Department of Communicative Sciences and Disorders

International Child Phonology Conference 2014

Program
International Child Phonology Conference

Organizing Committee

Amy Glaspey, Ph.D., CCC-SLP
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General Information

Conference Venue

The conference takes place at the Phyllis J. Washington Education Center on the University of Montana Campus. The building is located at the east end of Eddy Avenue, Missoula, Montana. Please see the campus map: http://www.umt.edu/map/print-maps.php. Oral Presentations will occur in room 123 and our poster session will be held in room 241.

Pre-conference Garnet Ghost Town Tour http://www.garnetghosttown.net/

We will meet at 9:30 AM on Monday June 16th in the Phyllis J. Washington College of Education. We will meet in the main lobby on the first floor at the Omni Globe. Transportation will be provided, however, you are welcome to drive your own car if you prefer. Sack lunches will also be provided. We will drive to Garnet which will take about an hour and you will be able to see some of the countryside. Be sure to wear comfortable walking/hiking shoes as we will be walking on dirt trails. You can explore on your own or we may be able to visit with some volunteers or a guide. You can be as active as you prefer exploring the old buildings or you may just enjoy resting in some of the buildings. We will spend a few hours at the site, eat our lunch, and then return to the UM campus approximately 4-6 hours later.

Oral Presentations

Please inquire at the registration desk to load your presentation in the morning prior to the start of the conference or during a break. If you are showing videos or any specialized fonts, please notify Amy Glaspey at amy.glaspey@umontana.edu to test the videos prior to your presentation.
Poster Presentations

Poster sessions will take place on Tuesday, June 17, 2014 from 1:30-3:00 in room 241 of the Phyllis J. Washington College of Education and Human Sciences. Posters may be hung at any time in the morning prior to 1:30.

The poster board surface is approximately 3' high x 4' wide and boards are made of soft surface with aluminum frames. Presentation materials may be attached using pushpins, which we will have available. We will have wireless access, should you also like to bring a laptop for supplemental materials. It is recommended that poster presenters use thin, lightweight poster paper for their poster. Heavier paper or cardboard may be difficult to keep in position on the board.

Wireless Internet

The wireless network name is grizzlyguest. Please open a web browser after connecting and you should be redirected to the Guest User login page. Please read the terms of use and input your personalized email address. Click on the “I accept” button and access should be granted. For further information, please visit http://umt.edu/it/wireless/guestaccess.php.

Lunch

Lunch will be provided on the Garnett Ghost Town Tour on Monday, June 16th. A light lunch will be served on Tuesday, June 17th at in room 241. These lunches are included in your conference fee. Lunch will be on your own at a Missoula community venue on June 18th. Please see the following list to view a sample of Missoula restaurants. We suggest that you visit the Missoula Out-to-Lunch at Caras Park on Wednesday.

Dinner

The conference dinner will take place on June 17 at Amy Glaspey’s home and is included in the conference fee. Directions will be provided at the registration table. A Montana Barbeque is planned with Bison Burgers, Veggie Burgers, and other local specialties from the Garden City.
**Public Transportation**

The UDASH bus system is free and open to the public. The East Broadway Green Line and the Lewis and Clark Red Line run every 10 minutes on weekdays beginning at 7:25am. On Monday, Tuesday, and Wednesday the Downtown Late Night Gold Line runs every 30 minutes beginning at 7:05pm. To view the stops for each route please visit [ASUM transportation](http://life.umt.edu/asum/asum_agencies/Transportation/getting-around/bus/default.php).
Schedule

Tuesday, June 17

7:30  **Child Phonology Walk and Talk**
Meet at the Phyllis J. Washington Education Center in the lobby at the Omni globe. We will walk part of the Kim Williams Nature trail along the Clark Fork River. [http://www.traillink.com/trail/kim-williams-nature-trail.aspx](http://www.traillink.com/trail/kim-williams-nature-trail.aspx).

Registration Table open
You may pick up your conference badge and program. Presentations will begin in room 123 of the Phyllis J. Washington Education Center

8:30  **Opening Welcome: Room 123**

8:45  **What Do Caregivers Tell Us about Vocal Development?**
Heather Ramsdell-Hudock\(^1\) and Andrew Stuart\(^2\)
\(^1\)Idaho State University, \(^2\)East Carolina University

9:25  **Opening Discussion**

10:05  **Break**

10:20  **Babbling and Early Words: Early Word Shapes and Segmental Inventories in Two English Children**
Kayla Day
University of Alberta

11:00  **Predictors of Intra-word Variability in Typically Developing Preschoolers**
Anna Sosa\(^1\), Toby Macrae\(^2\), and Katharine Bedsole\(^2\)
\(^1\)Northern Arizona University, \(^2\)Florida State University

11:40  **The Interaction of Word Complexity and Consonant Correctness in Spanish Speaking Children**
Kaitlyn Purinton, David Ingram
Arizona State University

12:20  **Lunch (provided): Room 241**
1:30  **Poster Session: Room 241**

- **Phonological Characteristics of Speech Produced by Korean-English Bilingual Children with and without Developmental Delay**  
  Minjung Kim, HyeKyeung Seung, Eunice Joo  
  California State University-Fullerton

- **Telepractice Assessment of Receptive Language Using the Peabody Picture Vocabulary Test 4**  
  Mark VanDam, Alyssa Anderson, Hannah Ahmann, Nancy Potter  
  Washington State University

- **Measuring Variability in Consonant Production in French-Speaking Children Aged 30 to 53 Months**  
  Andrea A.N. MacLeod⁷, Cécile Vaucel², Caroline Guillaume⁷, Christelle Maillart²  
  ¹Université de Montréal, ²Université de Liège

- **Performance of Children with Speech Sound Disorders According to Central Auditory Processing Assessment**  
  Tatiane Faria Barrozo, Haydée Fiszbein Wertzner, Luciana Pagan Neves  
  Universidade de São Paulo

- **The Tongue Shape of /s/ Produced by Children and Adult Speakers of Brazilian-Portuguese Using Ultrasound Imaging**  
  Danira Tavares Francisco, Luciana de Oliviera Pagan-Neves, Haydée Fiszbein Wertzner  
  Universidade de São Paulo

- **Performance of Children with SSD in Pre and Post Stimulation Phonological Program**  
  Thais Zemlickas Silva, Luciana de Oliviera Pagan-Neves, Haydée Fiszbein Wertzner  
  Universidade de São Paulo

- **Measuring Speech Adaptability for Target Selection**  
  Isabel Archilla, Jessica Camp, and Amy Glaspey  
  University of Montana

