Speech-Language Pathologists’ Assessment Practices for Children With Suspected Speech Sound Disorders: Results of a National Survey

Sarah M. Skahan
Maggie Watson
University of Wisconsin–Stevens Point

Gregory L. Lof
MGH Institute of Health Professions, Boston

Purpose: This study examined assessment procedures used by speech-language pathologists (SLPs) when assessing children suspected of having speech sound disorders (SSD). This national survey also determined the information participants obtained from clients’ speech samples, evaluation of non-native English speakers, and time spent on assessment.

Method: One thousand surveys were mailed to a randomly selected group of SLPs, self-identified as having worked with children with SSD. A total of 333 (33%) surveys were returned.

Results: The assessment tasks most frequently used included administering a commercial test, estimating intelligibility, assessing stimulability, and conducting a hearing screening. The amount of time dedicated to assessment activities (e.g., administering formal tests, contacting parents) varied across participants and was significantly related to years of experience but not caseload size. Most participants reported using informal assessment procedures, or English-only standardized tests, when evaluating non-native English speakers.

Conclusions: Most participants provided assessments that met federal guidelines to qualify children for special education services; however, additional assessment may be needed to create comprehensive treatment plans for their clients. These results provide a unique perspective on the assessment of children suspected of having SSD and should be helpful to SLPs as they examine their own assessment practices.

Key Words: articulation/phonological assessment, standardized testing, English Language Learners

Children with speech sound disorders (SSD) compose a large percentage of the caseloads of speech-language pathologists (SLPs) who practice in settings that provide services to children with communication disorders (American Speech-Language-Hearing Association [ASHA], 2004; Whitmire, Karr, & Mullen, 2000). Extensive information is available to guide clinicians as they assess and analyze the speech of children suspected of having SSD (e.g., Kamhi & Pollock, 2005). Assessment results are used to determine whether a speech delay or disorder exists and whether the child is eligible to receive speech and language services. Speech sound assessment options include administering a published articulation and/or phonological test, eliciting a connected speech sample, evaluating other communication domains, and assessing other related areas such as oral-motor structure/function and hearing ability (Kamhi & Pollock, 2005; Pena-Brooks & Hegde, 2000; Williams, 2003).

Along with determining eligibility, assessment results are also used to determine intervention goals and objectives and monitor intervention progress. Williams (2003) and others (e.g., Miccio, 2005; Tyler, 2005) have described a variety of independent and relational analyses that provide specific information about SSD. Independent analysis procedures (such as determining a phonetic inventory) are used to examine children’s speech sound production capabilities. On the other hand, relational analysis procedures compare children’s productions to the adult standard and include determining patterns of errors and consistency of sound substitutions (see Williams, 2003, for a review).

A combination of factors influence clinicians’ decision to choose specific assessment and analysis measures.
incorporating both theoretical and practical considerations. For example, some procedures, such as determining a phonetic inventory and assessing stimulability, focus on the articulatory aspect of speech sounds (Bleile, 2002). Conversely, a linguistic focus involves assessing the interaction of speech sound errors with other aspects of the language system (Hoffman & Norris, 2002). Still other assessment procedures help determine patterns of errors as reflected by natural phonological theory (Tyler & Tolbert, 2002).

Other factors may also influence clinicians’ assessment and analysis choices, such as severity of the SSD (Kamhi, 1992), state and federal guidelines for determining special education eligibility, and caseload size. These issues, especially the burden of large caseloads and extensive paperwork, often necessitate that SLPs work as efficiently as possible. For SSD assessment, this means that clinicians must balance time constraints with the best methods for gathering and analyzing the relevant data in order to guide therapy and monitor progress.

In an effort to provide information on how to implement a thorough speech sound assessment within a realistic time frame (i.e., 60–90 min), several university-based clinicians with expertise in the field of SSD described how they would conduct an evaluation for a child aged 4:3 (years;months) whose intelligibility was rated as approximately 50% in connected speech. Those opinions were presented in the 2002 American Journal of Speech-Language Pathology (AJSLP) Forum on Phonology in which information was provided on “how experienced clinicians wrestle with the dichotomy between what should be done under ideal conditions and what is possible within real life clinical settings” (Tyler et al., 2002, p. 214). Although it was cautioned that those opinions should not be interpreted as “the right way,” or the only way to conduct an assessment, they do offer a starting point for the discussion of realistic options and procedures for the assessment of children suspected of having SSD.

The authors who contributed to the 2002 AJSLP Forum on Phonology presented a variety of standardized and non-standardized procedures to assess SSD. There was a great deal of similarity in the general areas of assessment across forum participants, but specific assessment procedures varied depending on the authors’ theoretical perspective. For example, all authors recommended a review of a case history, elicitation of a speech-language sample, and stimulability testing. Three of the authors assessed expressive speech and phonological skills using a published single-word test such as the Goldman Fristoe Test of Articulation (GFTA; Goldman & Fristoe, 1986, 2000). Bleile (2002) stated he typically only administers parts of a standardized test. Hoffman and Norris (2002) were the only authors who did not recommend the use of a published single-word test, instead preferring to assess “higher levels of language organization” (p. 230) within naturalistic communication interactions that occur during play or interactive book reading.

The authors of the 2002 AJSLP Forum on Phonology reported the need to take the time to assess spontaneous speech-language, but they varied in how that sample was elicited and analyzed. For example, Tyler and Tolbert (2002) indicated that they typically elicited and transcribed at a minimum a 50-utterance sample from all clients, but Bleile (2002) suggested that a speech-language sample be obtained only if clients show a deficiency with expressive language. He reported that he listened to clients’ spontaneous speech, noting errors and level of intelligibility, but only transcribed the sample if significant language errors were observed.

