CANADIAN JOURNAL OF SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY

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REVUE CANADIENNE D'ORTHOPHONIE ET D'AUDIOLOGIE

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CANADIAN JOURNAL OF SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY

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The Canadian Association of Speech-Language Pathologists and Audiologists ...the national voice and recognized resource for speech-language pathology and audiology.

Mission

The Canadian Association of Speech-Language Pathologists and Audiologists ...supporting and empowering our members to maximize the communication and hearing potential of the people of Canada.

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REVUE CANADIENNE D'ORTHOPHONIE ET D'AUDIOLOGIE

Objet et Portée

L'Association canadienne des orthophonistes et audiologistes (ACOA) est l'association professionnelle nationale reconnue des orthophonistes et des audiologistes du Canada. L'Association a été fondée en 1964 et incorporée en vertu de la charte fédérale en 1975. L'Association s'engage à favoriser la meilleure qualité de services aux personnes atteintes de troubles de la communication et à leurs familles. Dans ce but, l'Association entend, entre autres, contribuer au corpus de connaissances dans le domaine des communications humaines et des troubles qui s'y rapportent. L'Association a mis sur pied son programme de publications en 1973.

L'objet de la Revue canadienne d'orthophonie et d'audiologie (RCOA) est de diffuser des connaissances relatives à la communication humaine et aux troubles de la communication qui influencent la parole, le langage et l'audition. La portée de la Revue est plutôt générale de manière à offrir un véhicule des plus compréhensifs pour la recherche effectuée sur la communication humaine et les troubles qui s'y rapportent. La RCOA publie à la fois les ouvrages de recherche appliquée et fondamentale, les comptes rendus de recherche clinique et en laboratoire, ainsi que des articles éducatifs portant sur la parole, le langage et l'audition normaux ou désordonnés pour tous les groupes d'âge. Les catégories de manuscrits susceptibles d'être publiés dans la RCOA comprennent les tutoriels, les articles de recherche conventionnelle ou de synthèse, les comptes rendus cliniques, pratiques et sommaires, les notes de recherche, et les courriers des lecteurs (voir Renseignements à l'intention des collaborateurs). La RCOA cherche à publier des articles qui reflètent une vaste gamme d'intérêts en orthophonie et en audiologie, en sciences de la parole, en science de l'audition et en diverses professions connexes. La Revue publie également des critiques de livres ainsi que des critiques indépendantes de matériel et de ressources cliniques offerts commercialement.

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ACOA : Vision et Mission

Vision

L'Association canadienne des orthophonistes et audiologistes : porte-parole national et ressource reconnue dans le domaine de l'orthophonie et de l'audiologie.

Mission

L'Association canadienne des orthophonistes et audiologistes appuie et habilite ses membres en vue de maximiser le potentiel en communication et en audition de la population canadienne.

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From the Editor

SPRING ISSUE

Welcome to this issue of CJSLPA where you will read four papers from Canadian authors that highlight research on pediatric assessment and outcomes. In the first article, Hund-Reid and colleagues shares with readers the results of a study that examined the effectiveness of phonological awareness intervention. Using a sample of 37 Canadian children of kindergarten age with moderate to severe language impairment, randomly assigned to an intervention or no intervention group, the investigators demonstrated benefits from phonological awareness training on skills including initial sound identification, segmentation, blending and letter-sound awareness.

Assessment is an important theme throughout this issue of CJSLPA and seemingly one that is of interest to Canadian audiologists and speech-language pathologists as they work with children in multiple languages and with special needs. It is well appreciated in the Canadian context that there is a paucity of assessment materials in French. In the second paper, Bérubé et al. have made an important contribution, introducing readers to a new assessment tool, "un teste de phonologie en français" that they have developed to evaluate the segments and structures of Canadian French phonology with an emphasis on Manitoba French.

Continuing on the theme of assessment and the challenges of appropriate tools when English is not the client's first language, Chase and colleagues discuss the advantages of language samples with children who are leaning English as a second language. They present a practical solution to English Second Language (ESL) assessment which involves developing local language sample databases to enable comparisons with typically developing ESL children. In the final paper, Hayward and colleagues are also concerned with using appropriate assessment measures and describe the development of a tool to assess outcomes in cochlear implantation for children with severe multiple disabilities. Through interviews with mothers, they share parents' perceptions of important outcomes to measure.

Thank you for reading the journal. Having completed my first year as Editor of CJSLPA, I am pleased to report that we have now fully moved our manuscript submissions and peer reviews to the CJSLPA online system. After a year, I can also more fully appreciate what makes this journal successful. As always, I am grateful not only to the authors for thinking of CJSLPA for their work but also to our associate editors and the many reviewers who contribute to each issue of this journal. We hope you will support your journal when we call on you to review CJSLPA submissions. If you have not already done so and are able to review future manuscripts, please register as a journal reviewer at http://cjslpa.coverpage.ca and let us know your areas of interest. Please do not hesitate to contact us for support with any technical issues. CJSLPA is actively seeking contributors for 2013 and I encourage you to submit your work for consideration.

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Mot de la Rédactrice en Chef

NUMÉRO DE PRINTEMPS

Bienvenue à ce numéro de la RCOA où vous trouverez quatre communications d'auteurs canadiens qui font état de recherches sur des évaluations pédiatriques et leurs résultats. Dans le premier article, Hund-Reid et leurs collègues partagent avec les lecteurs les résultats d'une étude qui a examiné l'efficacité de l'intervention en conscience phonologique. En utilisant un groupe de 37 élèves canadiens de niveau de la maternelle et assignés au hasard à un groupe recevant de l'intervention ou à un autre qui n'en recevait pas, les chercheurs ont démontré les avantages d'une intervention en conscience phonologique sur les compétences comme l'identification, la segmentation et la fusion des sons, et la conscience du rapport entre les sons et les lettres.

L'évaluation est un thème important de ce numéro de la RCOA et c'est évidemment un sujet qui intéresse les audiologistes et orthophonistes canadiens qui travaillent dans plusieurs langues avec des enfants qui ont des besoins spéciaux. Nous nous rendons bien compte, dans le contexte canadien, qu'il y a un manque de documents sur l'évaluation en français. Dans le deuxième article, Bérubé et al. ont fait une contribution importante, en présentant aux lecteurs de nouveaux outils d'évaluation, « un test de phonologie en français », qu'ils ont développé pour évaluer les segments et structures de la phonologie du français canadien, surtout celui du Manitoba.

Toujours sur le thème de l'évaluation et des difficultés d'avoir des outils appropriés quand l'anglais n'est pas la langue première du client, Chase et ses collègues discutent des avantages des échantillons linguistiques avec des enfants qui apprennent l'anglais comme langue seconde. Ils présentent une solution pratique à l'évaluation de l'anglais langue seconde, qui comprend le développement de bases de données d'échantillons linguistiques locaux qui facilitent la comparaison avec des enfants au développement typique en anglais langue seconde. Dans le dernier article, Hayward et ses collègues se préoccupent aussi d'utiliser des mesures d'évaluation appropriées et de décrire un outil pour évaluer les résultats d'un implant cochléaire chez les enfants ayant des handicaps multiples. Par le biais d'entrevues avec les mères, ils partagent la perception des parents sur les résultats importants à mesurer.