3:10  **Phonological Processes in Sentences Produced by Two Adult Japanese Speakers of US English: Proficiency and Parallels between L1 Phonological Acquisition and L2 Phonological Learning**  
  Amber D. Franklin¹, Lana R. McDaniel²  
  ¹Miami University, ²CA Beard Memorial School Corp

3:50  **Break**

4:05  **Round Table Discussion 1**

6:00  **Evening Dinner (provided) and Social**  
  A Montana Barbeque is planned with Bison Burgers, Veggie Burgers, and other local specialties from the Garden City. Directions and transportation options will be included at the conference. Dinner will be held at Amy Glaspey’s home.
Wednesday, June 18

7:30  **Child Phonology Walk and Talk**  
Meet at the Phyllis J. Washington Education Center in the lobby at the Omni globe. We will hike to the “M”  

8:45  **Business Meeting : Room 123**

9:15  **Expressive Phonology at 24 Months: Approaches to Assessment**  
Carol Stoel-Gammon¹, A. Lynn Williams²  
¹University of Washington, ²East Tennessee State University

9:55  **Methodology for Tracking Infant Vocalizations: A Comparison between an Infant with a Sibling Who Has Autism versus an Age-matched Peer with a Sibling Who Is Typically Developing**  
Heather Ramsdell-Hudock¹, Randi Killeen¹, Leslie Carke¹, Andrew Stuart²  
¹Idaho State University, ²East Carolina University

10:35  **Break**

10:50  **Performance of LENA Automatic Speech Processing in Families with Children Who Are Hard of Hearing**  
Mark Vandam¹, Noah Silbert²  
¹Washington State University, ²University of Cincinnati

11:30  **The Tale of Two Contrasts: Fricatives versus Stop VOT Contrasts in Bilingual Children with Cochlear Implants and Their Monolingual English-Speaking Peers**  
Ferenc Bunta  
University of Houston

12:10  **Out-to-lunch Missoula**  
Attendees may enjoy taking a free bus to Missoula’s Out-to-Lunch.  

2:20  **Speech Sound Disorders of Genetic Origin in Multigenerational Families**  
Beate Peter  
University of Washington

3:00  **Measuring Phonological Change in Speech Sound Disorders from a Multidimensional Perspective**  
Amy M. Glaspey¹ and Andrea A. MacLeod²  
¹University of Montana, ²Université de Montréal

3:40  **Break**

4:00  **Round Table Discussion 2**

4:50  **Closing Remarks**
What Do Caregivers Tell Us about Vocal Development?

Heather Ramsdell-Hudock\textsuperscript{1} and Andrew Stuart\textsuperscript{2}
\textsuperscript{1}Idaho State University, \textsuperscript{2}East Carolina University

Infant vocal behaviors have been shown to be predictors of later language abilities \cite{1-4}, but this knowledge has not been leveraged for clinical use. The challenge lies in identifying infants and toddlers who may be at risk of future speech and language difficulties \cite{5}. Identification is difficult because normal vocal development is variable and instable both within and across children \cite{6-9}. Adding further complication, the methodology used to study prelinguistic infant vocalizations has been cumbersome and tedious. Implementation of more refined and natural procedures for documentation of infant vocalizations may provide a more efficient means of tracking development. Specifically, caregiver perception of early infant sounds may be more predictive of later development than prior laboratory procedures, and therefore may provide an easier means of identifying infants at risk for later speech and/or language difficulties.

Parent report has been shown to be a reliable and valid means of tracking speech and language development and predicting performance \cite{3, 10-18}. In addition, it has been well-documented that caregiver response to early communicative behaviors can be indicative of both typical and atypical development \cite{19-22}, specifically with respect to vocabulary development \cite{23-28}. This is critical information for a child’s future success in school, because vocabulary is highly predictive of later reading ability \cite{25, 29-34}. Exploration of variables for early identification of late-talkers, using mainly expressive language measures such as vocabulary size and word combinations, has been conducted with parents whose children are as young as 18 to 32 months of age \cite{35-37}.

Important for more than simply tracking of development, caregiver perception directly influences interaction with infants. Recent research indicates that parent response to child production varies dependent upon whether or not the child’s production is perceived as phonetically accurate versus inaccurate \cite{38} and familiar versus non-familiar \cite{39}. Responses tend to phonetically enhance inaccuracies, facilitating future correct productions, and repeat non-familiar words produced by children, providing additional examples and input to reinforce these productions. Further, when children produce familiar words, word approximations, or even consonant-vowel syllables, parents are likely to expand upon those productions, encouraging language growth \cite{40}. Given that caregiver response to early communication influences later development it seems logical to posit that caregiver response to vocal development, even from 7 through 18 month old infants, can influence and perhaps predict later speech and language development. Further, given that caregiver input is influenced by the
accuracy and familiarity of the child’s production, it also seems logical to posit that caregiver input will be directly influenced by the sounds they perceive their infant to be producing.

Toward examining parental perception of infant vocalization, we begin by exploring the phonological makeup of parent judged early infant sound productions. The intention is to gauge whether or not caregiver judgment of prelinguistic vocalizations corresponds with our current knowledge of development. Herein, we report our findings from a cohort of 16 infant/parent dyads followed over a longitudinal period of 12 months while the infants were 7 to 18 months of age.

References


Babbling and Early Words: Early Word Shapes and Segmental Inventories in Two English Children

Kayla Day
University of Alberta

There is much debate in the field of first language acquisition concerning which factors are most influential on a child’s phonological development. This research considers approaches of two levels of representation (word shape and segmental), comparing each against child data. Vihman & Croft (2007) present a What You See is What You Get approach which claims children develop templates (or preferred word shapes), during the babbling and 50-word stages, based on the acoustic characteristics of the target language as well as influences from the child’s articulatory abilities. Leevlt & van Oostendorp (2007) provide an account of phonological development, driven by feature acquisition, where segments are added to the child's
phonological system as (s)he acquires more features, along with constraints on certain feature combinations.

Using a pre-coded corpus (English-Davis corpus) of the babbles and early words of two English-speaking children between the ages of approximately 00;07 and 2;11 this research investigates how effectively these two approaches describe child phonological development. I searched for evidence of templates (Vihman & Croft 2007) in the data of one child by examining the type and proportion of utterance shapes (e.g. CV, CVC, GV, etc.) observed during the babbling and early word stages, and then comparing the number of occurrences of each shape in babbles and word productions. Babbles were divided into two periods to illustrate the qualitative differences between the time periods. The data (Table 1) demonstrate that while there are commonalities between word shape and babble shape, there are also very common babble shapes (i.e. CV reduplicated forms) that are completely unattested in words. If both babble shape and word shape emerge from the child's acoustic mapping of the ambient language then one would expect all common recurring babble shapes should be present in words. There is also an unexpectedly large mismatch between the proportion of common babble shapes and common word shapes, for example the ratio of CV:CVCV in babbles is approximately 2:1, but in words it is almost 4:1. Based on these facts, this research finds that the evidence for the presence of templates in this child is questionable.