Khan’s contribution to the AJSLP forum was a time-efficient protocol for an assessment of SSD from the perspective of an SLP practicing in an elementary school (Khan, 2002). She discussed how SLPs working in such a setting often do not have the advantages typical of many SLPs working in university clinics, such as availability of support staff and a smaller caseload. Khan stated that SSD assessment procedures conducted by SLPs working in university training programs are usually not able to be fully implemented in settings such as public schools due to heavy workloads. Khan reported that her initial SSD assessment focus was to determine whether a client meets eligibility requirements to receive speech-language services. After eligibility has been determined, additional testing may be done at a later time to create more comprehensive goals and objectives. Interestingly, Khan’s assessment protocol was similar to those presented by the university clinicians. However, her methods were more “streamlined” because she suggested conducting only a cursory oral mechanism exam, making anecdotal comments on the child’s expressive speech-language from information obtained throughout the evaluation instead of eliciting a speech-language sample, and assessing stimulability of errored sounds only if time permitted.

Another challenge facing many SLPs working with children is measuring the speaking skills of non-native English speakers. This is especially difficult because few assessment instruments are specifically designed for non-native English speakers, and using tests standardized for monolingual English-speaking children is not appropriate for such children. In addition, SLPs often feel inadequately trained and supported to meet the unique needs of this growing population (Kritikos, 2003; Roseberry-McKibbin, Brice, & O’Hanlon, 2005).

At this time, little is known about the clinical assessment practices used by SLPs to identify children with SSD. This information will be useful for clinical service providers and can offer future directions for clinically relevant research. That is, clinicians can compare their own assessment procedures with those provided by the participants of the present study. Further, knowledge of current assessment procedures is necessary to determine how clinical practice is aligned with phonological theory and clinical advances. Thus, the purpose of this investigation was to provide a description of the assessment practices used by SLPs to evaluate children suspected of having SSD. Specifically, methods of gathering and analyzing data, collaborating with other professionals, and assessing non-native English speakers were explored. Information was also obtained on how participants’ clinical experience and caseload size affected the amount of time spent on assessment. The results gathered from this investigation were compared with the assessment practices presented by the university researcher clinicians as presented in the 2002 AJSLP Forum on Phonology to determine similarities and differences.
Method

Questionnaire Development

The questionnaire was developed following a literature review and discussions with SLPs practicing in a variety of settings and university students enrolled in clinical practicum. The literature review involved surveying current textbooks and articles on articulation and phonological disorders. A group of 10 SLPs with extensive experience working with children with SSD piloted an initial draft of the questionnaire. Those SLPs provided feedback about the content, readability, and general format of the questionnaire, and it was modified accordingly.

The final version of the questionnaire (see Appendix) consisted of 51 items posed in multiple-choice, fill-in-the-blank, and forced-choice questions to gain specific information regarding participants’ education, experience, and working conditions. Participants also answered a variety of questions designed to determine typical assessment procedures of children’s speech sound systems, including use of formal and informal measures, data analysis, the amount of time typically used for various aspects of the assessment process, and evaluation of non-native English speakers. Other items on the questionnaire used Likert-type scales to measure participants’ frequency of use of commercially available tests, implementation of assessment procedures, and speech sound analysis procedures.

To keep the questionnaire to a reasonable length, only questions directly related to the analysis of speech sounds and related areas (e.g., hearing screening) were included. It is acknowledged that children referred for suspected SSD should also be assessed for the presence of other communication problems (e.g., expressive/receptive language, fluency); however, these areas were not included in this questionnaire.

Participants

The questionnaire was mailed to 1,000 SLPs throughout the United States. Participants were randomly selected from the ASHA membership database from those who self-identified as serving the preschool- and school-age populations.

Each potential participant received the questionnaire, a cover letter explaining the investigation and its approval by an institutional research board, and a stamped and addressed return envelope. A total of 333 (33%) of the questionnaires were returned; however, 21 (6%) could not be used because of insufficient data or the recipient indicating that she or he never provided services to children with SSD. Two participants reported not having any clients with SSD on their caseload at the time they completed the questionnaire, but all participants had experience working with children with SSD. Participants were not limited to those who worked full-time, and although some indicated working part-time, the exact number is unknown.

Data Analysis

Descriptive statistics, including means, medians, and frequencies, were calculated for most items. Correlation analyses were performed to identify relationships across participant responses on selected questionnaire items.

Results

Respondent Demographics, Experience, and Training

Participants’ years of experience, caseload size, and work setting information are presented in Table 1. Responses came from SLPs working in all states except Alaska, Hawaii, and Rhode Island; however, the greatest number of participants lived in the Midwest (27%) and South (23%). As can be seen, there was a considerable range of years of service and caseload size across participants. Participants indicated multiple responses to the types of speech sound assessment training they had received. The three most common sources of information were graduate level courses (85%), attendance at conventions/workshops (81%), and undergraduate level courses (65%).

Parental Involvement and Collaboration With Other Professionals

Participants were asked how children’s parents were typically involved in the assessment process, with multiple responses accepted. The live interview (55%) was most often selected; however, parents were engaged in the assessment process in a variety of other ways, including accompanying the child to the evaluation (35%), completing and mailing a case history form back to the clinician (32%), and being interviewed over the telephone (23%). It was infrequent that observation of parent–child interaction was a part of the evaluation (12%), with 13% reporting “no parental interaction.”

Sixty-eight percent of the SLPs reported that the classroom teacher contributed to the evaluation, with the school psychologist and teacher of the learning disabled involved less frequently (28% and 21%, respectively). The school nurse (37%) or the SLP (40%) most often conducted hearing screenings.

Time Devoted to Speech Sound Assessment

Participants reported the amount of time spent completing the three different phases of the assessment: preassessment,

<table>
<thead>
<tr>
<th>Experience and caseload</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years practicing speech-language pathology</td>
<td>15.3</td>
<td>9.1</td>
<td>1–40</td>
</tr>
<tr>
<td>Years working with children with SSD</td>
<td>14.3</td>
<td>9.0</td>
<td>2–40</td>
</tr>
<tr>
<td>Caseload size</td>
<td>40.8</td>
<td>19.0</td>
<td>6–115</td>
</tr>
<tr>
<td>Number of children on caseload with SSD</td>
<td>22.7</td>
<td>15.0</td>
<td>0–90</td>
</tr>
<tr>
<td>Work setting*</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Elementary school</td>
<td>219</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Preschool</td>
<td>114</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Birth-to-3 (Early Intervention)</td>
<td>37</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>37</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Note. SSD = speech sound disorders.