Merci de lire cette revue. Ayant complété ma première année à titre de rédactrice de la RCOA, j'ai le plaisir d'annoncer que nous avons maintenant transféré nos soumissions de manuscrits et revues par les pairs à notre système en ligne. Après une année, je suis en meilleure posture pour apprécier ce qui fait le succès de cette revue. Comme toujours, j'apprécie non seulement les auteurs qui ont pensé à la RCOA pour leurs travaux, mais aussi nos rédacteurs associés et les nombreux réviseurs qui contribuent à chaque numéro de votre revue. Nous espérons que vous appuierez votre revue quand nous vous demanderons de réviser des soumissions qui lui sont proposées. Si vous ne l'avez pas déjà fait et si vous en mesure de réviser de futurs manuscrits, veuillez vous enregistrer à http://cjslpa.coverpage.ca et indiquer vos domaines d'intérêt. N'hésitez pas à communiquer avec nous pour vos problèmes techniques. La RCOA recherche activement des collaborateurs pour 2013 et je vous encourage à soumettre vos recherches pour considération.

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Effectiveness of Phonological Awareness Intervention for Kindergarten Children With Language Impairment

L'efficacité de l'intervention en Conscience Phonologique Auprès d'enfants de la Maternelle Ayant des Problèmes de Langage

KEY WORDS

PHONOLOGICAL AWARENESS

LANGUAGE IMPAIRMENT

KINDERGARTEN

INTERVENTION

EMERGENT LITERACY

Cecelia Hund-Reid
Phyllis Schneider

Abstract

Purpose: This study investigated the effectiveness of phonological awareness (PA) intervention in improving the PA skills of kindergarten children with moderate to severe language impairment.

Method: Thirty-seven kindergarten children aged between 4;9 and 6;3 (years;months) who demonstrated moderate to severe receptive or expressive or total language skills and low PA skills were randomly assigned to either an experimental group (n=22) and received PA and letter-sound awareness intervention or a no intervention control group (n=15). The intervention was implemented by educational assistants in groups of two children for 14 weeks, 20 minutes per day, 5 days per week, for a total 67 days. Participants received an average of 18.45 hours of intervention (SD 4.64, range 12.75-21.5 hours) that focused on initial sound identification, phonemic segmentation and blending, and letter-sound awareness.

Results: Participants in the experimental group made significantly greater gains than those in the control group on measures of initial sound fluency, phonemic segmentation fluency, and nonsense word fluency. Results were maintained for at least one month after intervention.

Conclusion: Kindergarten children with moderate to severe language impairment who receive direct, explicit, intensive, small group PA intervention demonstrate significantly better PA skills than children with moderate to severe language impairment who do not receive this intervention.

Abrégé

But : Cette étude visait l'évaluation de l'efficacité d'une intervention en conscience phonologique auprès d'enfants de la maternelle ayant un problème de langage modéré à sévère.

Méthodologie : Trente-sept enfants de la maternelle, de 4 ans, 9 mois à 6 ans, 3 mois ayant des problèmes de langage de degré modéré à sévère au plan réceptif ou expressif, ou dans les deux à la fois, ainsi que de faibles connaissances phonologiques ont participé à l'étude. Ils ont été assignés au hasard à un groupe expérimental (n=22) où ils recevaient une intervention visant à travailler la conscience phonologique et la conscience de l'association lettre-son ou à un groupe contrôle sans intervention (n=15). L'intervention a été effectuée par des assistants en éducation auprès de groupes de deux enfants pendant 14 semaines, vingt minutes par jour, cinq jours par semaine, pour un total de 67 jours. Les participants ont reçu en moyenne 18,45 heures d'intervention (SD 4.64, entre 12,75 et 21,5 heures) regroupant des activités d'identification initiale des sons, de segmentation et fusionnement phonémiques ainsi que des activités centrées sur l'association entre sons et lettres.

Résultats : Les participants du groupe expérimental se sont significativement améliorés comparativement à ceux du groupe contrôle sur des mesures de fluidité initiale de sons, fluidité de segmentation phonémique et fluidité de non-mots. Les résultats se sont maintenus pendant au moins un mois après l'intervention.

Conclusion : Les enfants de la maternelle ayant un problème de langage modéré à sévère ayant reçu une intervention directe, explicite et intensive à la conscience phonologique en petits groupes démontrent des aptitudes considérablement supérieures à ceux de même niveau de déficiences langagières qui n'ont pas reçu d'intervention.

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Introduction

Phonological awareness (PA) is a broad term that consists of an awareness of sound including rhyme and alliteration. It also takes into account identifying and manipulating larger parts of spoken language including words, syllables, and onsets and rimes. Phonemic awareness is a subcategory of PA and has a narrower focus. Phonemic awareness is the ability to identify, think about, and manipulate the individual sounds in words, and is an essential skill in the acquisition of early literacy skills (National Early Literacy Panel, 2008; National Reading Panel, 2000; National Strategy for Early Literacy, 2009). Most children at the kindergarten level who have well-developed PA skills—in the absence of higher level language problems, lack of motivation, or other reasons that impede development of early literacy skills—become better readers and spellers than children who lack phonological awareness skills (National Reading Panel, 2000). Children who lack PA skills may experience challenges in learning to read. Children who experience difficulties in reading may experience a widening academic distancing from their peers. This gap in reading ability between students who experience difficulty and students who experience success with learning to read continues to increase over time (Stanovich, 1986).

Phonological Awareness and Letter-Sound Awareness Intervention Studies for Children at Risk for Reading Failure

Many studies have been conducted in which children at risk for reading failure have been given PA intervention. The National Reading Panel (2000) reviewed the studies conducted prior to 2000 and concluded that PA intervention was effective at improving PA when it focused on phonemic segmentation and blending, and when it was accompanied by intervention in letter-sound correspondence. Three studies that incorporated phonemic segmentation and blending and letter-sound awareness into the interventions for kindergarten children are described below.

Blachman, Ball, Black, & Tangel, (1994) investigated a kindergarten phonological awareness intervention using explicit instruction in PA activities from *Road to the Code*: A Phonological Awareness Program for Young Children, a resource manual created byBlachman, Ball, Black, and Tangel (2000). The study involved 84 treatment children and 75 control children. Children, who scored in the low-average range of receptive vocabulary, had very limited knowledge of the alphabet, and were generally less skilled than students in a previous study by the researchers, participated in the study. They received forty-one 15 to 20 minute lessons in phoneme segmentation and letter name and sound instruction. The researchers expanded a 7-week intervention trialed in a previous study to 11 weeks. Kindergarten teachers and their classroom teaching assistants implemented the program with small groups of children. Children in the control group received whole class instruction in letter names and sounds. At the end of kindergarten, results from post-testing indicated that treatment children performed significantly better on tests of phoneme segmentation and letter-name and sound-knowledge, reading of phonetically regular words and non-words and on a measure of developmental spelling than the children in the control group. The researchers followed up with the kindergarten children who were the lowest scorers and provided additional PA and letter name and letter sound instruction for up to 12 weeks during grade one. The grade one intervention program continued to build on PA by emphasizing the alphabetic code. The researchers noted the most significant finding was that as length and complexity of the intervention increased, they had fewer non-responders to the intervention (Blachman, Tangel, Ball, Black, & McGraw 1999).