I then performed a Feature Co-occurrence Constraint (FCC) analysis (Levelt & van Oostendorp 2007) to examine if feature-based analysis could account for the segmental acquisition patterns of the two children in this study (analysis of one child is shown in Table 2). FCC analysis attempts to model a child's segmental development by gradually adding features and constraints to the system. The constraints perform one of two actions: either prohibiting or mandating the co-occurrence of two specific features (*[dor, nas] prohibits dorsal segments to be nasal; [del.rel] ɔ [voi] mandates that affricates must be voiced). The phonological development of both children examined behave as expected under an FCC analysis. However, many of the differences in their development patterns are lost within this framework due to the fact that only successful productions are considered. This lead to a qualitative analysis of substitution patterns where the two children show a great deal of overlap.

Predictors of Intra-word Variability in Typically Developing Preschoolers

Anna Sosa¹, Toby Macrae², and Katharine Bedsole²

¹Northern Arizona University, ²Florida State University

Intra-word variability, or variability in repeated productions of the same word, e.g., banana produced as [bɪnə], [bænə], and [nænə], has been studied in children with phonological impairment (e.g., inconsistent disorder, Dodd, 2005), speech motor impairment (childhood apraxia of speech, see ASHA, 2007), and typical speech and language development (Holm, Crosbie, & Dodd, 2007; Macrae, 2013; Sosa & Stoel-Gammon, 2012). Macrae (2013) and Sosa and Stoel-Gammon (2012) examined child- and word-specific predictors and correlates of intra-
word variability in children with typical development. Macrae found a significant positive effect of phonological complexity and significant negative effects of age and expressive vocabulary on intra-word variability in 2-year-olds. Sosa and Stoel-Gammon found that consonant age of acquisition, word frequency, and phonological neighborhood density were all significant predictors of intra-word variability, also in 2-year-olds. They also found a significant, negative correlation between expressive vocabulary and intra-word variability. To date, no studies have examined potential predictors of intra-word variability in a large group of older preschool children (3-4-year-olds). The identification of predictors in children with typical development may elucidate the deficits that underlie high intra-word variability in children with speech-language impairment.

The primary purpose of the present study is to explore potential concurrent predictors of intra-word variability, including age, expressive and receptive vocabulary, and speech sound production abilities, in 3-4-year-old children with typical speech and language development. A secondary purpose it to compare results obtained by different research teams, which may allow us to reconcile discrepancies in overall variability rates that have been reported previously.

Participants are 43 children (19 male, 24 female) between 2;6 and 4;3 who participated in data collection sessions conducted by two different research groups in two states (34 in Arizona and 9 in Florida). Data collection sessions took place in therapy rooms at university speech, language, and hearing clinics; 34 children were video- and audio-recorded and 9 children were audio-recorded only. Children participated in a variety of different assessment and experimental procedures, however the present study reports results from measures of expressive and receptive vocabulary (EVT-2 and PPVT -4), general articulation ability (GFTA-2), and intra-word variability (the Inconsistency Assessment, IA). The IA (Holm et al., 2007) consists of a set of 25 words ranging in length from 1 to 4 syllables (e.g., boat and helicopter). Three productions of each target word were elicited in the context of picture and object naming and were phonetically transcribed using a consensus transcription procedure. Target words were coded as variable if there were any differences in the broad transcription across the three productions; both consonant and vowel differences were included in the variability coding. An overall variability score (i.e., the number of target words produced variably out of the 25 target words) was calculated for each child. Multiple regression analysis was used to determine which child, speech, and language characteristics are significant predictors of intra-word variability. Potential clinical implications as well as contributions to our understanding of underlying sources of variability in both typical and delayed/disordered speech development will be discussed.

References

The Interaction of Word Complexity and Consonant Correctness in Spanish Speaking Children
Kaitlyn Purinton, David Ingram
Arizona State University

The Percentage of Consonants Correct (PCC) (Shriberg & Kwiatkowski, 1980) and The Proportion of Whole Word Correctness (PWP) (Ingram, 2002), are proposals for the assessment of young children's speech production. The PCC determines the child’s percentage of correct consonants. The PWP is determined after another measure, the Phonological Mean Length of Utterance (pMLU), has been calculated. These two measures are more inclusive than PCC since, besides measuring consonants correct, they also consider the rate of consonant substitutions (as opposed to deletions), and the rate of vowel usage. More specifically, the pMLU is a complexity measure that calculates a mean score for child's words in which correct consonants receive 2 points, while vowels and substitutions receive one point each. The pMLU is calculated separately for the child's produced words and their target words (the latter calculated by assigning 2 points to each consonant and 1 point to each vowel). The PWP then divides the target word pMLU score into the child's pMLU, resulting in a percentage score that captures the fit between the two. Children who produce words with a close fit to their targets will have high percentages, while those who do not will have low percentages. Recent work by Babatsouli, Ingram and Sotiropoulos (2012) has demonstrated mathematically that the measures PWP and PCC have a linear relationship. The measures are relatively far apart when the rate of consonant correctness is low, yet relatively close as correctness increases. They are also closer when the rate of consonant deletion is high, and further apart when the rate of consonant substitutions is high. These relations are shown in Figure 1 for a single child, where the parallelogram shows the range of possible scores. This leads to a new measure, called the PCC, PWP Intersect (Ingram, 2012) which combines the two measures.

This paper demonstrates how the PCC, PWP Intersect can be used to study the relationship between consonant correctness and word complexity. The participants were 14 Spanish-speaking children between 2,1 and 3,9 (7 males and 7 females) who had been previously studied in Hase, Ingram & Bunta (2010). The children each produced 56 words divided into 4 hypothetical categories of word complexity: 1. CVCV, e.g. ‘cara’, ‘mesa’, 2. CVCVC, e.g. ‘nariz’, ‘dedos’, 3. Trisyllables, e.g. ‘lavabo’, ‘zapato’ 4. Disyllables with clusters, e.g. ‘blanco’, ‘negro’. The PCC and PWP scores were calculated for each complexity group, then plotted for each child with the PCC on the x axis and PWP on the y axis (see Figure 1). It was found that consonant correctness correlated with word complexity for 10 of the 14 children. Specifically, consonant correctness was highest for complexity group 1, and lowest for group 4. Groups 2
and 3 fell between these two, with equal complexity. These results have important implications for words selected to test Spanish-speaking children’s phonological abilities. The individual differences of the 4 children who did not show the above pattern are also discussed. Finally it is argued that the PCC, PWP Intersect is a better measure for phonological assessment than either measure separately.