*Multiple responses accepted.
direct assessment, and postassessment tasks. Table 2 displays those activities and the amount of time participants spent on each.

Time spent on preassessment activities (e.g., reviewing the case history, completing paperwork, conducting interviews) was most frequently reported as either 11–20 min (26.2%) or 21–30 min (23.9%). Interaction with children to administer formal and informal tests (direct assessment phase) most often was reported as 51–60 min (22.2%) or more than 60 min (26.8%). Postassessment data analysis and completion of paperwork appeared to be the most time-consuming portion of the assessment for many participants. Thirty-five percent of participants indicated that they spent more than 60 min on this phase of the assessment, and nearly 20% of the participants reported spending 51–60 min on such activities. Based on this information, it appears that many participants devoted 2–2.5 hr of time per assessment.

Three different linear regression equations were used to determine whether years of experience predicted the amount of time the participants spent on preassessment, direct assessment, and postassessment tasks. The only significant correlation was years of experience with postassessment tasks ($F = 8.92$, $R^2 = .028$, $p = .003$). Correlation analysis revealed that respondents with more experience reported greater amounts of time devoted to postassessment tasks. Three different linear regression equations were also used to establish whether caseload size predicted the amount of time the SLPs spent on preassessment, direct assessment, and postassessment tasks. None of the correlations were significant.

Computerized Analysis Procedures

Very few participants (8%) reported use of computerized analysis. The majority (66%) of those who utilized a computerized assessment tool used Hodson Computerized Analysis of Phonological Patterns (HCAPP; Hodson, 2003).

Types of Direct Assessment Tasks

Participants were presented with a Likert-type scale (1 = always use, 4 = never use) to determine their use of a variety of procedures designed to assess the speaking skills of children suspected of having SSD. Table 3 presents those procedures and frequency of use. The following direct assessment procedures were most often indicated as “always” administered by more than 50% of participants: estimating intelligibility, administration of a single-word test, conducting a hearing screening, stimulability of errored sounds, and assessing oral motor skills for speech and nonspeech tasks.

Direct assessment tasks that were most often indicated as used “sometimes” were assessing phonemic awareness skills, perception/discrimination assessment, and contextual testing to determine phonetic context effects.

Participants’ frequency of use of 12 published articulation and/or phonological tests was examined using the same four-point Likert-type scale. The tests, and how frequently they were used, are presented in Table 4. Those tests with multiple versions available at the time of this investigation, such as the GFTA (Goldman & Fristoe, 1986, 2000) and Khan-Lewis Phonological Analysis (KLPA; Khan & Lewis, 1986, 2002), were indicated as “any version” on the questionnaire. The GFTA was by far (51.8% indicated “always” used) the most frequently chosen published test, followed by the Photo Articulation Test, Third Edition (Lippke, Dickey, Selmar, & Soder, 1997; 9.7% indicated “always” used), and then the KLPA (8.1% indicated “always” used). In addition, the Assessment of Phonological Processes (Hodson, 1980) was reported as “sometimes” used by 20% of the participants.

Analysis of Children’s Speech Samples

The SLPs were asked to describe the frequency of use of a variety of speech analysis procedures that can be applied to productions obtained from single-word tests or connected speech, again using a four-point Likert-type scale. Those analysis tasks and results are presented in Table 5. Just over 50% of the SLPs reported they “always” determined the use of phonological processes. Other procedures frequently documented as “always” used were completing a phonological analysis of a connected speech sample and determining a phonetic inventory. Determining syllable and word shapes was the least frequently used analysis procedure.

| TABLE 2. Frequency and percentage indicated by participants when asked to report the amount of time spent conducting each SSD assessment phase. |
|---|---|---|---|---|---|
| Minutes | Preassessment | Direct assessment | Postassessment |
| | n | % | n | % | n | % |
| 5–10 | 25 | 8.2 | 0 | 0.0 | 2 | 0.6 |
| 11–20 | 80 | 26.2 | 10 | 3.2 | 14 | 4.5 |
| 21–30 | 73 | 23.9 | 38 | 12.4 | 37 | 12.1 |
| 31–40 | 49 | 16.0 | 55 | 18.0 | 46 | 15.0 |
| 41–60 | 27 | 8.8 | 52 | 17.0 | 39 | 12.7 |
| 51–60 | 34 | 11.1 | 68 | 22.2 | 60 | 19.6 |
| More than 60 | 17 | 5.5 | 82 | 26.8 | 107 | 35.0 |

*Preassessment activities included case history, initial paperwork, interviewing.

*Direct assessment activities included administration of formal and informal assessments.

*Postassessment activities included data analysis and completion of paperwork for children qualifying for services.
Assessment of Non-Native English Speakers

Participants answered questions regarding the assessment of non-native English speakers suspected of having SSD. Of the respondents, 148 (48%) reported having non-native English speakers on their caseloads, but only 110 (36%) reported that they assessed non-native English speakers suspected of having SSD. Assessment methods used by these 110 clinicians are presented in Table 6.

Discussion

The results of this investigation provide data about the speech sound assessment practices of SLPs who are employed in settings that typically have large caseloads and who are required to adhere to state and federal regulations. These results show that this group of SLPs appear to be using assessment and analysis procedures that would help (a) determine whether a child should receive speech-language services and (b) establish therapy goals and objectives. Clinicians who typically work with children with SSD may find it useful to compare the results from the present investigation with their own assessment practices. It is also interesting to contrast the assessment practices advocated by a group of university clinicians as presented in the 2002 AJSLP Forum on Phonology with the results from the present study. Further, it was suggested by Khan (2002) that the workload and caseload differences that exist between university and nonuniversity clinics may necessitate differences in how children suspected of SSD are assessed across work settings. However, the results of this investigation showed that this group of SLPs conducted similar SSD assessments as their counterparts practicing in university clinics, despite the demands of heavy caseloads.

