, Price, et al., 2005). Parents adopting from Haiti can be single or married. If they are married they must have been married for at least ten years. One parent must be older than 30 and less than 45 years of age and cannot have more than four adopted children. The cost of adopting from Haiti is estimated at $11, 000 (Government of Alberta, 2010). It has been suggested that socioeconomic status (SES) is positively correlated with language development (Black, Peppé, & Gibbon, 2008) and therefore should be considered when assessing and studying the language development of children who were IA.

Parental concern

Speech and language development was the biggest concern for parents of children who were IA (Clauss & Baxter, 1998). After doctors and dentists, speech-language pathologists (SLP) were the most sought after professional for children who were IA and as many as 57% of the children who were IA were seen by an SLP (Pollak & Bechner, 2000, as cited in Glennen, 2002). This may be because, like professionals, parents usually do not have experience with other children who were internationally adopted and therefore do not have the appropriate comparisons with which to monitor their child's development (Geren et al., 2005). Glennen (2007) reported as many as 60% of children are referred for speech and language assessment and 35%-50% are seen for treatment. Typical prevalence rates of specific language impairment, according to the DSM-IV, are between 6% and 8% (as cited in Tomblin, 1997).

Preschool Language Development and IA

The language development of children who were internationally adopted (IA) requires special focus in the research as they experience a unique pattern of language exposure (Glennen, 2009; Roberts, Pollock, Krakow, Price, et al., 2005). Children who were IA are exposed to their first language (L1) up until the time of adoption. At this point, for most of the children, there is an abrupt end to their exposure to their L1 accompanied by complete immersion in the second language (L2) (Glennen, 2002). Some children do, however, continue to speak their L1 with their parents, friends, or in school (Roberts, Pollock, Krakow, Price, et al., 2005).

There appears to be a majority view that children who were IA are at risk of having a speech and/or language delay (Glennen, 2009) but that most of the children will overcome the

odds and catch up to their peers (Scott, 2009; Glennen, 2007; Yan, 2009; Urichuk, 2007; Fast & Reay, 2007). In a study by Roberts and colleagues (2005), 55 children, aged 35 to 77 months, who were adopted from China, were given a battery of speech and language assessments. As a whole, the children adopted from China scored significantly higher than the reported norms on all the standardized tests. The majority of the children were average scorers or high scorers (i.e., scored at or above average on two or more tests) (Roberts, Pollock, Krakow, Price, et al., 2005). They hypothesized that these positive findings were in part related to the higher SES and educational backgrounds of the parents and the fact that 54 of the 55 children were girls.

Despite evidence that most children who were IA catch up to their peers, there have been reports that a higher percentage of children who were IA are seen for speech and language services than non-adopted children (Glennen & Masters, 2002; Mason & Narad, 2005). As many as 25% of children recently adopted from Eastern Europe were identified as needing early speech and language intervention (Glennen, 2005). One study reported that within 14 months of adoption, articulation, vocabulary, and receptive language had improved towards proficiency for children adopted from Russia and Kazakhstan, but expressive language was relatively delayed (Glennen, 2009).

Assessment of Children who were IA

Gauthier and Genesee (2011) assessed the speech and language of children adopted from China at age 50 months and again about 16 months later. Children who were IA were compared with a control group matched for SES, gender, and age. They found that at initial testing, the children who were IA had significantly lower expressive language abilities than the