References

Figure 1. PCC, PWP Intersect for Participant 8
Phonological Characteristics of Speech Produced by Korean-English Bilingual Children with and without Developmental Delay

Minjung Kim, HyeKyeung Seung, Eunice Joo

California State University-Fullerton

There has been extensive research on phonological development of typically developing children (e.g., Smit, 2007; Templin, 1957). However, there are relatively fewer studies on speech sound development of bilingual children. Furthermore, limited information on bilingual children with developmental delay is currently available. The current study investigates phonological characteristics of speech produced by Korean-English bilingual children with and without developmental delay. The proposed study will answer the following research questions: 1) Do bilingual children with developmental delay exhibit developmental patterns of speech sounds similar to those of typically developing children? 1) Are there error patterns that are related to interference of bilingual children’s first language? 3) How do bilingual children with developmental delay improve their speech production over a one-year period?

Participants: Two typically developing bilingual children aged four and five respectively and two five-year-old bilingual children who present developmental delay participated in this study. Data from typically developing children were collected through one-time home visit. On the other hand, data from two children with developmental delay were collected multiple times over a year in order to examine developmental changes of speech sound production. These two participants visited the university clinic for data collection. One child has been diagnosed with Autism as well as speech-language delay at age 3.5 years and has received speech-language intervention. The other child had tonic-clonic seizure and was hospitalized at age two years. Subsequently he was diagnosed with Autism at age 2.5 years. These two children participated in the previous study (Kim & Seung, 2012).

Procedures: As baseline measures of speech and language, the Peabody Picture Vocabulary Test-4 (PPVT-4), the Expressive Vocabulary Test-2 (EVT-2), and the Goldman-Fristoe Test of Articulation-2 (GFTA-2) were conducted for all participants. The first author obtained the child’s word productions using the Goldman-Fristoe Test of Articulation and the speech samples were video- and audio-recorded. The samples were transcribed phonetically. Broad transcription was used, except for in the case of any distortions or non-English speech sounds, which were transcribed using diacritics.

Analysis: Data analyses include the phonetic inventory, syllable structure, error patterns, vowel accuracy, and percentage of consonant correct (PCC). Data analyses are underway. Speech productions by typically developing children and children with developmental delay will be compared. Error patterns that are related to influence of the children’s first language on English speech sound production will be examined. Also, developmental patterns of speech sounds produced by bilingual children with developmental delay will be examined. The sample size of this study is small, but the findings of this study will provide information of phonological characteristics of typically developing children and development trajectory of bilingual children with developmental delay.
References

Telepractice Assessment of Receptive Language Using the Peabody Picture Vocabulary Test 4
Mark VanDam, Alyssa Anderson, Hannah Ahmann, Nancy Potter
Washington State University

Here we report preliminary findings of a standardized receptive language test, the Peabody Picture Vocabulary Test-Fourth Edition (PPVT-4; Dunn & Dunn, 2007), delivered in a telehealth service delivery model via the Internet. Standardized language assessment tests such as the PPVT have traditionally been administered in-person in a paper-and-pencil format. Traditional test administration poses a significant barrier to certain populations (low socio-economic status, dispersed populations such as those with rare disorders, and populations living in remote or rural areas [Waite, et al, 2010]). The challenge of service delivery in these populations is further aggravated by shortages of speech language pathologists (SLP) who are among the front lines of professionals to deliver language services (Grogan-Johnson, et al., 2010; Simpson, 2013). Traditional in-person test administration also consumes professional and financial resources, and paper-and-pencil recording and scoring is prone to error (Rhoades & Madaus, 2003; Dodd, 2013). As a consequence, these shortcomings have been shown in some cases to lead to difficulty in interpretation and may result in overall reduction in quality of care, especially for certain populations who have reduced access to healthcare (Swanepoel, et al., 2010).

Addressing these shortcomings, recent research has shown that a telehealth service delivery model may lower barriers (Jannett, et al., 2003), demand fewer resources (Dharmar, et al., 2013; Ahmann, et al., 2014), and improve reliability (Mashima & Doarn, 2008; McEachern, et al., 2008). Telehealth has been demonstrated to be clinically effective (Dellifraine & Dansky, 2008; Young & Ireson, 2003) and patients and clinicians report high satisfaction with telepractice services (Gustke, et al., 2000; Theodoros, 2012). Many professional organizations including the American Speech-Language-Hearing Association (ASHA, 2005/2014) recognize telepractice as an appropriate model of service delivery.

For this study, an interactive, Internet-based telepractice application of the PPVT-4 was developed. The test was administered to 53 school-aged children in both paper and computer formats. Tests were automatically scored and analyzed for difference between test time and
standard score, as well as for testing order, socio-economic status (SES), age, and sex. Preliminary results indicate significant correlations between test modalities (paper versus computer) for both standard scores and test times ($r=.74, p<.001; r=.39, p<.05$, respectively). Testing order, SES, age, and sex did not appear to influence standard scores or testing time in either modality condition (all $p>.05$), and automatic scoring accuracy is at ceiling.

Results indicate that telehealth delivery of receptive language assessment may be a viable telepractice option to increase service delivery to at-risk populations in need of services while simultaneously reducing the overall cost of test administration. Future studies will expand this research to explore the role of the test administrator, additional standardized tests, and assessment of fine detail of participant responses.

References
Measuring Variability in Consonant Production in French-Speaking Children Aged 30 to 53 Months

Andrea A.N. MacLeod\(^1\), Cécile Vaucel\(^2\), Caroline Guillaume\(^2\), Christelle Maillart\(^2\)

\(^1\)Université de Montréal, \(^2\)Université de Liège

Although phonological variability is commonly observed in children’s early words, it is expected that variability decrease as the child matures. As a result of this decrease in variability, the observation of high variability has been noted as a clinical marker of phonological disorder (e.g., Holm & Bradford, 2000), and Childhood Apraxia of Speech (ASHA, 2007). Little research has investigated the variability present in the productions of preschool-aged children, and these have focused on English speaking children. The goal of the present study was to compare measures of variability in consonant production among French-speaking children between the ages of 30 and 53 months. A total of 153 children participated in the present study and were equally distributed in four groups (aged 30-35, 36-41, 42-47, and 48-53 months). We created a picture identification task with 65 target words, which contained the consonants of French in word initial, medial and final position. The children were asked to produce this series of words three times. For this comparison, we targeted 3 measures of variability: (1) the stability of consonants regardless of word or syllable position (Holm et al., 2007); (2) the consistency of productions across the three series (Holm et al., 2007); and (3) the proportion of whole-word variability (Ingram, 2002). The sensitivity of these measures across the age groups will be discussed.