Demographics, Experience, and Training

The demographic variables of caseload size, years of experience, and number of students served with SSD reported in this study can be compared with the data from the 2004 Schools Survey Report (ASHA, 2004) of school-based SLPs. Results of the present study showed that the median number of clients on the SLPs’ caseload was 40 (mean of 40.8), whereas the Schools Survey Report showed a median

### TABLE 3. Frequency and percentage indicated by participants when asked to report their use of direct assessment procedures.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Always</th>
<th>Sometimes</th>
<th>Infrequent</th>
<th>Never</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimating intelligibility</td>
<td>233</td>
<td>55</td>
<td>17.8</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Single-word test to determine percentile rank and standard score</td>
<td>229</td>
<td>46</td>
<td>14.9</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Hearing screening</td>
<td>218</td>
<td>43</td>
<td>13.9</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>Stimulability of errored sounds</td>
<td>210</td>
<td>44</td>
<td>27.2</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Assessing oral motor skills using nonspeech tasks</td>
<td>178</td>
<td>93</td>
<td>30.1</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>Assessing oral motor skills using speech tasks</td>
<td>168</td>
<td>110</td>
<td>35.6</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>Classroom observation</td>
<td>95</td>
<td>136</td>
<td>44.0</td>
<td>48</td>
<td>15</td>
</tr>
<tr>
<td>Assessing phonemic awareness skills</td>
<td>40</td>
<td>149</td>
<td>48.2</td>
<td>75</td>
<td>24</td>
</tr>
<tr>
<td>Perception/discrimination assessment</td>
<td>39</td>
<td>134</td>
<td>43.4</td>
<td>75</td>
<td>24</td>
</tr>
<tr>
<td>Contextual testing to determine phonetic context effects</td>
<td>33</td>
<td>111</td>
<td>35.9</td>
<td>84</td>
<td>27</td>
</tr>
</tbody>
</table>

Note. Responses rank ordered by participants’ “always” responses.

### TABLE 4. Frequency and percentage of use of published tests reported by participants.

<table>
<thead>
<tr>
<th>Test</th>
<th>Always</th>
<th>Sometimes</th>
<th>Infrequent</th>
<th>Never</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldman Fristoe Test of Articulationa</td>
<td>160</td>
<td>51.8</td>
<td>100</td>
<td>32.4</td>
<td>16</td>
</tr>
<tr>
<td>Khan–Lewis Phonological Analysisb</td>
<td>25</td>
<td>8.1</td>
<td>92</td>
<td>29.8</td>
<td>33</td>
</tr>
<tr>
<td>Photo Articulation Testc</td>
<td>30</td>
<td>9.7</td>
<td>53</td>
<td>17.2</td>
<td>34</td>
</tr>
<tr>
<td>Assessment of Phonological Processesd</td>
<td>14</td>
<td>4.5</td>
<td>63</td>
<td>20.4</td>
<td>22</td>
</tr>
<tr>
<td>Arizona Articulation Proficiency Scalee</td>
<td>15</td>
<td>4.9</td>
<td>41</td>
<td>13.3</td>
<td>17</td>
</tr>
<tr>
<td>Hodson Assessment of Phonological Patternsf</td>
<td>7</td>
<td>2.3</td>
<td>47</td>
<td>15.2</td>
<td>30</td>
</tr>
<tr>
<td>Structured Photo Articulation Testgh</td>
<td>6</td>
<td>1.9</td>
<td>24</td>
<td>7.8</td>
<td>17</td>
</tr>
<tr>
<td>Fisher–Logemann Test of Articulation Competencei</td>
<td>2</td>
<td>0.6</td>
<td>24</td>
<td>7.8</td>
<td>19</td>
</tr>
<tr>
<td>Clinical Assessment of Articulation and Phonologyj</td>
<td>6</td>
<td>1.9</td>
<td>19</td>
<td>6.1</td>
<td>6</td>
</tr>
<tr>
<td>Assessment Link Between Phonology and Articulationk</td>
<td>2</td>
<td>0.6</td>
<td>10</td>
<td>3.2</td>
<td>4</td>
</tr>
<tr>
<td>Bankson–Bernthal Test of Phonologyl</td>
<td>2</td>
<td>0.6</td>
<td>10</td>
<td>3.2</td>
<td>4</td>
</tr>
<tr>
<td>Templin–Darley Tests of Articulationm</td>
<td>5</td>
<td>1.6</td>
<td>5</td>
<td>1.6</td>
<td>17</td>
</tr>
</tbody>
</table>

caseload size of 50 clients for SLPs employed in a variety of school-based settings. The data from this study mirrored information provided in the Schools Survey Report for years of experience (a median of 14 years for both), and number of children with articulation/phonological disorders being served (a median of 20 and 22 for the Schools Survey Report and this investigation, respectively).

Graduate courses, workshops, and undergraduate courses were the most frequently reported sources of information on SSD by these participants. Participants also indicated that information from workshops also influenced their SSD assessment practices. Although workshops offer opportunities for clinicians to receive information, it is imperative that the content provided in those workshops is current and adheres to the principles of evidence-based practice (Lof & Kennedy, 2005), in which very few of the SLPs in the study reported that they used independent journal screenings. This practice concurs with ASHA guidelines (ASHA, 1998) that permit nonaudiologic personnel to conduct hearing screenings.

Parental Involvement and Collaboration With Other Professionals

Parents and classroom teachers had considerable involvement in the assessment process, as reported by these SLPs. This probably reflects the federal regulations that require such participation for determining eligibility for services and documenting the impact of the disability on academic performance. Parental involvement was most often by a live interview, but other forms of interaction also occurred, such as accompanying the child to the evaluation and completing a case history form.

Classroom teachers were not involved in all assessments, most likely due to the typical early age of referral for most children with SSD. Shriberg and Kwiatkowski (1994) reported that the average referral age was 4;3, possibly limiting the presence of classroom teachers for many children. Other than the classroom teacher, few other educational professionals were reported as involved in the assessment, perhaps because they may not be needed for children at this young age. A frequent collaborator with the SLP was the school nurse, who often conducted the hearing screenings. This practice concurs with ASHA guidelines (ASHA, 1998) that permit nonaudiologic personnel to conduct hearing screenings.