control group but later testing revealed that the IA group had significantly lower expressive and receptive language skills. However, at neither age did the IA children score below average when compared to test norms. Interpreting scores of children who were IA based on norms from standardized tests should be done with caution. The populations used to standardize tests do not include children who were IA. In addition, parents of children who were IA tend to be older and of higher socioeconomic status than the general population and therefore their demographic is not represented proportionately in the population the tests are normed on (Glennen, 2002; Roberts, Pollock, Krakow, Price, et al., 2005). Similarly, other studies have found that, as a group, the majority of toddlers adopted from Eastern Europe tended to score within the "normal" range on articulation, vocabulary, and receptive language when compared to norms on speech and language tests within the first 14 months of being home. When compared to the test norms, 6 out of the 15 children had expressive language below average after 14 months of being home. However, when compared to local norms (based on children adopted from Eastern Europe at the same age) only four of the 15 children fell below average (Glennen, 2009). This suggests that children who are IA should not only be compared to test norms and to their non-adopted peer group but also to children who have been adopted from the same country. Research suggests that norms on some tests (e.g. articulation tests) can be used after a year of the child being home but that norms on other tests (e.g. expressive and receptive language tests) cannot be used even after 14 months of the child being home (Glennen, 2009).

School-age Language Development and IA

More recently there has been growing data on whether or not school-aged children who were IA continue to catch up with their peers as language demands become higher. Some studies suggest that because academic language demands are higher for older children, children who were IA may struggle to reach demands when they reach school-age (Scott, 2009). Dalen and Rygvold (2006) found that children adopted from China into Norwegian families did not perform significantly more poorly in academic language (e.g., following directions, word problems, etc.) or conversational language when compared to their Norwegian-born peers. Similarly, Scott, Roberts, and Krakow (2008) found that school-aged children adopted from China had average oral and written language skills. Croft (2007; as cited in Scott, 2009) also found that school aged children who were adopted from Romania scored the same as or higher than average on norm-referenced language tests. In a review of the literature, Scott (2007) concluded that the majority of studies (9 out 16) found that most school-aged children who were IA eventually caught up with their non-adopted peers. However, Scott cautioned the reader when interpreting these results as there were some children who still had language levels below average.

A study conducted by Bylsma, Perry, and Yam (2010) tested children adopted from Haiti, ages 7;0 to 12;2 years, using standardized tests. They compared the results to the same children's earlier scores at ages 2;7 to 7;3 and found that the children's relative language scores decreased over time. Children who were initially "low scorers" (i.e. scoring below average on at least two tests) remained low scorers when they were older. However, the majority of the

children in the study scored within normal limits on all the language tests. These results were consistent with Roberts, Pollock, and Krakow (2005) who found that children adopted from China who had low language abilities at a young age also had difficulties when they are school-aged.

Dalen (2001) found that school-aged children adopted from Korea performed as well or better on academic measures when compared to their non-adopted peers but that school-aged children adopted from Columbia performed more poorly. However, as a group the children who were IA had lower school performance than their non-adopted peers. The children from Korea and Columbia also had a wider range of school performances which was accounted for by the children's ability to use language at a higher cognitive level (i.e. school language). Vinnerljung, Lindblad, Hjern, Rasmussen, and Dalen (2010) found that 16 year old students adopted from Korea into Swedish families had lower school performance than that of native-born adopted peer and non-adopted peers. Despite varying conclusions across studies, one commonality was that individual variation was apparent in all groups. Some children appear to overcome a delayed start at learning a new language and catch up or even surpass their non-adopted peers but others continue to fall behind (Croft et al., 2007).

Interpreting Research Results

Many studies suggest factors such as age at adoption (Glennen & Masters, 2002; Scott et al., 2008; Vinnerljung et al., 2010; Croft et al., 2007), length of time spent in an institution (Mason & Narad, 2005), length of time exposed to their new language (Roberts, Pollock, Krakow, Price et al., 2005), country of origin (e.g., China versus Eastern Europe) (Dalen, 2001;

Glennen, 2007), and methodology (e.g. standardized tests versus parent report) (Scott, Roberts & Glennen, 2011; Scott, 2009) account for the many differences between and within studies. Internationally adopted children represent a diverse group, making overall conclusions difficult (Scott, 2009; Scott et al., 2011).