References
Speech Sound Disorder (SSD) is a speech disorder of unknown origin and with heterogeneous manifestations. Aim: To verify the performance of children with SSD in different Phonological measures, in Speech Inconsistency (SI) and in metaphonological abilities (rhyme and alliteration) according to the presence of Central Auditory Processing (CAP) disorder (CAPD). Method: The study participants included 21 male and female children with SSD, aged between 7 and 9:11 years old, divided into two groups, G1 formed by 10 subjects with SSD and no CAPD; and G2 formed by 11 subjects with SSD and CAPD. All subjects were submitted to assessment with Brazilian Portuguese tests: the Phonological Test from ABFW (comprises a picture naming task and a word imitation task), the Speech Inconsistency Test (SIT), the Phonological Awareness Test (PAT) (visual and auditory versions – rhyme and alliteration) and the Central Auditory Processing evaluation. Based on the phonological tests were analyzed phonological processes, the severity indexes: Percentage of Consonants Correct (PCC), Percentage of Consonants Correct - Revised (PCC-R) and Process Density Index (PDI). From SIT subjects were classified into consistent and inconsistent and according to values established in another study. For PAT was accounted the rights and wrongs of each subject. Results: No difference was observed at the analysis between groups for the number of inconsistent subjects (p = 0.268). The analysis for the use of different types of phonological processes showed that G1 used on average 3.2 and 3.3 (imitation and naming respectively) phonological processes and G2 3.9 in both phonological tests, indicating no significant difference between imitation and naming tasks (p = 0.458 and p = 0.538 respectively). To phonological processes analysis, the results indicated that the only significant difference between groups was Cluster Simplification (CS) in the Imitation task only (p = 0.041). For severity indexes PCC and PCC-R, the results showed that the G2 had lower averages in both indexes and the difference was significant for PCC (p = 0.031) and for PCC-R (p = 0.014). The PDI showed that the G2 had higher values and there was also significant difference (p = 0.007). The construction of ROC curve for PDI indicated discriminatory power for composition of two groups (area = 0.79), with the cutoff set to 0.54 sensitivity (0.73) and specificity (0.90). This result suggests that SSD children aged between 7 and 9:11 years old, and PDI values above this value may have CAPD. The children with CAPD (G2) have more difficulty in all subtests in both visual and auditory version (p <0.001).
of PAT (rhyme and alliteration). Conclusion: Children with SSD and CAPD showed greater impairment on phonological measures and rhyme and alliteration, but not in speech inconsistency. The evidence showed that PDI is an efficient index to indicate the need for CAP assessment of SSD children with values above 0.54.

References


The Tongue Shape of /s/ Produced by Children and Adult Speakers of Brazilian-Portuguese Using Ultrasound Imaging
Danira Tavares Francisco, Luciana de Oliveira Pagan-Neves, Haydée Fiszbein Wertzner
Universidade de São Paulo

INTRODUCTION: The ultrasound imaging of the tongue shape can be used to visualize different speech sounds in order to answer phonological questions, to conduct phonetic fieldwork, and to speech rehabilitation (Bernhardt et al., 2003; Bressmann et al., 2005; Davidson, 2006; Gick, 2002; Stone, 2005). The ultrasound is a very useful tool because it registers the movement of the whole midsagittal section of the tongue (including the tongue root) permitting the study of both the tongue surface and contour.

AIM: describe the tongue shape for /s/ in typically developing children and adults speakers of Brazilian-Portuguese using the ultrasound imaging.

METHODS: Four subjects were divided into two groups: Group 1- two typically developing children: a girl with 8:02 and a boy with 7:10 years-old; Group 2- two adults: one woman and
one man, both aged 19 years-old, all native speakers of Brazilian-Portuguese. The subjects were submitted to the ultrasound evaluation which was conducted in an acoustic room using the Mindray 6600 ultrasound coupled to the software Articulate Assistant Advanced (AAA) used for further analysis. The Probe Stabilization Headset (Scoobie, Wrench, Linden, 2008) was individually fitted for stabilizing the position of the endocavity transducer with respect to the head at midsagittal position. A computer screen was positioned in front of each subject and 10 pictures were presented in five different sequences. The target word selected for this paper was /'sapu/ (frog) where the sound /s/ was extracted and analyzed. Tongue contour was hand-made and individually traced at the middle point of /s/ production for the five productions of each subject. Images were analyzed individually and also by superposing images within each group.

RESULTS AND CONCLUSION: We observed different patterns of tongue shape for the /s/ production in both groups even though we listened to the sound produced by the four participants always as the same and without any distortions (Figure 1).

Images of ultrasonography demonstrated that the /s/ sound is produced with a slighter movement of posterior tongue combined to a greater approach of the tongue tip on the alveolar ridge. The two adults and the young boy seemed to articulate the tongue nearer to the upper alveolar ridge forming a waving with the tip of the tongue. The young girl, on the other hand, seemed to use the lower alveolar ridge as a passive articulator during the production of /s/ and presented no waving at the tongue tip region.

The tongue contour of both the grown-up woman and the young girl were similar once their tongue movement was more linear without much participation of the posterior tongue which was also associated to a lower tongue tip in relation to the height of the tongue root that was traced. On the other hand the production of both the grown-up man and the young boy were also similar as their tongue movement was broader in respect to the height of the posterior tongue combined to a higher tongue tip in relation to the height of the tongue root that was traced.

References:
Performance of Children with SSD in Pre and Post Stimulation 
Phonological Program

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INTRODUCTION: SSD is defined as a disorder of speech characterized by inadequate production of speech sounds and use of phonological rules of the language. The heterogeneity of the manifestations makes it complex to classify the disorder. Calculate the PCC-R in speech samples help to compare between the distinct cases of SSD. Regarding the intervention in SSD children, many studies indicates that work with multiple unfamiliar sounds simultaneously can make therapy faster and more effective since it results in a higher and wider reorganization of the child's phonological system. However, there are few studies about the intervention and the evidence of their effectiveness is still not entirely clear. Searching evidence for the effectiveness of the stimulation of several sounds as a starting point for SSD treatment, guided this study. Also it is intend to verify if measures like PCC-R and number of absent sounds in the phonetic inventory of the child.