O'Connor, Bocian, Beebe-Frankenberger & Linklater (2010) conducted a study to evaluate the responsiveness of kindergarten children, described as having poor language skills, to an intervention that included phonemic awareness, alphabetic understanding, and oral language. The 69 students in this study presented with receptive vocabulary standard scores below 85 and were described as having mild cognitive impairments, students learning English, and students with low language skills because of other conditions. Letter-naming and initial sound identification screening scores for this sample were in an at-risk range and nearly half of the students were English language learners. Thirty-eight students were randomly assigned to an immediate intervention group that began intervention in September and continued for the full school year and 31 students were randomly assigned to a delayed treatment group that began intervention in mid-February. Students received pull-out sessions with a teacher assistant in 15 minute sessions three times per week in small groups of two or three students. The intervention included focused instruction on alphabet knowledge, phonemic awareness, and oral language. The authors report the differences between the immediate and delayed intervention groups on outcome measures of Letter Naming Frequency, Phonemic Segmentation Frequency, and Nonsense Word Frequency at year end were statistically significant in favour of the immediate intervention group. The researchers reported these

results suggested that longer interventions may be needed for students who grow slowly in these skills.

Schuele et al. (2008) reported on the outcomes of a two-tiered response to intervention model for delivering PA intervention. A total of 113 kindergarten children from six classrooms participated in the study. Fifty-seven kindergarten students from three comparison classrooms received the school-adopted literacy curriculum and 56 kindergarten students from three classrooms received a supplemental classroom PA program in addition to the school literacy program. A literacy battery was administered in October, January, and May. The literacy subtests included rhyme awareness, beginning sound awareness, alphabet knowledge, letter sounds, spelling and word recognition. Six low literacy achievers were identified in each supplemental classroom based on the January results of the literacy subtests. These 18 children received an additional 12-week small-group intervention administered by the school Speech Language Pathologist in a pull-out session with six children with three 30 minute sessions weekly. Skills targeted included letter-sound awareness, rhyme, initial sounds, final sounds, and segmentation and blending. Year-end measures included letter-sound knowledge, word recognition, and developmental spelling. The classroom based supplemental curriculum did not produce statistically significant gains for typically achieving children on these measures however the add-on tier of supplemental instruction resulted in statistically significant gains on a measure of developmental spelling for the low achieving children receiving the 12- week small group intervention.

The children in the above studies were described as having low receptive vocabulary, poor language skills, or low literacy achievers and not clearly identified as language impaired. Thus, it is unclear if the results would extend to children with a diagnosis of moderate to severe language impairment.

Kindergarten Children with Language Impairment

It is estimated that 7.4% of 5-year-olds have Specific Language Impairment (SLI) (Tomblin et al., 1997). Children diagnosed as having SLI demonstrate a significant deficit in production and/or comprehension of language in the absence of cognitive delay, hearing impairment, emotional or psychiatric disorders or evident neurological dysfunction (Leonard, 1997). The operation of both the semantic and phonological pathways of the majority of children with language impairments is compromised (Snowling, 2005). For children with language impairment whose language problems are still present at 5½ years of age, difficulties with language and learning to read and write are likely to continue into adolescence and even adulthood. Results from longer term follow up studies have revealed difficulties with reading decoding, spelling, and reading comprehension at 15 years of age even for a subgroup of children whose language impairments had resolved by 5½ years (Bishop & Adams, 1990; Boudreau & Hedberg, 1999).

Children with Language Impairment and Low PA and Letter-Sound Awareness

As with children with typically developing language, PA is correlated to early reading development in children with early language impairment (Boudreau & Hedberg, 1999; Catts, Fey, Tomblin, & Zhang, 2002; Catts, Fey, Zhang, & Tomblin, 1999). Problems in oral language are observable before children begin formal reading instruction, and variables that predict reading outcomes in Grade 2 include phonological awareness ability in kindergarten (Catts et al., 2002). Children with language impairment will often have low PA resulting in a large initial gap in PA between children with language impairment and children with typically developing language (Puranik, Petscher, Al Otaiba, Catts, & Lonigan, 2008). Children with language impairment and low PA and letter-sound awareness may run a high risk of experiencing literacy difficulties due to their early oral language and PA deficits. Specifically, these children may be slow to decode words and have less resources remaining for the higher level reading comprehension skills necessary for proficient reading (Snowling, 2005).

There is evidence that children with low PA and letter-sound awareness skills differ from their peers as a result of their difficulty in associating letters to sounds, segmenting words into individual speech sounds and blending sounds to form words (Adams, 1990; Muter, Hulme, Snowling, & Taylor, 1997; Stanovich, 1986; Torgesen, Wagner, Rashotte, Alexander, & Conway, 1997). Given these challenges with acquiring critical pre-literacy skills, it is essential that children diagnosed with language impairment receive intervention to help them understand that letters of the alphabet stand for sounds that occur in words (Adams, 1990; Bus & van Ijzendoorn, 1999).

Intervention Studies of Children with Language Impairment

A large body of research on the effectiveness of phonemic awareness and letter sound instruction exists. Despite the large body of research that has been conducted, few studies have specifically examined the effectiveness of PA intervention for children with language impairment (Scheule & Boudreau,

2008). However, children with language impairment experiencing difficulty with developing phonological awareness are 4 to 5 times more likely to have reading difficulties than children from the general population (Catts et al., 1999). Studies that describe PA intervention among children with language impairment are described below.

Fazio (1997a, 1997b) conducted two simple, brief exploratory studies in which preschool children with language impairments were trained to increase their rhyming skills. Although the author found that rhyme could be improved, these studies did not attempt to relate children's rhyming ability to later reading success. Rhyming was not found in other studies to be a predictor of reading and spelling ability (Nation & Hulme, 1997; Yeh, 2003). Blachman (2000) noted learning to recognize and produce rhyming words is not enough to bring children at risk for reading difficulties to the level of awareness of the phonological structure of words required to learn to read and spell.

In contrast to Fazio's focus on rhyme, Warrick, Rubin, & Rowe-Walsh (1993) explored teaching preschool children with language impairment in a developmental sequence including syllable awareness, initial sound awareness, onset-rime and rhyme recognition, and phonemic segmentation. The researchers found that children with language impairment who received the PA intervention demonstrated significantly better scores on measures of PA than did the children with language impairment in the no-intervention control group. Furthermore, in a 1 year follow up, children with language impairment compared with children with typically developing language skills were equivalent on the phoneme awareness tasks with the exception of one phoneme subtest (Repairs). The groups were also equivalent on word identification and word attack reading measures (Warrick et al., 1993). This suggests that children with language impairment can improve their PA using phonemic based tasks in a developmental sequence, and that such training can improve word identification and word attack skills. Research staff provided the intervention to children in small groups using researcher-made phoneme awareness tasks. No fidelity of treatment was reported.

Segers and Verhoeven (2004) investigated PA interventions for preschool children with language impairment and included three groups. Group 1 received a PA blending and segmenting computer program, Group 2 received the same program but with a slowed speech rate. A control group was assigned to a computer vocabulary game intervention. The researchers reported Group 1 made more progress on the PA tasks than the control group. No statistically significant differences were found between Group 1 and Group 2 or between Group 2 and the control group. No fidelity of treatment data was reported. Thus it appears that an intervention program focusing on blending and segmentation can be effective at increasing PA for children with language impairment when delivered at a normal speech rate. However, the results were not clear due to lack of information on whether treatment differences or implementation differences accounted for the pattern of performance among the groups.