Time Spent on the Assessment and Analysis of Children’s SSD

Time constraints have been raised as a critical issue that may impede clinicians from completing comprehensive SSD assessments (Khan, 2002). Data from this investigation quantified the amount of time this group of SLPs devoted to various aspects of the assessment process: pre-, direct, and postassessment activities. The participants in this study reported spending more time on preassessment activities when compared with the amount of time used by the university clinicians on similar tasks (Williams, 2002). This discrepancy may be accounted for by the procedures and paperwork SLPs must complete prior to assessing children to determine eligibility for special education services as mandated by state and federal regulations (cf. Khan, 2002). In addition, SLPs have reported that one of the effects of the No Child Left Behind Act (NCLB; 2002) has been an increase in the amount of time in prereferral activities (ASHA, 2004).

Conversely, this group of SLPs devoted less time to direct assessment activities as compared with those reported by the university clinicians (Williams, 2002). An examination of the data summarized by Williams (2002) showed that the range of time used by the university clinicians for direct assessment was 66 to 86 min and included the oral mechanism examination, hearing screening, assessment of speech and language skills, and evaluating stimulability. Those same assessment procedures were ranked as being frequently used by the participants in the present investigation; however, only 27% devoted more than 60 min for direct assessment activities, while more than 50% completed those procedures in less than 51 min. It is possible that the SLPs did not complete all of those assessment procedures at

### TABLE 5. Frequency and percentage indicated by participants when asked to report their use of speech sound analysis procedures.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Always</th>
<th>Sometimes</th>
<th>Infrequent</th>
<th>Never</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological processes</td>
<td>158</td>
<td>51.1</td>
<td>105</td>
<td>34.0</td>
<td>28</td>
</tr>
<tr>
<td>Connected speech sample</td>
<td>112</td>
<td>36.2</td>
<td>135</td>
<td>43.7</td>
<td>40</td>
</tr>
<tr>
<td>Phonetic inventory</td>
<td>112</td>
<td>36.2</td>
<td>92</td>
<td>29.8</td>
<td>49</td>
</tr>
<tr>
<td>Syllable/word shapes</td>
<td>35</td>
<td>11.3</td>
<td>79</td>
<td>25.6</td>
<td>87</td>
</tr>
</tbody>
</table>

### TABLE 6. Assessment of non-native English speakers (N = 110).

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of participants who assess non-native English speakers</td>
<td>36</td>
</tr>
<tr>
<td>Assessment methods used&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Informal procedures</td>
<td>67</td>
</tr>
<tr>
<td>English-only standardized tests</td>
<td>35</td>
</tr>
<tr>
<td>Standardized test from client’s native language</td>
<td>19</td>
</tr>
<tr>
<td>Developed local norms</td>
<td>11</td>
</tr>
</tbody>
</table>

<sup>a</sup>Multiple responses accepted.
one time and may have included some of them during initial treatment sessions (Khan, 2002). Khan also discussed methods for maximizing the amount and type of information that may be gleaned while evaluating a child suspected of having SSD. For example, she reported that she typically recorded examples of the child’s spontaneous language throughout the assessment instead of eliciting a complete language sample. Although this method may help save time, it may not provide representative language performance (Retherford, 2000).

There was a wide range of time spent on direct assessment as reported by these SLPs. Reasons for this large time divergence may include availability of support staff (e.g., SLP aide), types of clients served, and differences in requirements across work settings. Another reason for the disparate time range is that some SLPs may use the initial assessment time primarily to determine placement eligibility (e.g., administer a single-word test), while others may also complete procedures that allow them to qualify for services and determine specific treatment targets (e.g., administer a single-word test and collect a spontaneous language sample).

The largest time difference between these SLPs and the university clinicians occurred for postassessment activities, which included data analysis and follow-up paperwork. More than 50% of the SLPs indicated that those activities took longer than 51 min, while the university clinicians averaged approximately 30 min. This discrepancy may be attributed to the amount of paperwork typically required for children who qualify for special education services. Increased paperwork was also ascribed to the effects of the NCLB (ASHA, 2004) by many SLPs.

It was also interesting to note that caseload size was not correlated with the amount of time that the participants spent on various aspects of the assessment process. It seems reasonable to assume that clinicians with larger caseloads would have less time to devote to each assessment, but this did not appear to be the case for this group of SLPs. On the contrary, the state and federal requirements to determine eligibility for special education services do not vary based on each clinician’s workload. Therefore, all clinicians must follow state and federal guidelines to qualify a child for special education services, so SLPs may not feel that they have a great deal of flexibility in adjusting their SSD assessment procedures.

This investigation did show that years of experience did have an effect on the amount of time clinicians’ spent on postassessment activities. Those SLPs with more experience spent more time on postassessment activities than those with less experience. It may make intuitive sense to assume that as clinicians acquire experience, they would develop methods and strategies to efficiently deal with work requirements; however, the data from the present investigation do not support this. One possible explanation is that more experienced clinicians may have more awareness of the many variables that need to be accounted for when analyzing the speaking skills of children.

Use of Technology for the Analysis of Speech

Technology is frequently posed as an answer to the time constraints involved in SSD assessment (Ingram & Ingram, 2002), but only 8% of these participants reported using computerized analysis procedures (usually the HCAPP; Hodson, 2003). Hodson, Scherz, and Struttman (2002) were the only contributors to the 2002 A/SLP Forum on Phonology who mentioned the use of any type of computer software analysis. They commented that entering data into the HCAPP software typically takes less than 10 min, making the postassessment results nearly instantaneous. Ingram and Ingram (2002) also discussed the advantage of using computer applications for recording, transcribing, analyzing, and storing speech samples, and they argued that these benefits far outweigh the concerns of cost, availability, and ease of use.