AIM: To compare the performance of two patients before and after Stimulation Phonological Program (SPP) through measures of PCC-R and absent sounds from the phonetic inventory.

METHODS: Participated in the study two children with SSD with mean age of 7:04 years old. The word imitation and picture naming tests used are part of ABFW test for Brazilian Portuguese and have been applied in pre and post SPP. The stimulability test was applied to the absent sounds of the phonetic inventory. It was considered stimulable when the child produced at least 10% of the stimuli provided. The two children were submitted to SPP with 12 sessions, which were worked all 21 consonantal sounds and 13 clusters of Brazilian Portuguese. All SPP session consists of auditory perception of the target sound, articulatory production, phonological organization and metalinguistic skills activities. After the 12th session it was applied word imitation, picture naming tests and stimulability of the absent sounds.

RESULTS: Child 1 (C1) was 7:02 years in evaluation and showed, respectively, a pre and post PCC- R word imitation of 80.4% and 88.8%, PCC-R picture naming 77.8% and 82.1%. Four absent sounds has also been observed both pre and post SSP and all non-stimulable sounds (pre) became stimulable (post). Child 2 (C2) was 7:05 years old, showed respectively a pre and post value of PCC-R word imitation of 89.7% and 96.3%, PCC-R picture naming of 85.5% and 87.8% with nine and four absent sounds, all non-stimulable sounds became stimulable.

DISCUSSION AND CONCLUSION: Interesting evidence is that both children showed improvement after SPP once they became stimulable for the absent sounds of the phonetic inventory however, the child with minor severity (C2) had fewer absent sounds and child with greater severity (C1) showed the same amount of absent sounds regarding the pre SPP. Could
be seen that the SPP was efficient regardless the values of PCC-R as an initial intervention program for children with SSD with non-stimulable absent sounds, thus demonstrating some phonological reorganization.

Measuring Speech Adaptability for Target Selection
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Obtaining an accurate and sensitive assessment of a child’s changing speech patterns can lead to better prognostic indicators and treatment target selections. Traditionally, measures of children’s speech skills are assessed using standard, static measures with no assistance. One alternative approach to assessment, which has been shown to reveal greater sensitivity and gradient change in speech sound acquisition, involves dynamic assessment of speech adaptability (Glaspey & MacLeod, 2010; MacLeod & Glaspey, 2014). Speech adaptability refers to a child’s ability to correctly alter productions given assistance when producing speech sounds. The current study measured one six-year, two-month old boy’s speech adaptability by applying principles of dynamic assessment using the Glaspey Dynamic Assessment of Phonology (GDAP). The GDAP is a 15-point hierarchical scale that is used to determine which sounds a child can produce when given a range of cues over varying linguistic environments. The measure was used prior to treatment to establish pre-treatment skills and select treatment targets. The purpose of this study was to monitor change during short increments of time using dynamic assessment of speech adaptability and to explore outcomes when least adaptable targets were treated. Research questions included: (1) how does one boy’s speech adaptability change over 4 weeks of time during treatment as measured by the Glaspey Dynamic Assessment of Phonology? and (2) how do scores for targets that were least adaptable and treated, compare to scores for targets that were more adaptable and untreated?

The participant was a six-year, two-month old boy with a moderate speech sound disorder based on scores from the Hodson Assessment of Phonological Patterns-3. Changes in his speech adaptability were assessed for four target sounds treated over eight sessions. Sounds were selected because they were classified as least adaptable sounds. Each target sound scored from 12-15 on the GDAP during the initial evaluation and occurred in word-initial position. Pre-treatment and post-treatment scores were compared by target; in addition, scores were calculated at the end of each treatment session to document change in short increments of time. The scores for the targets were combined as a composite score pre- and post-treatment and compared to targets that were more adaptable and untreated. Changes in speech adaptability will be presented to show how the GDAP reflects gradient change in as few as two sessions. Results from our research may provide implications for treatment target selection related to the amount of progress made toward least adaptable sounds.


**Phonological Processes in Sentences Produced by Two Adult Japanese Speakers of US English: Proficiency and Parallels between L1 Phonological Acquisition and L2 Phonological Learning**

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This study examined the speech sound errors in scripted sentences produced by two adult Japanese speakers of US English, one of whom had been speaking English for seven years and the other three months. The sound errors were classified according to phonological processes and compared to the established developmental processes exhibited by monolingual US English speaking children. The processes framework was used to describe the similarities between L1 phonological acquisition and L2 phonological learning. The results revealed that most of the Japanese speakers’ misarticulations affected phonemes that are mastered late in the development of US English-speaking children. For both speakers the three most frequently occurring consonant processes were vowelization, final consonant devoicing, and cluster reduction. These processes are among the last to be suppressed in monolingual US English speaking children. The most frequently occurring vowel processes produced by the Japanese speakers were rounding, tensing, diphthong reduction and decentralization. In general, the occurrence of processes was lower for the participant who had been speaking US English the longest. The findings are interpreted in relation to markedness and a contrastive analysis between Japanese and English phonetic inventories. Clinical implications with respect to pronunciation instruction for English language learners are also addressed.

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**Expressive Phonology at 24 Months: Approaches to Assessment**

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The primary source of phonological assessment for young children is usually a sample of spontaneous speech, providing information on a child’s “typical” performance in terms of vocabulary, phonology, syntax, and semantics, as well as a rough idea of the level of speech intelligibility. The advantage of this approach is that it is “ecologically valid” as the assessment is based on “real world” data. The disadvantage is that spontaneous speech samples vary considerably in quantity and quality of data, making it difficult to compare expressive phonology across children.

An alternative approach to assessment is a test in which the child is asked to produce a
particular set of words. The advantage of this approach is that the words are selected to ensure that all consonants of English are assessed in one or two word positions, and comparing performance across children is relatively straightforward. The disadvantage is that, at present, most articulation tests are designed for children 3 years and older; consequently, two-year-olds are not familiar with many of the test words.

The goal of assessing expressive phonology of children aged 24 months (and of older children with limited vocabularies) is not to determine the accuracy of individual consonants in particular word positions, but to provide broad information on a range of domains: inventories of sound classes, word and syllable shapes, and stress patterns; accuracy of productions; and occurrences of error patterns. The target words on a clinical assessment for this age should (a) be part of the productive vocabulary of typically developing children at 24 months, and (b) have phonological properties consistent with the productive vocabulary at that age. For English, this means that the majority of the words are mono- or bisyllabic; have many stops and nasals, and some fricatives, affricates, liquids, and glides (Stoel-Gammon, 1998). Few words would contain consonant clusters and the majority would have stress on the first syllable.