The children in each of the above studies were not clearly identified as having a diagnosis of moderate to severe language impairment. It is possible that because of their weak language skills, children with moderate to severe language impairment would not benefit from PA intervention.

Implications of Intervention Studies of PA and Letter-Sound Awareness

Results from intervention studies indicate that explicit and systematic training in PA and letter-sound awareness has a positive impact on decoding and spelling skills and that these skills can be effectively trained with a subsequent positive impact on reading achievement (Blachman et al., 1994; Lundberg, 2009; Lundberg, Frost, & Petersen, 1988; National Reading Panel, 2000; O'Connor, Jenkins, & Slocum, 1995; Torgesen, Morgan, & Davis, 1992). More specifically, evidence from research studies indicates that the most effective strategy for intervention is to teach children to segment and blend sounds and to develop their letter-sound awareness. These skills are necessary to develop the alphabetic principle that will enable children to independently translate a graphic symbol into a sound and to more easily acquire word decoding skills (Ball & Blachman, 1991, Davidson & Jenkins, 1994; O'Connor, Jenkins, & Slocum, 1995). Ball and Blachman found in their research that training in PA alone can produce significant improvement in PA and subsequent reading growth; however, including activities consistently linking reading and phonology such as letter-sound associations was the most effective way to teach pre-reading skills. This approach consistently produced the largest gains in reading (Ball & Blachman, 1991; National Reading Panel, 2000; Bus & van Ijzendoorn, 1999).

Currently, there is limited knowledge about the effectiveness of PA intervention for kindergarten children with moderate to severe language impairment. The studies that did include children with specific diagnoses of language impairment did not conduct their studies in a school context, making them more difficult to adapt and implement in real-life settings (Al Otaiba, Puranik, Ziolkowski, & Montgomery, 2009; O'Connor et

al.,, 2010; Schuele & Boudreau, 2008). We do not know the extent to which kindergarten children with a diagnosis of moderate to severe language impairment respond or fail to respond to early intervention in phonological and letter sound awareness delivered in their school settings. Research is necessary to ensure that outcomes in phonological awareness and letter-sound awareness development for children with specific diagnosis of moderate to severe language impairment are as positive as possible.

Thus, as a first step, it is important to know whether or not these skills could be strengthened through intervention for these children. It is equally important to know whether intervention could be conducted in a school context, using school personnel and materials that are readily available. If intervention could be successfully conducted under these conditions, it is more likely to be adopted and implemented on a regular basis.

The Current Study

The purpose of the current study was to investigate the effectiveness of PA and letter-sound awareness intervention conducted in a school context in improving the PA and letter-sound awareness skills of kindergarten children with moderate to severe language impairment. To determine effectiveness, we compared the PA and letter-sound awareness skills of a group of children with language impairment who received small group, direct and explicit PA and letter-sound awareness intervention to the PA and letter-sound awareness skills of a no-intervention control group of children with language impairment. Segmenting and blending at the phoneme level and the ability to link letters with sounds was the primary focus of the intervention. These skills have been found to predict reading achievement in previous research (National Reading Panel, 2000). Three research questions were formulated for this study:

1. Do kindergarten children with moderate to severe language impairment and low PA and letter-sound awareness skills who receive small-group, direct, explicit PA and letter-sound awareness intervention show a greater increase in these skills than children with language impairment who do not receive this intervention (no-intervention control group)?
2. Were the effects of the intervention maintained for PA and letter-sound awareness performance after the intervention was discontinued?
3. How many children responded appropriately to the intervention provided?

METHOD

Setting. Ten kindergarten classrooms in nine elementary city centre schools in an urban school district in a western Canadian city participated in this study. The children attended full-day kindergarten, 5 hours per day, 5 days per week in an inclusive classroom setting. Children in both the experimental and control groups were in the same classrooms with the same teachers and educational assistants during the intervention period. Provincial education funding is provided for kindergarten children with challenging needs, including those with moderate to severe language impairment, and this funding is used for the hiring of educational assistants who provide support and assistance to qualifying children. Speech-language pathologists assigned to the classrooms provide assessments and participate with the classroom staff and parents in the development and implementation of communication goals for children receiving provincial educational funding.

Recruitment and Retention. Classroom based speech-language pathologists recommended potential candidates for the study based on the inclusion criteria of Clinical Evaluation of Language Fundamentals Preschool-2 (CELF P-2) scores (percentile score of 6 or below). Fifty children were identified as meeting these criteria. Parents of all participants were sent an information letter explaining the study, consent form, and demographic information form that included information about maternal education, language spoken in the home, and parental occupations. Parents of 39 of the eligible children returned the consent form. One child failed the hearing screening and was referred for medical follow-up, resulting in a total of 38 participants who began the study. One child, a boy, in the control group left the school district before the end of the intervention, resulting in a total of 37 participants completing the study.

Inclusion Criteria. Kindergarten children were selected for this study based on the following criteria:

(a) receptive or expressive language percentile rank score cut-offs at or below the 6th percentile as measured by the Clinical Evaluation of Language Fundamentals Preschool-2 (CELF P-2; Wiig, Secord, & Semel, 2004). All children were referred to this study from the cooperating school district and presented with developmental language scores of 1.5 standard deviations or greater below the mean. Language scores at this level qualified all children in this study for provincial funding for programming support (Alberta

Education, 2005; Alberta Health Standards, 1993). This language score criterion, established by the province in which this study took place, suggests that the participants had slightly more severe language impairment than would be found in the whole population of children with language impairment.

(b) hearing within normal limits (Hearing Identification Procedures, Alberta Speech, Language, Hearing Association, 2001)

(c) nonverbal performance score on the Kaufman-Brief Intelligence Test-2 (KBIT-2) (Kaufman, & Kaufman, 2004) no lower than 70. Thirty children scored at a nonverbal performance score of 85 or above. Seven children scored at 84 or below (5 in the experimental and 2 in the control group).

(d) PA scores at or below the 25th percentile as measured by the Test of Preschool Early Literacy (TOPEL) pre-published version (Lonigan, Wagner, Torgesen, & Rashotte, no date) Phonological Awareness subtest, or the presence of "at risk" indicators in two PA measures from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) subtests Initial Sound Fluency (score <10) or Phoneme Segmentation Fluency (<7) (Good, Simmons, Kame'enui, Kaminski, & Wallin, 2002). The DIBELS measures are described below. Three students scored higher than the 25th percentile on the TOPEL PA subtest. All three students scored in the "at risk" range on the DIBELS measures of Initial Sound Fluency and Phoneme Segmentation Fluency.

(e) may have articulation delay or phonological disorder, but not so severe as to preclude understanding their responses.

(f) not yet reading words, as reported by the kindergarten teachers and school speech-language pathologists.

(g) English spoken in the home.

Sample. Thirty-seven kindergarten children with language impairment participated in the study (27 boys, 10 girls). Participants were randomly assigned to either an experimental group (n=22) and received the intervention and whole class instruction in PA and letter-sound awareness or the non-intervention control group (n=15). Portney and Watkins (2000) note random assignment means that each subject has an equal chance of being assigned to any group; that this assignment will be independent of personal judgment or bias. The process of assigning children at random to groups in the study was followed. Departures from random assignment in this study were not based on pretest scores or other personal characteristics of the children but on administrative requirements for having two children per group from the same classroom.