Much of the research on IA children has focused on children adopted from China (Dalen & Rygvold, 2006; Gauthier & Genesse, 2011; Geren et al., 2005; Hwa-Froelish & Matsuoh, 2008; Roberts, Pollock, & Krakow 2005; Roberts, Pollock, Krakow, Price, et al., 2005; (Scott et al., 2008) and Eastern Europe (Glennen, 2005; Glennen, Rosinsky-Grunhut, & Tracy, 2005; Glennen, 2007; Glennen, 2009; Glennen & Bright, 2005; Glennen & Masters, 2002). Although some similarities may exist, children adopted from different countries experience different pre-adoption conditions such as orphanage conditions (Croft et al., 2007), length of time spent in institutional care, medical conditions (Ladage, 2009), access to health professionals (Urikchuk, 2007; Glennen, 2009), reason for adoption (e.g. poverty, preference of gender, etc.) (Chattaway & Zmijewski, 2006), and the amount of information available regarding the children's pre-adoption conditions (Glennen, 2002). Specifically, children adopted from Haiti were mainly given up for adoption due to poverty and/or illness. However, orphanages in Haiti have high international standards and may provide improved living conditions for the children. Because of the number of variables present when studying the language development of children who were IA, generalizations cannot be made to children adopted from other countries (Chattaway & Zmijewski, 2006).

Parent Report

Parent report is a useful tool for professionals when assessing the language abilities of young children. Early identification of language difficulties is imperative especially for children who come from different language backgrounds (Massa, Gomes, Tartter, Wolfson, & Halperin, 2008). Parents are experts on their own children and can provide information on their child's language in a variety of contexts. Often test items on standardized tests are decontextualized and the administrator is usually unfamiliar to a child. This can result in a misrepresentation of the child's language abilities (Boudreau, 2005). Informants filling out questionnaires may also have different biases or interpret items differently. While parent report can contribute vital information on a child's language development, it should be facilitated with assessment that determines how well a child is performing when compared to other children of similar demographics (Bishop & McDonald, 2009).

Parental report used for early identification of speech and language difficulties has been shown to be consistent with results from standardized tests for children with language impairments (Boudreau, 2005). Parental report can also provide a good indication of the language development of children who were IA in the early years after adoption (Geren et al., 2005). Glennen and Master's (2002) adapted the Rossetti Infant-Toddler Language Scale (1990) and the Language Development Survey (LDS; Rescorla, 1989) and found that children who were adopted from Eastern Europe acquire English in a similar pattern as monolingual English speaking infants but delayed. The LDS was developed for use by professionals and many items had to be removed for the study as they were difficult for parents to interpret. The authors

advised that more research be done on the reliability of parents of children who were IA filling out the LDS questionnaire. Glennen (2005) found that the Caregiver Questionnaire from the *Communication and Symbolic Behaviors Scales-Development Profile* (CSBS-DP; Wetherby & Prizant, 2002) was useful for children adopted from Eastern Europe and when combined with results from the *MacArthur-Bates Communicative Development Inventory (*MCDI; Fenson et al., 2003) could be used to predict later language development. The *MCDI* is a standardized parent report instrument that is normed on children from 8 to 30 months of age. Geren, Snedeker, and Ax (2005) used the *MacArthur-Bates Communicative Development Inventory Second Edition* (CDI-2; Fenson et al., 1993) and found that children adopted from China, aged 2;7 to 5;1, had language development patterns similar to rapid language development in infants. However, the researchers found that many of the children who were IA reached the ceiling on the CDI-2 suggesting that the test has limited use for children residing in the United States for more than one year.