Besides the HCAPP, other computerized phonological analysis procedures are available, including the Computerized Articulation and Phonology Evaluation System (Masterson & Bernhardt, 2001) and the Profile of Phonology module of Computerized Profiling (Long, Fey, & Channel, 2006). All of these programs involve entering data from the keyboard, but they all provide extensive information about children’s phonetic and phonemic skills that can reduce the amount of time spent on postassessment analysis. Reasons for these results may include lack of access to computers as well as the cost of some software programs, familiarity with computer technology, and lack of knowledge about the availability of computerized assessment programs.

Types of Direct Assessment Tasks

Assessment tasks were identified as formal and informal procedures that were conducted while interacting directly with the child, and were most often used to determine whether SSD exist. The following assessment tasks were most frequently used: administering a published test to determine a standard score and percentile rank, estimating intelligibility, assessing stimulability, and conducting a hearing screening. Results from these measures are useful for satisfying the mandates of state and federal guidelines for determining eligibility for special education services, documenting the students’ present level of performance, and establishing recommendations for intervention (Khan, 2002). Although there was a great deal of agreement between the assessment tasks used by these SLPs and the university clinicians, it is of interest that Bleile (2002) and Hoffman and Norris (2002) did not fully complete an articulation test, and Hodson et al. (2002) did not include a hearing screening. Although administration of an entire articulation test may not always provide clinically useful information, many SLPs may find the scores they obtain from this type of testing a convenient way to qualify children for services. Similarly, knowing the child’s hearing status is also essential in implementing an appropriate plan of service (Podwell & Podwell, 2003).

The SLPs indicated that an important part of an SSD assessment was estimating intelligibility. This measure may be crucial, as a child’s level of intelligibility often influences decisions about need for services, intervention priorities, and evaluating the success of intervention. A variety of methods of measuring intelligibility exist, and clinicians can choose the technique that best meets their needs (Kent, Miolo, & Bloedel, 1994), but for this investigation it is
unknown which methods are being used. It has been suggested that many clinicians make impressionistic statements about intelligibility and do not routinely conduct the more time-consuming objective measurements (Gordon-Brannan & Hodson, 2000).

The assessment of oral motor skills for both speech and nonspeech tasks was conducted by more than 50% of the clinicians in this study. Although examination of oral structures (i.e., oral peripheral examination) for functional speech tasks may be worthwhile, the validity of conducting such an examination for nonspeech tasks is questioned, especially when the relationship between nonspeech tasks and speech is unknown (see Lof, 2002). Perhaps in an effort to make the best use of time, nonspeech movement assessments should be discontinued.

Participants overwhelmingly reported that the most used published test was the GFTA (Goldman & Fristoe, 1986, 2000), followed by the KLPA (Khan & Lewis, 1986, 2002), which must use the child’s responses from the GFTA. While the validity, reliability, and usefulness of the GFTA (both versions) are not disputed, it is interesting to speculate why this test stands out among published tests. One reason may be school districts’ funding that prevents SLPs from purchasing numerous published tests. The GFTA is versatile and can be paired with the KLPA to help clinicians describe error patterns. In addition, the GFTA has been used by a generation of SLPs because it is efficient and involves straightforward administration that provides results to determine qualification for services.

Although published tests are useful for qualifying children for services, they typically only provide phonetic/articulatory information of children’s SSD and very little information about their phonological system. In fact, most published tests do not provide enough information about speech sound production to generate adequate goals and objectives for intervention (Bernhardt & Holdgrafer, 2001). The additional use of the KLPA may add some efficiency to the assessment process by using productions that have already been obtained by administering the GFTA. However, the KLPA only provides a limited and cursory phonological analysis, and these results may not be useful for actual planning for phonological intervention (Lof, 2002).

Survey participants most frequently responded that they assess phonemic awareness skills “sometimes.” In contrast, across the authors within the 2002 AJSLP Forum on Phonology, Hodson et al. (2002) were the only authors to include phonemic awareness assessment. Children with SSD are at risk for the development of inadequate metataphonological skills (Rvachew, Ohberg, Grawburg, & Heyding, 2003; Sutherland & Gillon, 2005), so the inclusion of such a measurement may be important. The relatively high frequency of phonemic awareness testing by these SLPs as compared to the university clinicians may reflect when the testing is done, as opposed to if it is completed at all. That is, it cannot be determined with certainty that these SLPs only reported the assessment procedures that were a part of their initial evaluations, or whether they also included those that were conducted during the child’s intervention program. The assessment of phonemic awareness skills also concurs with data obtained from the ASHA Schools Survey Report (2004), where more than one third of the respondents reported that an effect of NCLB was an increase in their involvement in literacy activities.

**Analysis of Speech-Language Samples**

Williams (2003) stated that the purpose of speech analysis is to provide information about the children’s speech sound system (see Williams, 2003, for a review), so it is imperative that SLPs obtain appropriate speech samples to conduct this detailed analysis (Bernhardt & Holdgrafer, 2001). Thus, the ability to thoroughly analyze children’s speech is directly related to the type of speech sample the clinician elicits. For example, published single-word tests often do not yield sufficient opportunity for the productions of phonemes in a variety of phonetic contexts, so clinicians may need to also elicit a connected speech sample.

The type of speech sample that clinicians elicit will vary across clients and should consider factors such as age of the child and severity of the SSD. Williams (2003) stated that single-word samples are most commonly elicited, but a conversational sample is recommended to supplement the information provided by single-word productions. In the present study, the SLPs reported that they elicited and analyzed connected speech samples to a lesser extent as compared to the administration of single-word tests and subsequent analysis of those productions. The use of specific analysis procedures performed on the connected speech samples was not explored.

The most frequent speech analysis procedures used by the SLPs were determining phonological processes and documenting a phonetic inventory. Phonological process analysis most likely reflected the information that clinicians obtained by using the KLPA. Phonological process analysis allows clinicians to make general observations about the client’s error patterns, but recent advances in assessment have shown that this type of analysis may not always yield the most clinically useful information (Williams, 2005). Documenting a phonetic inventory is useful for describing the child’s unique sound system and the phonemes the child is capable of making. Typically, the documentation of the phonetic inventory also takes into account phoneme production across word or syllable position (e.g., initial, intervocalic, final).