Schulz and Grimes (2002) note that equal sample sizes in a randomized controlled trial contribute little to statistical power. However, an attempt was made to access a comparison group that was at least 1/3 the size and, if possible half the size of the intervention group. There were 17 males and 5 females in the experimental group, and 10 males and 5 females in the control group. Participants were ages 4;9 to 6;3 (Experimental mean 66.68, SD 4.81; Control mean 64.13, SD 4.22) at the beginning of the study. Eighteen children (49%) were First Nations Canadians (i.e., Aboriginal, predominantly Cree, who spoke English in the home as their first language). Eight First Nations children were in the experimental group and 10 were in the control group. Three children in the experimental group resided in homes where the parents' first language was not English; however, the parents reported that the language spoken in the home was English. Parents reported maternal education, based on the highest grade completed (Experimental grade mean: 11.45, SD 1.41; Control grade mean: 11.47, SD 1.25). Socio-economic information was gathered for all participants based on parents reporting occupations, which were then assigned values according to a list of numerical values for occupations, weighted equally for education and income (Ganzeboom, Treiman, & Donald, 1996). The mean occupations for parents for both groups were equivalent to values in the skilled manual worker category including a range from factory or plant worker to clerk, secretary, and sales person (Experimental SES mean: 3.61, SD 2.25, range: 1-8; Control SES mean 2.83, SD 1.43, range: 1-6).

Group Equivalence at Pre-Intervention. Independent t-test analysis was conducted to examine whether or not there was a significant difference between the experimental group (n=22) and control group (n=15) before the intervention began. As Table 1 shows, there were no statistically significant differences between the experimental and the control group on the variables measured: age, SES, maternal education, nonverbal intelligence, receptive language, expressive language, and print knowledge. All PA and early reading measures were not significantly different at pretest with the exception of the DIBELS Initial Sound Fluency subtest which was statistically different in favor of the experimental group. Given the sample size was small, the recommended procedure of Brace, Kemp, and Snelgar (2006) was followed and pretest scores were used as covariates in the ANCOVAs to control for any differences prior to the intervention.

Table 1. Comparisons of Pre-intervention Measures between Groups (E=22, C=15, n=37)

	Experimental			Control				
Measure	Mean	SD	Range	Mean	SD	Range	*t*	*p*
Age (months)	66.68	4.81	58-74	64.13	4.22	57-75	1.661	.247
SES (occupation scale)	3.61	2.26	1.0-8.0	2.83	1.44	1.0-5.5	1.183	.067
Mother's Education (grade)	11.45	1.41	8-13	11.47	1.25	9-14	-.027	.483
K-BIT Nonverbal Intelligence	91.68	11.73	75-127	88.67	7.18	73-100	.886	.182
CELF-P2 Receptive Language	73.86	8.99	53-86	73.40	11.11	50-87	.140	.474
CELF-P2 Expressive Language	75.95	9.67	57-96	72.60	12.25	50-92	.930	.314
TOPEL Print Knowledge	90.59	13.74	70-117	84.33	10.55	69-104	1.487	.302
TOPEL Phonological Awareness	82.64	9.53	55-101	77.60	12.08	55-96	1.416	.079
DIBELS Initial Sound Fluency	7.64	6.84	0-27	3.87	3.09	0-11	2.267	.030
DIBELS Phonemic Segmentation Fluency	2.05	4.27	0-18	3.40	5.14	0-17	-.872	.389
DIBELS Letter Naming Fluency	13.18	13.19	0-48	8.20	10.21	0-32	1.23	.226
DIBELS Nonsense Word Fluency	2.73	4.67	0-14	1.07	2.92	0-10	1.22	.230

Note. K-BIT = Kaufman Brief Intelligence Test; CELF-P2 = Clinical Evaluation of Language Fundamentals – Preschool, 2nd Ed.; TOPEL = Test of Early Preschool Literacy; DIBELS = Dynamic Indicators of Basic Early Literacy Skills. Standard scores are reported for the K-BIT, CELF-P2, and TOPEL tests. Raw scores are reported for the DIBELS subtests.

Psychometrics of the Measures

KBIT-2. The KBIT-2 Matrices is designed as a screening tool to identify high-risk children who require subsequent in-depth evaluation. The Matrices subtest is a nonverbal measure comprising items involving meaningful pictures (people and objects) for children in the 4- to 7-year range. The internal consistency reliability for age 5 years is .78. Test-retest reliability is .76 for children age 4 to 12 years as reported in the KBIT-2 manual.

Language Measure. The CELF P-2 is used for identifying, diagnosing, and performing follow-up evaluations of language deficits in children ages 3 to 6 years. Test-retest reliability coefficients for the 5; 0-5; 11 age range are from .79 to .95.

PA and Early Reading Measures. It was recognized that different types of PA tasks place different demands on PA abilities (Phillips, Clancy-Menchetti, & Lonigan, 2008). The intent for including the TOPEL PA subtest and the DIBELS subtests in the inclusion criteria was to capture kindergarten children with language impairment who had any indication of delay in PA and letter-sound skills. The 27-item Phonological Awareness subtest of the pre-published version of the TOPEL was individually administered to measure elision and blending abilities. The developmental continuum of phonological awareness skills was sampled across both elision and blending items. The internal consistency reliability of the items for the phonological awareness subtest of the TOPEL at age 5 years is .88. The test-retest reliability score is .83, and the inter scorer

reliability is .97 as reported in the test manual. The 36-item Print Knowledge subtest of the pre-published version of the TOPEL was individually administered to measure early knowledge about written language conventions and form as well as alphabet knowledge. The internal consistency reliability of the items for the print knowledge subtest of the TOPEL at age 5 years is .96. The test-retest reliability is .89, and the interscorer reliability is .96 as reported in the test manual (Lonigan et al., n.d.).

The DIBELS subtests were selected for use in participant selection and as an outcome measure because the subtests were designed specifically to measure and track progress in early reading skills. Unlike standardized tests, which are not designed to show progress over time, the DIBELS was specifically developed for this purpose. It consists of sets of measures of specific skills. For example, the materials for Initial Sound Fluency contain 3 Benchmark and 20 Progress Monitoring sets with 16 items each; all containing items that ask children to isolate the first sounds in words. The DIBELS materials are intended to be administered repeatedly throughout a school year, using a different set each time. Alternate-forms reliability is reported to be .72 for an earlier version of ISF, Onset Recognition Fluency. For the other measures, alternate-forms reliability is reported as follows: Phonetic Segmentation Fluency, .88; Letter Naming Fluency, .88; Nonsense Word Fluency, .83.

A description of the DIBELS subtests follows:

The *Initial Sound Fluency* (ISF) subtest is designed to measure the student's ability to match and produce initial phonemes or blends. The student answers 16 questions, presented in sets of 4 questions. To answer the first 3 questions in each set, the student selects a picture that begins with a target sound. To answer the fourth question, the student produces the initial phoneme or blend for a given picture. The formula used to calculate the score incorporates both the number of questions answered correctly and the cumulative time required to respond to all 16 questions.