Children's Communication Checklist – Second Edition

More recent parent report tools, such as the *Children's Communication Checklist - Second Edition* (CCC-2; Bishop, 2003) have been developed for older children. The CCC-2 is a tool that was standardized using parent report. It was designed for screening the communication abilities of people four to sixteen years of age, and yields 10 subscale scores (e.g. semantics, coherence, use of context, etc.). It also yields a General Communication Composite (GCC) score which represents a child's structural language (e.g. syntax, speech, etc), and a social interaction deviance composite (SIDC) score which represents the discrepancy

between a child's social language abilities and their structural language abilities. The CCC-2 has been shown to be a reliable tool in screening for children who have a language profile that differs from the normal range when compared with results from standardized tests. The test also distinguishes children who have disproportional difficulties with pragmatic language when compared to structural language (Norbury, Nash, Baird, & Bishop, 2004). Scores on structural language subtests have been shown to reach a ceiling for children who are school-age, however, the GCC approximates a normal distribution (Bishop & McDonald, 2009).

Bishop and McDonald (2009) tested 256 children aged nine to ten years old who were Caucasian, whose only language was English and who did not have any additional disorder (e.g. hearing loss, diagnosis of autism, physical handicap, or other handicap affecting cognition). They found that the CCC-2 did as well or better than other psychometric tests on distinguishing between groups of children who had been referred for assessment by a speech-language pathologist (SLP), those who had not been referred and those who had a statement of special needs but with no indication of speech or language difficulty. The authors recommend that this tool be used in combination with other standardized psychometric tests.

CCC-2 and IA

Using the CCC-2, Urichuk (2007) compared the GCC scores of children adopted from China, aged 5;6 to 12;6 years, with their academic scores on a teacher report measure and found no correlation between them. The GCC scores did, however, negatively correlate with age at adoption (i.e., children adopted at an older age had lower GCC scores) and with parental concerns (i.e., parents who had more concerns about their child's language abilities had

children with lower GCC scores). As a group the GCC scores and the scores on the individual subtests of the children adopted from China did not differ significantly from the CCC-2 normative sample. However, Urichuk (2007) also reported that a lower percentage (77%) of children adopted from China had scores within normal limits than would be expected in a typical population (84%), reflecting a negatively skewed distribution. The statistical significance of this difference was not assessed. Seventeen of the children had atypical profiles on the CCC-2. Eight of those 17 children had profiles suggesting possible developmental language delay or specific language impairment (SLI) and the other nine children had profiles similar to those found in children with Autism Spectrum Disorder (ASD) or Asperger's syndrome. Parental concerns were correlated with their children's scores on the CCC-2 indicating consistency with the parents' level of concern; however, the parents of four of the children with profiles indicative of ASD or Asperger's syndrome expressed no concern in the Parent Survey. Due to geographic constraints, follow up assessment was not possible to confirm the ASD or Asperger's profiles suggested by the CCC-2 results.

Yan (2009) also used the CCC-2 with school-age children adopted from China and found that although there were no significant differences in overall GCC and individual subtest scores between the children adopted from China and the test norms, a higher percentage of children who were adopted from China had scores that suggested language impairment. A higher percentage (5.7%) also had scores indicative of ASD which is higher than the expected in a typically developing monolingual non-adopted population. Again, the results were not followed up with any further testing. The study found that the GCC scores were negatively correlated

with age at adoption. In addition, GCC scores were positively correlated with vocabulary size and utterance length 24 months after adoption but not 12 months after adoption (Yan, 2009).

Glennen and Bright's (2005) study of children adopted from Eastern Europe, aged six to nine years, also used the CCC-2 and found that on average the children adopted from Eastern Europe had lower scores than the normative sample on the CCC-2. Although none of the children who were IA were identified as having language characteristic of autism spectrum disorder, they had relatively lower scores on the Nonverbal Communication and Social Relations subtests. On the other hand, the checklists showed that children who were IA scored higher on Stereotyped Language and Interests subtests than their non-adopted peers.

Objective

Although parent report has been used to assess the language of older children who were IA, to date, no studies have directly compared those children's scores on the CCC-2 with their scores on SLP-administered language assessments. Other studies have determined that the CCC-2 is a reliable measure for children who were not adopted when compared to standardized test scores. Keegstra and colleagues (2007) found that parents with higher education levels tended to be over-concerned about their child's language development which may result in their child scoring lower on parent report measures. Parents of children who were adopted internationally may have different interpretations of the questionnaire items because they are often older and more highly educated than the general parent population. This project is a continuation of a project done by Bylsma, Perry, and Yam (2010). The aim of the present study is to determine if the CCC-2 is a reliable tool for school-aged children adopted from Haiti when compared with the results of norm-referenced language tests.