In addition, two analysis procedures that could potentially yield information important for intervention planning—contextual testing to determine phonetic context effects and analyzing syllable/word shapes—were not used often by the participants. Reasons for the low frequency of use can only be speculated. It is possible that clinicians do not conduct this type of analysis, or that information is gathered informally throughout the child’s course of intervention.

The university clinicians (Williams, 2002) indicated that some type of connected speech sample (e.g., conversation, telling a story) should be elicited, although the types of speech sample and subsequent analyses of those samples varied. For example, Tyler and Tolbert (2002) indicated that the child’s language sample could be examined at a later time for further speech and language analysis. Hoffman and Norris (2002) advocated using speech sound analysis procedures that involved comparing the child’s productions during conversation.
to developmental norms available for the production of sounds and consonant clusters. Miccio (2002) discussed the administration of a 100-word probe to provide more opportunities for the production of all English consonants. She then described a variety of independent and relational analysis procedures that could be applied to children’s productions of those probe words; however, it was not specified when that analysis should occur.

The use of specific analysis procedures may be influenced by the severity of children’s SSD. The speech of children with moderate-to-severe or unusual SSD often requires more thorough analysis procedures than the speech of those children whose SSD are considered mild or more typical (Kamhi, 1994). On the other hand, collecting and analyzing connected speech samples and word-probes from highly unintelligible children may be difficult and extremely time-intensive. Thus, choosing the most appropriate methods of speech-language sampling and analysis is dependent upon a combination of client variables, as well as the amount of time the SLPs can devote to the tasks.

Assessment of the Speaking Skills of Non-Native English Speakers

Despite the increase of bilingual and multilingual students in America’s schools (Meyer, Madden, & McGrath, 2004), fewer than one half of the participants reported having non-native speakers of English on their caseloads. This low frequency is relatively similar to data from the ASHA Schools Survey Report (2004) that showed a median of two non-native English speakers on participants’ caseloads. Most SLPs reported using either informal assessment procedures or English-only standardized tests when assessing the speech of non-native English speakers. This is to be expected, as most SLPs do not speak the native language of their non-English-speaking clients, and few formal tests have been developed for children who speak a language other than English (Yavas & Goldstein, 1998). It is essential that appropriate assessment measures for this population are used in order to prevent overinclusion in speech-language services (Roseberry-McKibbin, 1994). As the population of non-native English-speaking students continues to increase, suitable assessment instruments will need to be developed, and SLPs will require appropriate training and support to adequately assess the speaking skills of these students. In addition, SLPs may need to seek out information on this topic by attending workshops and reading pertinent literature (e.g., Goldstein, 2000; Yavas & Goldstein, 1998).

Bias and Limitations

Several limitations of this investigation need to be acknowledged. First, the design of the questionnaire did not allow for a measure of reliability, and because none of the respondents completed the questionnaire more than once, consistency of responses could not be determined. Further, in an effort to keep the questionnaire to a reasonable length, some aspects of the SSD assessment process were not addressed in great depth, or at all. These areas included the assessment of expressive/receptive language skills, voice, fluency, and evaluation of oral motor structures.

It is also recognized that participants needed to remember and then estimate a great deal of information about their caseloads. The enormity of that task may have produced biased or unreliable information. It also could not be clearly differentiated when the participants actually conducted various assessment tasks (i.e., at the time of the initial assessment or during the intervention program). Finally, participants were not given the opportunity to indicate how their assessment procedures varied relative to client characteristics such as severity of the SSD, attention and motivation, or presence of other communication disorders.

It should also be stated that the opinions expressed by this group of respondents’ should not be construed as representing the practices of all SLPs. These results only reflect the opinions of those who completed the questionnaire. Further, only about one third of the potential participants returned the questionnaire. It is unknown if this response rate is “typical,” as a minimum standard for survey response has not been determined (Fowler, 1993).

Clinical Implications

The intent of this investigation was not to present the “correct way” to assess children with suspected SSD. However, the information may prove to be useful to practicing clinicians. SLPs may find it helpful as well as interesting to compare their typical SSD assessment and analysis procedures with those used by the participants in the present study. For example, knowing that many SLPs spend a great deal of time completing paperwork may foster discussions among colleagues to reduce the necessary paperwork and/or complete it more efficiently. In addition, faculty at university training programs who are responsible for preparing students can use these data to help guide their teaching content. That is, students need to be prepared to conduct thorough yet efficient SSD assessments while also following federal and state regulations that govern special education services in many employment settings. Individuals who provide continuing education workshops and in-services also need to be aware that many practicing clinicians may be relying on information that is not current, and can focus the content of those workshops on efficient and effective methods to analyze children’s speech. It is apparent that SLPs need to find the most efficient methods to thoroughly assess and analyze children’s speech.

Given that many SLPs who assess children suspected of SSD are obligated to adhere to the same federal mandates to qualify children for special education services, it is likely that the procedures documented in this investigation are similar across clinicians. Those federal guidelines state that each individualized education program (IEP) must contain a statement of the present levels of the child’s educational performance. It seems reasonable to assume that clinicians would document performance levels at the very least by using the results of a formal test and an intelligibility rating. IEPs must also contain annual goals, and many school districts also require additional short-term instructional objectives. It appears that many of the respondents gather the type
of information that would be useful for intervention planning, including documenting a phonetic inventory, describing error patterns, and assessing stimulability. It also seems reasonable to assume that throughout the intervention process, clinicians update the status of the child’s sound system by noting changes in the phonetic inventory, types of error patterns, and stimulability.

Miccio (2005) described speech sound assessment as “dynamic” and pointed out that intervention “also serves as an extended longitudinal assessment” (p. 40). That is, speech sound assessment is not a short-lived process that occurs only prior to children’s enrollment in intervention. Assessment and analysis of children’s speech productions should also be conducted while the child receives intervention in order to monitor progress and make programming changes as needed. Thus, clinicians may be able to apply the kinds of detailed analysis procedures described in the literature at different times during children’s intervention programs.