Profiles of Early Expressive Phonological Skills (PEEPS - Stoel-Gammon & Williams, 2013; Williams & Stoel-Gammon, in preparation) is a 60-word test that incorporates the principles described above. The test words are part of the expressive vocabulary of children 18–24 months, based Dale and Fenson’s (1996) age-of-acquisition norms from the MacArthur-Bates Communicative Developmental Inventories (CDI; Fenson et al., 1993); the phonetic composition of words conforms to the patterns described above in terms of sound classes, word shapes, and stress patterns. Administration of PEEPS indicates that the test items are familiar to young children: 24-month-olds produced over 90% of the test items. Preliminary phonological analyses from 10 children at 24 months reveal high levels of pronunciation accuracy: mean Percent Consonants Correct for this age was 88.6% (range: 72-96%). Phonological analyses of data from children 18-30 months will be presented, as well as findings from children with atypical phonological development.

References
Methodology for Tracking Infant Vocalizations: A Comparison between an Infant with a Sibling Who Has Autism versus an Age-matched Peer with a Sibling Who Is Typically Developing

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Early experience is critical to development, forming foundations for later success throughout all aspects of life. Early intervention has been shown to positively impact developmental outcomes in young children who are at risk for speech and language disorder. Further, infant vocal behaviors have been shown to be predictors of later language abilities, but this knowledge has not been leveraged for clinical use. Infants and toddlers in need of services must be identified as early as possible to guarantee that intervention is provided at pivotal developmental periods.

Traditionally, researchers have utilized phonetic transcription to assess the syllabic repertoire of babbling and early words, which can result in highly detailed phonetic descriptions of infant sounds. To date, restrictions on the level of detail considered in assessing an infant’s repertoire through transcription have been based primarily on practical criteria, rather than on a principled method aimed at determining the infant’s functional repertoire of phonological categories. To limit overestimation, infant repertoires have sometimes been restricted to include only sounds occurring some minimal number of times in a transcribed sample [1, 2], at some minimal proportion in a sample [3], or abiding by presumed phonetic principles [4]. Caregiver perceptual judgment can help provide a principled method. The functional repertoire of infant syllables is best seen as that repertoire recognized by caregivers, around which interaction about the semantic meaning of words can begin [5-7].

Preliminary work [7, 8] has introduced a novel approach to determine the prelinguistic syllabic repertoires of infants, invoking a more ecologically grounded natural mode of listening. This approach incorporates the interaction between phonological categories systematically produced by the infant and recognition of those categories by the caregiver, a recognition founded on the caregiver’s natural mode of listening. The approach is logically and theoretically grounded in the interaction between caregivers and infants. The method serves as an adjunct to standard phonetic transcription of vocalizations by including an explicit account of the infant’s functional syllabic repertoire as recognized by the caregiver and/or by individuals who simulate caregiver listening.

Preliminary data also offers the opportunity for exploring caregiver, naturalistic listener, and transcriber report of prelinguistic vocalizations produced by an infant with a sibling who has autism compared to an infant with a sibling who is typically developing. The intention is to gauge whether or not these new methodologies, as compared to the more traditional transcription methodology, will be able to represent differences between an infant who is at risk for developing a speech and language disorder and an age matched peer who is typically developing. Herein, we report our findings from these two infants followed over a longitudinal period of 12 months, from 7 to 18 months of age.
References

Performance of LENA Automatic Speech Processing in Families with Children Who Are Hard of Hearing

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Automatic speech processing (ASP) depends on acoustic events being interpreted and accurately assigned to the appropriate, useful label. ASP software developed by the LENA Research Foundation (Boulder, CO) is an increasingly important tool in research into speech and language development. The LENA system records a whole-day of audio from the child’s perspective via a body-worn recorder. The offline ASP software then segments the audio and assigns a label to each segment. Labeled audio segments are in turn used to assess speech and language developmental.

Reliability and accuracy of the LENA device has been reported in several studies. In one study, segments automatically labeled ADULT and KEY CHILD were similarly coded by human transcribers in 68% and 70% of instances, respectively [1-3]. Another study [4] found about 64% agreement between automatic and human labels within the KEY CHILD category. Other studies have reported reliability of the automatic algorithms to code specific acoustic
parameters [4], inter- and intra-judge reliability among human transcribers [3-5], and agreement rates between LENA labels and human judges [6-7]. There are no known published reports examining LENA labeling accuracy within families with a child who is hard of hearing.

This report examines ASP performance of the LENA system in families with children who are hard-of-hearing (HH). Segments labeled by LENA’s ASP software were compared with human determinations of talker identity (child, mother, or father), and TD and HH families were compared for differences. Classification models were fit to several acoustic variables to assess decision process differences between automatic and human labels and objectively between TD and HH groups. Accuracy and error of both automatic and human performance is reported. Results may be useful to improve implementation and interpretation of ASP techniques using the LENA system, especially as they are interpreted in terms of special populations such as children with hearing loss.

References

The Tale of Two Contrasts: Fricatives versus Stop VOT Contrasts in Bilingual Children with Cochlear Implants and Their Monolingual English-Speaking Peers

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Phonological acquisition in bilingual children with hearing loss who use cochlear implants (CIs) is predictably complex. Nonetheless, not all phonemes pose equal challenges to this population, and the present study explores two phonological contrasts (select fricatives and voiced versus voiceless stops) that appear to display divergent paths.

METHOD: Data from two pilot studies are reported. Study 1 investigated the production of /s/ and /ʃ/ (Bunta, Harrison, & Douglas, 2012), and Study 2 focused on voiced and voiceless stop VOTs (Procter & Bunta, 2013). Study 1 included 10 children who use CIs (5 monolingual English, 5 bilingual Spanish-English; hearing ages 3;7 to 7;5). Study 2 had 16 CI users (8 monolingual English, 8 bilingual Spanish-English; hearing ages 2;7 to 8;4). Single words were elicited via picture prompts targeting /s/, /ʃ/, and English stops. The fricatives included both word-initial and final singleton consonants. Stop consonants were targeted in initial singleton position only. The children’s productions were phonetically transcribed by linguistically trained personnel with over 94% inter-rater agreement. Acoustic analyses (using time waveforms and spectrograms) were performed to measure stop VOT duration, fricative duration, and look for indication of a burst in fricatives (to investigate cross-linguistic substitution).