Research Questions

- Do children who have a low General Communication Composite (GCC) score on the *Children's Communication Checklist – 2nd Edition (CCC-2)* also have a low score on the Core Language composite of the *Clinical Evaluation of Language Fundamentals – 4th Edition* (CELF-4)?
- Are the children whose scores on the CCC-2 indicate possible clinical concerns the same children who had low scores on the CELF-4?
- Do the scores on the individual subscales of the CCC-2 and scores on the four Core Language subtests of the CELF-4 correlate with one another?

Methods

Participants

Thirteen children (8 boys and 5 girls) from Alberta participated in the study conducted by Bylsma, Perry, and Yam (2011). Two of the children were fraternal twins and another two children were non-biological siblings. All of the children had been adopted from Haiti, where they were all exposed to Haitian Creole as their primary language. The age of the children at time of adoption ranged from 0;6 to 3;7 with an average of 1;5 years old. At the time of the study they had been in Canada for an average of seven years with a range of five to ten years. The children ranged in age from 7;0 to 12;2 with an average of 9;2 years. All of the children had one or more siblings. All the children were exposed to English as their primary language at home.

All of the parents of the children participating in the study had at least a college or university degree. Eight of the 13 children had at least one parent with a graduate/professional degree. Eleven of the families were a two-parent household; two children were adopted by single parents. The parents ranged from 29 to 46 years of age (mean = 36 yrs) at the time their child was adopted.

Procedure

A battery of tests was administered to all the children by two graduate students under the supervision of a certified speech-language pathologist (Bylsma et al., 2011). Only the *Clinical Evaluation of Language Fundamentals – Fourth Edition (CELF-4;* Secord, Semel, & Wiig, 2003*)* results were analysed for the present study. The subtests administered from the CELF-4 assessed the children's Core Language abilities and included "Concepts and Following Directions", "Recalling Sentences", "Formulated Sentences" and, depending on the child's age, either "Word Structure" or "Word Classes 2". Parents were also asked to fill out a parent questionnaire and complete the CCC-2. In the present study, the results from the CCC-2 were compared to the results from the CELF-4.

Analysis Procedures

The children's GCC scores on the CCC-2 were compared to their Core Language Composite scores on the CELF-4. On the CELF-4, children whose scores fell more than 1.25 SD above or below the test mean were considered "high" and "low" scorers, respectively. Those whose scores were within 1.25 SD of the test mean were considered "average" scorers. These results were compared to the results of the CCC-2 to see if the CCC-2 identified the same children has having language that was of clinical concern. According to the CCC-2 manual, a child with a GCC score of less than 55 combined with a SIDC score of nine or more is suggestive of specific language impairment (SLI). A negative SIDC score combined with a GCC score below 55 indicates a communication profile suggestive of Autism Spectrum Disorder (ASD). A SIDC score below -15 is considered abnormal regardless of the GCC score. The subtests that comprise the CELF-4's Core Language composite were also compared to the structural

subscales (speech, syntax, semantics, and coherence) of the CCC-2. Although multiple correlations were calculated, a significance value of $p < .05$ was maintained because this project was exploratory and only a small number of participants were assessed.

Results

Table 1 presents the group results for the CELF-4 and CCC-2. In addition to group means and standard deviations, the number of children scoring above or below the average range is identified. Although the group means for the GCC and all of the CCC-2 subscales were lower than the expected mean based on the norming samples, none of these differences were statistically significant (based on one sample Wilcoxin Signed Rank tests).