Additional research is needed to further explore SSD assessment issues, such as typical methods of measuring intelligibility, speech sound analysis procedures that SLPs find most beneficial, types of analysis procedures used across severity levels, and the kinds of assessment and analysis procedures that are most typically undertaken after the child is enrolled in therapy. This information may provide SLPs with practical solutions to the problems associated with efficiently conducting comprehensive assessments of children suspected of having SSD.

Acknowledgments

This study was supported by a grant from the University of Wisconsin–Stevens Point Student Research Fund, College of Professional Studies, and Department of Communicative Disorders.

References


Received June 12, 2006
Accepted February 28, 2007
DOI: 10.1044/1058-0360(2007/029)

Contact author: Maggie Watson, University of Wisconsin–Stevens Point, 1901 4th Avenue, Stevens Point, WI 54481.
E-mail: maggie.watson@uwsp.edu.
## SSD Assessment Questionnaire

Please complete this survey if you work with children who have speech sound disorders.

If you do not work with this population:

- Check this box and give this survey to a colleague who does
- OR
- Check this box and return the incomplete survey in the enclosed envelope

### PART 1: DEMOGRAPHIC INFORMATION

1. Check the location(s) that best describe your work setting:
   - Birth-3 program
   - Elementary School
   - Preschool
   - Other

2. Enter the year each of your degrees were obtained (leave blank if it does not apply):
   - Bachelor's
   - Masters
   - PhD
   - EdD

3. On the line below, write the name of the state in which you work:

4. On the line below, enter the number of years you have practiced Speech-Language Pathology:
   - ____ years

5. On the line below, enter the number of years children with speech sound disorders have been a part of your caseload:
   - ____ years

6. On the line below, enter the number of children currently on your caseload:
   - ____ children

7. On the line below, enter the total number of children currently on your caseload receiving services for a speech sound problem(s):
   - ____ children

### PART 2: PHONOLOGICAL ASSESSMENT

8. Check the areas that describe the phonological assessment training you have received:
   - Undergraduate level courses
   - Conventions/Workshops
   - Independent Journal Study
   - Graduate level courses
   - District/state training
   - Other

9. On the line below, enter the average number of phonological assessments you conduct each year:
   - ____

10. What professionals are typically involved in the assessment of your clients with speech sound disorders?

    - School Psychologist
    - Teacher of the Cognitively Disabled
    - Classroom teacher
    - Audiologist
    - Teacher of the Learning Disabled
    - Other

11. What is the most typical parental involvement during the assessment process?

    - Completes mail-in case history form
    - Live Interview
    - Accompanies child during assessment
    - Phone Interview
    - Parent/child play during assessment
    - No parental interaction

12. If a hearing screening is conducted as part of the assessment, who typically administers the screening?

    - Myself
    - Paraprofessional Aide
    - School nurse
    - Audiologist
    - Other

13. Do you use computerized analysis procedures for articulation/phonological assessment?

    - Yes
    - No

If yes, please write title:__________

---

Skahan et al.: SLPs' Assessment Practices 257
PHONOLOGICAL ASSESSMENT: Non-Native Speakers

14. How many children on your current caseload speak English as their second language?

______ children

15. When assessing the phonological skills of a child who uses English as his/her second language (ESL), do you typically conduct the entire assessment?

☐ Yes    ☐ No

16. When assessing the phonological skills of ESL students, which individual typically assists you when you are not familiar with the child’s native language (please choose one)?

☐ SLP Colleague    ☐ Child’s family member translates
☐ ESL Teacher    ☐ Translator provided by my workplace
☐ N/A. I have not assessed the phonological skills of ESL students.

Please indicate your use of the following methods with non-native speakers:

<table>
<thead>
<tr>
<th>English-Only Standardized Test</th>
<th>Always</th>
<th>Sometimes</th>
<th>Infrequent</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized Test for Client’s Native Language</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Informal Procedures</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Developed Local Norms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

PHONOLOGICAL ASSESSMENT: TIMING

In the following section, please check the amount of time that best describes your assessment practices:

<table>
<thead>
<tr>
<th>Assessment Activity</th>
<th>Number of Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Pre-assessment activities including completion of paperwork, interviewing teachers/caretakers, etc.</td>
<td>☐</td>
</tr>
<tr>
<td>Direct assessment activities with the child, including administration of formal and informal assessments, etc.</td>
<td>☐</td>
</tr>
<tr>
<td>Post-assessment data analysis and completion of paperwork for children qualifying for services</td>
<td>☐</td>
</tr>
</tbody>
</table>
### PHONOLOGICAL ASSESSMENT: FORMAL TESTING

Please indicate the frequency with which you utilize the following formal tests:

<table>
<thead>
<tr>
<th>Test</th>
<th>Always</th>
<th>Sometimes</th>
<th>Infrequent</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona Test of Articulation (any version)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment of Phonological Processes (APP) or APP-Revised (APP-R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment Link Between Phonology and Articulation (Alpha)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bermthal Bankson Test of Phonology (BBTOP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Assessment of Articulation and Phonology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fisher-Logemann Test of Articulation Competence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldman-Fristoe Test of Articulation (either version)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hodson Assessment of Phonological Patterns</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khan-Lewis Phonological Analysis (either version)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photo Articulation Test (any version)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured Photo Articulation Test (any version)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Templin-Darley Test of Articulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PHONOLOGICAL ASSESSMENT: COMPONENTS

Please indicate the frequency with which you employ the following phonological assessment components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Always</th>
<th>Sometimes</th>
<th>Infrequent</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Interview</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Case History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single word test to determine percentile rank and standard score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonological analysis of connected speech sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hearing Screening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulability of errored sounds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception/discrimination assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contextual testing to determine phonetic context effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Observation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determining Phonetic Inventory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determining Phonological Processes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determining Syllable/Word Shapes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing Phonemic Awareness Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing oral motor skills using nonspeech tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing oral motor skills using speech tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimating intelligibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>