The *Letter Naming Fluency* (LNF) subtest is designed to measure whether or not the student can accurately and fluently name randomly sorted uppercase and lowercase letters and is a measure of alphabet knowledge. The score is the number of correct letter names the student states at the end of 1 minute. The examiner stops administering the assessment if the student does not accurately name any of the 10 letters in the first line.

The *Phonemic Segmentation Fluency* (PSF) subtest is designed to measure the student's ability to segment one-syllable words with two to five phonemes into component parts. The examiner asks the student to segment each sound in the word and the student earns 1 point for each correctly segmented sound. The student's score is the number of correctly segmented sounds in 1 minute. The examiner stops administering the assessment if the student does not accurately provide any sound segments in the first five words.

The *Nonsense Word Fluency* (NWF) subtest generally measures decoding and specifically measures two skills: (a) whether or not students can name letter sounds, and (b) whether or not students can blend sounds to read unfamiliar words with short vowels in consonant-vowel-consonant or vowel-consonant syllable patterns. One point is awarded for each letter sound in the nonsense word and the total score is the number of letter sounds the student says correctly in 1 minute. The student is given credit regardless of whether the letter is read correctly as an individual sound or is blended into a word or word part. The maximum number of points a student can receive is the number of letters in the word. The examiner stops administering the assessment if the student gives no correct sound segments in the first five words (Farrell, Hancock, & Smartt, 2006). Additional information about the DIBELS is available at dibels.uoregon.edu.

Data Collection

The duration of data collection was from October through May. Identifying participants, obtaining parental consents, and administering the CELF P-2 extended from October through December. Classroom-based speech-language pathologists administered the CELF P-2, identifying children with moderate to severe language impairment eligible for specialized services. The hearing screening, KBIT-2 nonverbal performance test, and TOPEL Print Knowledge and Phonological Awareness subtests were administered to potential participants immediately before the intervention began. Pre-intervention assessments for the study were conducted by four community based speech-language pathologists (not the authors or classroom-based speech-language pathologists) and three second-year speech-language pathology masters students. The speech-language pathology masters students administered the tests with the supervision of the first author. Each assessment session lasted between 45 minutes and 1 hour. All assessors were blind to the assignment of the children to either the experimental or control group.

DIBELS testing was administered by educational assistants with the supervision of the first author. DIBELS pre-intervention testing occurred in early

January. DIBELS testing was carried out at several points during the intervention to permit us to track and graph changes in the skills of interest between the pre- and post-testing points that were to be used for statistical analyses; it was conducted on days 24, 47, and 65 of the study. The number of DIBELS probes and the day intervals between probes during the intervention were scheduled in an attempt to have an even number of days between probes to track changes and also with consideration for the schedule of the kindergarten school year. DIBELS post-intervention testing was conducted to obtain measures for comparison of change in the intervention and control groups; it took place two weeks and again one month after the final day of the intervention. Each testing session lasted between 8 to 10 minutes. All tests for the study were administered in a quiet location in the children's schools.

Assessment Fidelity

To ensure fidelity of administration of assessments, speech-language pathologist assessors participated in 5 hours of assessment training conducted by the first author that included simulated administration, and scoring and calculating test scores. Review of hearing screening procedures was conducted by two community based pediatric audiologists. Spoken responses were recorded at the time of the assessment by an Olympus VN-480 PC audio recorder. To establish inter-rater reliability of the scoring procedures, 25% of the pre- and post-intervention test protocols were randomly selected for independent scoring by a registered speech-language pathologist (not the authors or assessors) using the audiotapes. Reliability for pre- and post-intervention scoring ranged from .99 to 1.00.

To ensure fidelity of DIBELS testing, educational assistant assessors participated in 4 hours of training on the four DIBELS subtests implemented by the first author. DIBELS administration and scoring simulations were conducted during the training sessions. Consistent following of the test administration script, accurate use of the stop watch, accurate scoring, calculating, and recording the test results was emphasized in the training. The first author filmed each educational assistant conducting a DIBELS assessment session with a study participant and completed the DIBELS Observational Checklist during the session. The checklist was discussed with the educational assistant immediately after the session while reviewing the filmed session. After the administration of the third DIBELS probe, the researcher met with the whole group of educational assistants to review specific aspects of the DIBELS test administration process with the intent of ensuring that the administration and scoring of the subtests was consistent across educational assistants.

PA and Letter-Sound Awareness Intervention

The intervention chosen for this study was *Road to the Code: A Phonological Awareness Program for Young Children* (Blachman et al.,2000). *Road to the Code* was chosen for the proposed research because this phonological awareness training program incorporates principles that include the explicit teaching of one or two types of phoneme manipulations (e.g., initial sound isolation and/or initial sound identification) and blending and segmenting in each lesson, as well as sound-symbol awareness activities (phoneme manipulation with letters). The program allows for flexibility in small-group instruction, and provides suggestions for instructional adaptations based on the individual child's needs. The program is 15 hours long and contains material sufficient for 20 hours of phonological awareness programming (Blachman et al., 1994; National Reading Panel, 2000; Torgesen et al., 1992). The intervention components were:

Say-It-And-Move-It. The Say-It-and-Move-It activity was designed to heighten awareness of the phonemes in spoken words. Each child was given a Say-It-and-Move-It sheet with a picture on the top half of the page and an arrow drawn in a left-to-right direction at the bottom of the page. The students were taught to segment words by first repeating a target word and then moving one disk down from the picture to the arrow for each sound that they said in the word. First, children learned to represent single sounds (e.g., 'a'), then double sounds (e.g., 'a-a'), then two phoneme items (e.g., 'at'), and finally three phoneme items (e.g., 'sat'). During the sixth week of instruction, one letter was placed on the disk. The letters were selected from among the eight letters (*a, m, t, i, s, r, f, b*) introduced in the *Road to the Code* program. Gradually, children were given enough letter tiles to produce a consonant-vowel-consonant real word. After the word was segmented, it was blended (spoken at normal speed). Each Say-It-and-Move-It activity took 7 minutes of each 20 minute lesson.

Letter Names and Sounds. A letter name and sound instruction exercise was included in each lesson to teach the children that all letters have both a name and a sound. Explicit connections were repeatedly made between the letter name and sound ("All letters have both a name and a sound."). Illustrated alphabet cards were used to reinforce initial sounds. After initial introduction, each letter and letter sound was reviewed in subsequent lessons across the remainder of the program. The authors (Blachman, et al., 2000) noted that many phonetically regular consonant-

vowel-consonant words could be made using these letters and the knowledge of these letter sounds. A variety of game-like activities (e.g. hand clapping, sound bingo, go fish, concentration, letter-sound matching, and sound boards) focused on the correspondence between sound segments in words and the letters that represented the sound segments. Each letter-sound activity took 7 minutes of each 20 minute lesson.

Phonological Awareness Practice. The activities in this component of the lesson provided practice with a range of simple PA tasks. For example, in one activity, the children grouped words on the basis of alliteration in a sound categorization task. In another activity, cards with a picture representing the word on the top half of the page were presented to the children. Underneath each picture was a series of boxes. Each box represented one phoneme in the word. Children learned to say the word slowly and simultaneously move a disk to the appropriate box to represent each phoneme in the word. The children blended the sounds together to create the word. Six minutes of each 20 minute session was spent on this component of the lesson.