RESULTS: Monolingual English-speaking children with CIs typically substituted [ʃʃ] for /s/ as opposed to only one such substitution by bilinguals. However, bilingual children with CIs had twice as many examples of affrication ([tʃ] for /ʃ/) as their monolingual English-speaking peers. Fricative duration analyses were inconclusive with non-significant differences between monolinguals and bilinguals (t (8) = 0.88, NS); however, a medium effect size (d = 0.6) was found in the direction of monolinguals having longer /ʃ/ productions (0.250 sec) compared to bilinguals (0.201 sec).

Monolingual and bilingual children with CIs used VOT to differentiate voiced from voiceless stops. In the English productions of the bilingual versus monolingual children there was an effect of voicing (F (1, 14) = 94.65 at p = 0.00, \( \eta^2_{\text{partial}} = 0.871 \)) and place of articulation (F (2, 28) = 7.36 at p = 0.003, \( \eta^2_{\text{partial}} = 0.344 \)). In comparing the Spanish versus English stops of the bilingual participants, there was a significant effect of voicing (F (1, 4) = 70.927 at p = 0.001, \( \eta^2_{\text{partial}} = 0.947 \)), place (F (2, 8) = 7.899 at p = 0.013, \( \eta^2_{\text{partial}} = 0.664 \)), language (English versus Spanish; F (1, 4) = 94.65 at p = 0.004, \( \eta^2_{\text{partial}} = 0.897 \)), and language by voicing interaction (F (1, 4) = 92.25 at p = 0.001, \( \eta^2_{\text{partial}} = 0.958 \)). The results for VOT largely mirrored findings for typically developing populations (cf. Procter, Bunta, & Aghara, forthcoming).

DISCUSSION: Bilingualism interacts with the impoverished CI signal to yield specific phonological patterns in bilingual children with CIs. In some respects, the phonological skills of bilingual children with CIs mirror their bilingual peers’ with hearing within normal limits and their monolingual peers’ with CIs, but in other respects diverge distinctly. The unique phonological profiles of bilingual children with CIs warrant further investigation to fully
understand phonological acquisition in this population.

**References**


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**Speech Sound Disorders of Genetic Origin in Multigenerational Families**

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Speech sound disorders (SSDs) can run in families, suggesting the possibility of a genetic etiology. To date, very few causal genes have been identified. For instance, mutations in the *FOXP2* gene are known to cause a severe speech disorder in the presence of disordered language abilities and structural brain differences. If a catalog of causal genes existed, it would be possible to create an SSD subtype system based on biological factors. Importantly, in families with familial SSD of known genetic etiology, children at genetic risk could be identified during infancy and followed closely for early signs of SSD, while infants not at genetic risk would not need to become the focus of special concern. This motivates not only the search for causal genetic variants but also the development of effective early intervention approaches.

In our study designed to investigate the genetics of SSD, multigenerational families with any kind of familial SSD were invited to participate. Several of the enrolled families included children with a diagnosis of childhood apraxia of speech (CAS), a severe form of SSD thought to arise from faulty motor programming and motor planning. Adults and children in these families obtained low scores on tasks requiring sequential processing across a variety of domains, not only regarding motor speech but also hand motor functions, nonword imitations, nonword reading, and spelling. In a parallel study of dyslexia, a similar error profile was noted, suggesting that CAS and dyslexia may share a biomarker characterized by sequential processing deficits. In other multigenerational families, the familial SSD subtype was tongue thrust, suggesting that craniofacial structural traits contributing to SSD can be inherited as well. In an isolated case of a child with a severe SSD involving both apraxic and dysarthric components, a novel candidate gene was identified using copy-number variation techniques. This child had a spontaneous mutation involving the deletion of a single gene on chromosome 2. This case illustrates that SSD can have a genetic etiology in the absence of a family history. Future goals include investigating
genetic etiologies in additional families and cases and developing and testing interventions for children during the prespeech stages.

Measuring Phonological Change in Speech Sound Disorders from a Multidimensional Perspective
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Typically developing children show gradient change in their acquisition of new phonemes (e.g., phoneme may be acquired in word initial but not word final position) or new phonological structures (e.g., child produces both components of a consonant cluster, but the transition is slow resulting in the perception of a schwa between the consonants). Yet, the most common clinical approach for documenting acquisition is by using IPA transcription, which in some cases may not identify gradient change especially when speech is distorted by errors (Miccio & Ingriasano, 2000; Pierrehumbert, 2003; Weismer, 1984). IPA transcription requires that contrasts be perceived by the transcriber and that the child use cues that are relevant in the target language to distinguish phonemes. We propose two alternative measures to phonetic transcription for clinicians that may better reveal changes in phonological acquisition and offer a multidimensional view of speech skills. These measures include dynamic assessment of speech adaptability and acoustic analyses (Glaspey & MacLeod, 2010; MacLeod & Glaspey, 2014).

When using dynamic assessment of speech adaptability, the clinician provides the child with just enough scaffolding in the form of cues and manipulations of the linguistic environment to be successful in production. These cues and environments are presented using a 15-point hierarchy. Cue levels range from no cues to a group of cues: instructions, verbal model, prolongation, segmentation, and visual/tactile cues (Glaspey, 2006; Glaspey & MacLeod, 2010). Linguistic environments range from isolation to connected speech. Results from Glaspey and MacLeod (2010) and MacLeod and Glaspey (2014) support that this systematic method better differentiates productions across children and that measuring speech adaptability better captures gradient change than transcription alone. Dynamic assessment offers an alternative for clinicians to document acquisition in a systematic manner by expanding stimulability-like procedures to show changes that occur.

In comparison to speech adaptability, which relies on clinician judgments regarding subtle changes in accuracy of production, an objective measure of subtle changes in accuracy can be obtained using acoustic analyses. Acoustic analyses may reveal changes that are occurring at a covert level (Scobbie, 1998; Li et al., 2008) and reveal the fine-tuning of the child’s phonological system and thus are not captured by measures that rely on judgments of accuracy such as a speech adaptability measure or traditional accuracy measures (e.g., Glaspey & MacLeod, 2010). Glaspey and MacLeod (2010) and MacLeod and Glaspey (2014) support the sensitivity of acoustic analyses over transcription procedures. Acoustic analyses have not been
commonly completed in the past by clinicians because of accessibility to instrumentation, which is now readily available. With increased training more clinicians could make use of this approach in the clinical setting.

In this presentation, dynamic assessment of speech adaptability and acoustic analyses as applied to phonological acquisition in children with speech sound disorders will be described. In addition, the advantages of using these methods rather than solely IPA transcription in the clinical setting will be discussed. Strategies for future directions for clinical applications will be suggested.

References