A Spearman's rho correlation showed there was a moderate positive correlation (*rho* = .60, $p < .05$) between Core Language composite scores on the CELF-4 and the GCC composite scores on the CCC-2 (See Figure 1). However, the significant correlation appears to be influenced by one very low-scoring participant, who was considered an outlier by Bylsma et al. (2011). In fact, when his scores are removed, the correlation is no longer significant (rho = .491, $p = .105$). A chi-square test indicated that children who scored below average on the CELF-4 were not consistently identified as being of clinical concern on the CCC-2 ($\chi^2(1, N = 13) = 0.012$, $p > .05$)). Table 1 shows the distribution of children in each group.

A correlation matrix (Table 2) showed that only the "Word Class" subtest and the "Semantics" subtests were highly and significantly correlated ($p < 0.01$). This is not surprising as the "Word Class" subtest requires students to define a word in relation to another (e.g. "How do the words 'hot' and 'cold' related?"). When using a more liberal *p*-value ($p < .05$), the "Semantics" subtest correlated with all but the "Word Structure" subtests The "Word Class"

subtest on the CELF-4 also significantly correlated with the "Speech", "Syntax", and "Semantics" subtests on the CCC-2. The "Coherence" and the "Recalling Sentences" subtests were also significantly correlated ($p < .05$).

Discussion

GCC and Core Language Composite Scores

The GCC scores and the Core Language composite scores on the CELF-4 were moderately positively correlated only when the outlier was included in the analysis. These results suggest that the CCC-2 may be more reliable in determining the structural language abilities of children who have extreme scores. On the other hand, a significant result may be observed in studies that include more participants.

Clinical Concern

Although analysis showed that the CCC-2 and the CELF-4 did not identify the same children's language abilities as being of clinical concern, looking at the children individually provides some insight to these results. The child that scored "low" on the CELF-4 and on the CCC-2 was considered an outlier by Bylsma et al. (2011). He scored below average on the CELF-4 and scored below the first percentile on the GCC. This child's results on the CCC-2 were suggestive of SLI. Another one of the children that scored "low" on the CELF-4 had scores that were considered "average" on the CCC-2. However, this child's structural language scores were considered borderline (13th percentile). The same child reportedly also had anxiety, Oppositional Defiant Disorder, attended an attachment group, and had ADHD which may have contributed to his inability to concentrate during the standardized assessments. Both of these children's parents expressed concerns about their child's academic and social abilities. Another

child who scored "low" on the standardized tests but average on the CCC-2 was diagnosed with dyslexia.

The child that was identified as having language abilities that were of clinical concern on the CCC-2 but not on the CELF-4 had a language profile suggestive of ASD or Aspergers. The parents of the child expressed no concerns with their child's structural language abilities or social skills. Another child had an overall score that also fell into the profile suggestive of ASD. However, upon further investigation, the child only received one score below the sixth percentile (two are needed to indicate clinical concern). The child's overall score can be explained by their relatively high scores on structural language, compared to their average scores on social language. Interestingly, this child was reportedly diagnosed with ADHD, Oppositional Defiant Disorder, had a fine motor disorder, and had attended social skills classes. This child's parents also expressed mild concerns with their child's social skills.

Two children (fraternal twins) had average scores on the CELF-4 but had low GCC scores (3^{rd} percentile and < 1 percentile) on the CCC-2. Their scores on the CCC-2 suggest generalized language impairments but do not fit any of the profiles on the CCC-2. Both children had language difficulties in the past and parental concerns were consistent with their scores on the CCC-2. Their parents expressed mild concerns about their children's academic abilities but no concerns with their social skills. The children reportedly had difficulty with reading, memory, math, and some higher language skills (e.g., reasoning).

The CCC-2 and the CELF-4 did not identify the same children has having language that was of clinical concern. This could be for a couple different reasons. First of all, one purpose of the CCC-2 is to fill the gap of assessing social language in children. None of the subtests

administered on the standardized tests assessed pragmatic language. Consequently, the two children who had scores on the CCC-2 that were suggestive of ASD or Asperger's were not identified by the battery of standardized tests. Similarly, some of the subtests on the CELF-4 assessed language components (e.g., following directions, recalling sentences, etc.) that were not assessed by the CCC-2.