Educational assistants. The treatment program was implemented by 10 educational assistants, each of whom worked with the same children each session in groups of two. The range of years of education included one educational assistant with a Grade 12 diploma and three educational assistants with undergraduate university degrees. Two educational assistants reported thirteen years of education. Four educational assistants held diplomas from post-secondary institutions in areas such as early childhood development, educational assistant, and nursing assistant. The range of educational assistants' experience working with kindergarten children ranged from 4 months to 60 months with a mean of 30 months. The first language of two of the educational assistants was not English however both spoke fluent English.

Length of Intervention. Instruction began in early January and concluded the end of April. The lessons were implemented for 14 weeks, 20 minutes per day, 5 days per week, for a total of 67 days, which corresponds to 22.33 hours of program time. The average time that children spent in PA intervention was 18.45 hours (*SD* = 4.64, range 12.75-21.5). Seven children received between 12.75 and 16.0 hours; the remaining 14 received between 16.5-21.5 hours. Illness on the part of the children or educational assistant or low school attendance accounted for the lower number of intervention hours.

Groups. Of the 10 classrooms with participating students, 5 had both treatment and control students, 4 had treatment students only and one had only one student in the control group. Two of the students in this study received individual sessions because each of them was the only child in these classrooms enrolled in the study.

Classroom PA and letter-sound awareness instruction. To gather information on the phonological awareness and letter-sound awareness programming the children in the study received in their classrooms, all eleven kindergarten teachers independently completed a questionnaire at the end of the study (Smith, 2004). The information from the teacher questionnaire revealed that nine teachers (82%) had heard of phonological awareness programming and two (18%) had not. Teacher understanding of the skills in phonological awareness ranged from five teachers (45%) reporting having full understanding, four (36%) having an adequate grasp, to two teachers (18%) reporting having somewhat of an understanding of the skills in phonological awareness. Seven teachers (64%) reported attendance at a phonological awareness in-service and four (36%) reported not having attended an in-service. Ten teachers (91%) responded that the concepts in phonological awareness training were very beneficial in enhancing reading skills in young children. The range of time reported by teachers providing phonological awareness instruction on a daily basis ranged from 15 to 30 minutes, with the average amount of time 21.3 minutes. The amount of time spent on letter naming represented the greatest amount of time spent on a skill, followed by letter-sounds. Each teacher committed some time to segmenting and blending activities; however, some teachers spent considerably more time (i.e., daily) on this literacy activity than did others (i.e., weekly or monthly). Although teachers were supportive of the theoretical basis of phonological awareness intervention, instruction in the most essential instructional components, that of segmenting and blending, was provided less than letter naming.

Instructional Setting. The setting for instruction was established outside participants' regular classrooms to prevent migration effects that might have occurred if the intervention had been implemented in the classroom and to attempt to provide a quieter, less distracting acoustical environment. With a few exceptions, students received the lessons in the same room each day. Teachers were not informed about the specific content of the intervention and while educational assistants also worked within classrooms, they worked on activities provided by classroom teachers that did not include the phonological awareness activities provided in the study.

Scheduling of the Lessons. The lesson delivery schedule was developed in keeping with the principles of instruction appropriate for children at risk for reading difficulties. Intensive scheduling in groups of two children provided predictable and extensive opportunities for scaffolded practice and many opportunities for error correction and feedback (Foorman & Torgesen, 2001). All 44 lessons from *Road to the Code* were taught to the children receiving the intervention. Lessons that included a note from the author indicating that the lesson was a major transition point or suggesting scaffolded instruction within the lesson's activities were conducted two days in a row. Twenty-three complete lessons (52%) were repeated on successive days. Each educational assistant followed the lesson schedule so that the lessons were presented on approximately the same day across the groups. In cases of absences, the children were scheduled for two sessions per day until they caught up to the other students. In other cases—when extended or frequent absences occurred, for example—the educational assistants provided as much programming as schedules would permit on the days the children attended school. Lessons were not scheduled during breakfast, lunch, snack, or recess.

Intervention fidelity. To ensure fidelity of administration of the intervention, educational assistants participated in an initial 3 hour training session. Four hours of additional training on implementation of the lessons occurred during monthly educational assistant training sessions. Training focused on researcher modeled lessons and opportunities for the educational assistants to practice implementing the lessons. The educational assistants were requested to read verbatim the bold script from the *Road to the Code* manual for each lesson activity to ensure consistency of instructional language across the groups. The educational assistants set a timer at the beginning of each component of the lesson to ensure consistency of intervention time across the groups. The total number of minutes of daily programming time for each lesson was documented and submitted to the researchers. All educational assistants participated in an email listserv that facilitated an exchange of information between the researcher and educational assistants when questions, concerns or observations arose regarding intervention implementation.

Throughout the study, the first author conducted 54 fidelity-of-implementation observations, representing 10% of the total number of intervention sessions. During these observations the researcher filmed the 20-minute phonological awareness intervention session and used an observational checklist that included criteria for the instructional activities. Instructional behaviours were rated on a scale of 0–4, with higher scores indicating better performance. The video and checklist were reviewed with the educational assistant immediately after the lesson and feedback was provided. To establish inter-rater reliability with respect to lesson implementation, 10 filmed sessions representing approximately 20% of the total 54 filmed sessions were randomly selected for independent scoring by a registered speech-language pathologist and independent scorer. The independent observer was asked to observe the sessions and complete the observational checklist with the researcher. Reliability scores on observations indicated 100% agreement. The independent observer noted that, across the filmed sessions, each educational assistant's strict adherence to the script from the manual for each component of the lesson contributed to the overall fidelity of implementation. Further information is available from the first author.

RESULTS

Analyses

Each dependent variable was analyzed using a separate analysis of covariance (ANCOVA) with pretest scores as covariates to examine whether or not there were statistically significant differences between the groups. The assumptions of ANCOVA including normality, linearity, homogeneity of variances, and homogeneity of regression slopes were verified. The variables were four DIBELS subtests: initial sound fluency, phonemic segmentation fluency, letter naming fluency and nonsense word fluency.

ANCOVA allowed the investigation of the effect of the intervention on each post-test score while removing the effect of the pre-test score by using it as the covariate (Brace et al., 2006). The between-groups factor was used for two comparisons for each variable. The first comparison was effectiveness of intervention during the final week of the intervention, for which the dependent variable was the post-intervention probe; the second was at the second maintenance probe, given one month after the intervention. To correct for multiple ANCOVA tests, Holm's procedure (Aicken & Gensler, 1996) was applied, in which obtained p-values are ranked from smallest to largest and each is compared to an adjusted alpha value until a p-value larger than its adjusted alpha is encountered; all larger p-values are considered to be non-significant. All significant p-values remained significant after Holm's procedure was applied.

The standardized effect size Cohen's d was calculated for each measure. It was computed by dividing the mean difference by the pooled standard deviation (Cohen, 1988). Conventional guidelines consider effect sizes as

large if the intervention versus control difference is at least 0.80, moderate if the impact is 0.50 to 0.79, and small if the impact is 0.20 to 0.49; anything smaller than 0.20 is considered trivial (Cohen, 1988).