Subtest Comparisons

Many of the subtests on each test correlated with one another when a more liberal *p*-value was used. On the CCC-2, semantics is measured using questions such as "Mixes up words of similar meaning. e.g., might say 'dog' for 'fox', or 'screwdriver' for 'hammer'". Although the "Word Class 2" subtest on the CELF-4 measures the children's explicit knowledge of the meaning of words, and the CCC-2 measures the correct usage of words, they both appear to draw the same conclusions about the child's language abilities in the area of semantics. The title of the subtest "Formulating Sentences" suggests that it measures syntax (i.e., grammar) however the subtests was not significantly correlated with the "Syntax" subtest on the CCC-2 but it was significantly correlated with the "Semantics" subtest. This may be because tasks in the "Formulating Sentences" subtest require children to use a given word in a sentence. Although grammar is taken into account when scoring the task items, the child must know how to use the word, implying he or she knows the meaning. Not surprisingly, "Semantics" was also significantly correlated with "Following Concepts and Directions" and "Recalling Sentences". Both these tests on the CELF-4 require knowledge and use of words.

The "Word Class 2" subtest was unexpectedly significantly correlated with the "Speech" and "Syntax" subtests. One of the items on the "Syntax" subtests is "Produces sentences

containing 'because' such as "John had a cake because it was his birthday". Other items ask if the child mixes up certain words (e.g. "he" and "she"). These word uses require the knowledge of word meaning and may explain the correlation. The correlation between "Word Class 2" and "Speech" is more difficult to explain, but may in part be due to the fact that the "Word Class 2" subtest was only used with the children who were 9 to 12 years of age. Given the older age, these children were less likely to have problems with "Speech."

Finally, the items in the "Coherence" subtest ask if the child mixes up ideas or words or if the child explains ideas well to their communication partner. When scoring the "Recalling Sentences" subtest, children have to repeat back sentences exactly as the test administrator has said them. Although these subtests assess structural language, memory and attention may play a part in both these subtests explaining their correlation.

The CCC-2 is a questionnaire filled out by, in this case, the children's parents. Some parents may be aware of difficulties the child has that are not easily identified by standardized tests. For example, standardized tests often provide a structured environment in which language is assessed. This can lead to an inflation of the child's actual abilities if the child has difficulty with problem solving or long-term memory. On the other hand, children can often do more poorly on standardized tests as the situations are often decontextualized. Their parents observe their language in a variety of different contexts, therefore judging their language abilities in different situations than the static environment often experienced with test administration.

In addition, due to the small sample size (N = 13), overall conclusions cannot be made. Different results may have been observed with a larger sample size. However, finding a large

number of children who were adopted from Haiti in the same geographic location (so that in-person assessments can be completed) and who will volunteer for a study is difficult.

Finally, parents who volunteered for their children to participate in the study may be more involved and aware of their child's language abilities and because of their higher education levels may be more eager to participate. This could results in two outcomes. Parents may be over-concerned about their child's language development, judging their language abilities to be lower than they actually are, or parents may be overtly aware of their child's language development, giving results more consistent with the standardized tests. A combination within the group is also a possibility.

Clinical Implications

Some of the subtests on the CCC-2 correlated with subtests on the CELF-4, but overall the GCC scores did not correlate with the Core Language composite scores when one low outlier was removed. This may be partly because the GCC score takes other language use subtests (e.g., not just the structural language subtests) of the CCC-2 into account. More research is needed to determine if, with a larger sample, for example, the CCC-2 is a reliable assessment to screen for SLI in children who were adopted from Haiti. Generally, the CCC-2 does not identify the same children as having language that is of clinical concern as the CELF-4. The CCC-2 appears to assess different language areas than thee CELF-4 and therefore, should be used in combination with other tests in order to ensure that a language delay of any type is identified. Future research might also include additional subtests on the CELF-4, such as the "Pragmatics Profile", when comparing the results of the CCC-2.

Results from this study should be generalized with caution (Scott, 2009). As the parents of children who participated in the study may be more aware of their child's language abilities and therefore, more eager to participate in a study than parents who are less in-tuned to their child's language development, the results may not accurately represent the larger population. Because the study was based on children who were adopted from Haiti, the results cannot be generalized to children who were adopted from other countries. Haiti has different adoption requirements than other countries, such as China, and as a result, the families that children from Haiti were adopted into may be of different ages, may have different incomes, and/or different education levels. These varying demographics may influence the parent's perception of their child's language development. Overall, more research needs to be done in order to determine which assessment tools are best suited to assess children who were internationally adopted.

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Table 1. Group results for CELF-4 and CCC-2

	Mean	SD	# of children above average	# of children below average
CELF-4 Core Language Composite	94.92[a]	22.74	2	3
Concepts & Following Directions subtest	8.31[b]	3.97	0	4
Recalling Sentences subtest	10.08[b]	3.59	1	1
Formulating Sentences subtest	9.46[b]	3.99	3	2
Word Structure subtest (5-8 yr olds, n=7)	8.86[b]	2.54	0	2
Word Class 2 subtest (9-12 yr olds, n=6)	9.15[b]	5.31	2	1
CCC-2 - General Communication Composite	69.00[c]	28.19	0	4
Speech subscale	9.69[b]	4.19	0	2
Syntax subscale	8.23[b]	4.36	0	5
Semantics subscale	8.15[b]	4.39	2	3
Coherence subscale	8.62[b]	3.45	0	3
Inappropriate Initiations subscale	8.23[b]	3.11	1	3
Stereotyped Language subscale	8.92[b]	3.77	0	3
Context Use subscale	8.46[b]	4.41	1	4
Nonverbal subscale	8.69[b]	3.88	0	3
Social subscale	8.08[b]	3.66	0	5
Interests subscale	8.38[b]	3.07	1	2

Notes: [a]Norming sample M=100, SD=16, average range = 81-117; [b]Norming sample M=10, SD=3, average range = 6-13; [c]Norming sample M=80, 55 is cutoff for clinical concern, average range = 55-105.

Table 2. Contingency table for clinical concern as determined by the CELF-4 and the CCC-2

	CCC-2		**Total**
CELF-4	Concern	No concern	
Low Scoring	1	2	3
Average or High Scoring	3	7	10
	4	9	13

Table 3. Correlation matrix for CCC-2 and CELF-4 subtests. *Spearman's rho* and p-values

	Speech	**Syntax**	**Semantics**	**Coherence**
Concepts and Following Directions	*rho* = .268 *p* = .377	*rho* = .354 *p* = .236	***rho* = .558** ***p* = .047***	*rho* = .522 *p* = .067
Recalling Sentences	*rho* = .214 *p* = .483	*rho* = .458 *p* = .115	***rho* = .625** ***p* = .022***	***rho* = .647** ***p* = .017***
Formulating Sentences	*rho* = .241 *p* = .428	*rho* = .372 *p* = .211	***rho* =.564** ***p* = .045***	*rho* = .552 *p* = .051
Word Structure (5-8 yrs; n=7)	*rho* = .000 *p* = 1.0	*rho* = .130 *p* = .780	*rho* = .211 *p* = .650	*rho* = .086 *p* = .855
Word Class 2 (9-12 yrs; n=6)	***rho* = .868** ***p* = .025***	***rho* = .868** ***p* = .025***	***rho* = .986** ***p* < .001****	*rho* = .812 *p* = .050

*Significant at p < .05
**Significant at *p* < .01

Figure 1. Scatterplot for Core Language composite scores and GCC scores