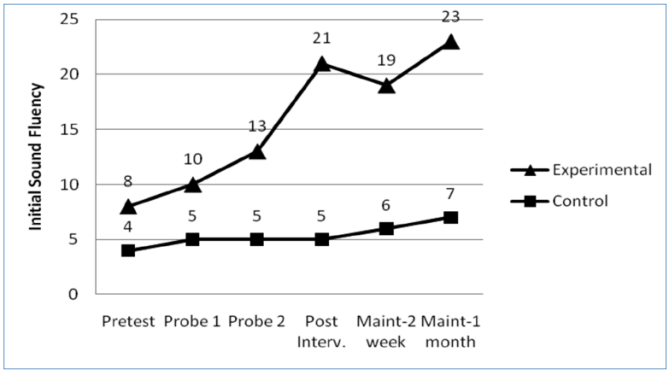
Additionally, discriminant analysis was used to identify the non-responders to the intervention using the DIBELS subtests. Data from the probe given in the last week of the intervention were used in this analysis to assess the accuracy of classification of children into pre-existing groups—in this case, children who received the intervention and children in the no-intervention control group—to identify children in the experimental group who did not benefit from the intervention (i.e., children in the intervention group who were classified as being in the non-intervention group).

Initial Sound Fluency (ISF)

ISF is designed to measure children's ability to recognize and produce the initial sound of a word. Figure 1 displays data for all time points at which ISF was administered from pre-test to one month post intervention. ANCOVA was used to examine the effect of the intervention on this variable by comparing groups at post-intervention and again at maintenance one month later; pre-intervention ISF scores were entered as the covariate. At post-intervention, the analysis revealed a statistically significant difference between the groups, indicating the intervention group was higher than the control group on ISF, F (1, 34) = 39.52, p < .001, d = 2.17. At maintenance-one month there was also a statistically significant difference between the groups, indicating the intervention group remained higher than the control group on ISF, F (1, 34) = 16.21, p =.009, d =1.33. The effect sizes indicate a large effect of the intervention on this variable.

According to DIBELS guidelines (Good et al., 2002), kindergarten students are expected to achieve an ISF score of 25 or higher by the middle of kindergarten in order to be on target for meeting the Phonemic Segmentation Fluency benchmark score at the end of kindergarten. Thus, for typically developing children, ISF would not be administered past midyear. However, for the children in the present study whose language was moderately to severely impaired, the ISF measure was administered beyond the middle of the year because the students had not yet demonstrated an established skill in this area. Children in the intervention group maintained and increased their scores to the second maintenance probe. Goals and indicators of risk for the ISF measure at the middle of kindergarten are: 0–9, Deficit; 10–24, Emerging; 25+, Established. The group mean for children in the intervention group, who had pre-intervention ISF group mean scores in the "deficit" range, increased to 2 points below the "established" range for the skill at maintenance-one month. The group of children in the non-intervention control group, who also had Pre-intervention ISF group mean scores in the deficit range, demonstrated maintenance-one month group mean scores that remained well within the deficit range.

Figure 1. Children's Performance on the Initial Sound Fluency Measure from Pre-intervention to Maintenance-one Month.



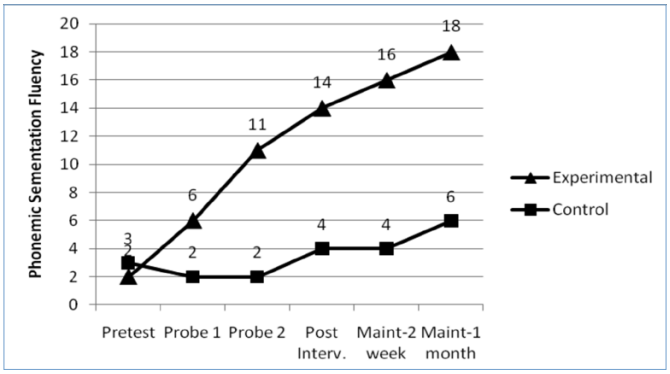
Post-intervention and Maintenance-one month scores were used for the ANCOVA. Means (standard deviations-SDs) for post-intervention scores: Experimental 20.95 (8.655), Control 5.13 (5.579); Means (SDs) for Maintenance-one month: Experimental 23.36 (16.253), Control 6.60 (7.219).

Phonemic Segmentation Fluency (PSF)

PSF measures children's ability to segment words into individual phonemes. Figure 2 displays data for all time points at which PSF was administered from pre-test to one month post intervention. ANCOVA was used to examine the effect of the intervention on this variable by comparing groups at post-intervention and again at maintenance one month later; pre-intervention PSF scores were entered as the covariate. Results of the analysis revealed a statistically significant difference between the groups on the PSF Subtest at post-intervention, with the intervention group higher than the control group, F (1, 34) = 17.00, p < .001, d = 1.39. At maintenance-one month, the results of the analysis reveal a statistically significant difference between the groups on the PSF Subtest; again the intervention group was higher than the control group, F (1, 34) = 12.86, p = .001, d = 1.25. The effect sizes at both time points indicate a large effect of the intervention on this variable.

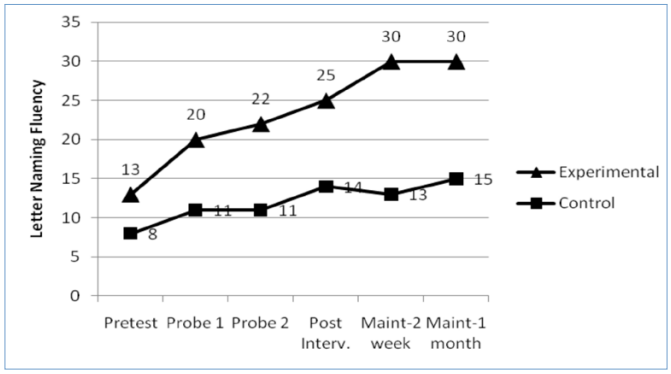
Kindergarten students are expected to achieve a PSF score of 35 by the end of kindergarten in order to be on track to meet the Nonsense Word Fluency benchmark score by the middle of first grade. Goals and indicators of risk for the PSF measure at end of the kindergarten year (month 7–10) are: 0–9, Deficit; 10–34, Emerging; 35+, Established. Based on the goals and indicators of the DIBELS subtest of PSF, the group of children in

Figure 2. Children's Performance on the Phonemic Segmentation Fluency Measure from Pre-intervention to Maintenance-one Month.



Post-intervention and Maintenance-one month scores were used for the ANCOVA. Means (standard deviations-SDs) for post-intervention scores: Experimental 13.82 (8.894), Control 3.53 (5.553); Means (SDs) for Maintenance-one month: Experimental 18.45 (12.523), Control 5.53 (7.643).

Figure 3. Children's Performance on the Letter Naming Fluency Measure from Pre-intervention to Maintenance-one month.



Post-intervention and Maintenance-one month scores were used for the ANCOVA. Means (standard deviations-SDs) for post-intervention scores: Experimental 24.55 (13.773), Control 14.33 (14.475); Means (SDs) for Maintenance-one month: Experimental 30.18 (16.823), Control 14.80 (11.749).

the intervention group, who had pre-intervention PSF skills in the "deficit" range, demonstrated maintenance-one month skills in the "emerging" range. The group of children in the non-intervention control group, who also had pre-intervention PSF skills in the deficit range, demonstrated maintenance-one month skills that remained within the deficit range.

Letter Naming Fluency (LNF)

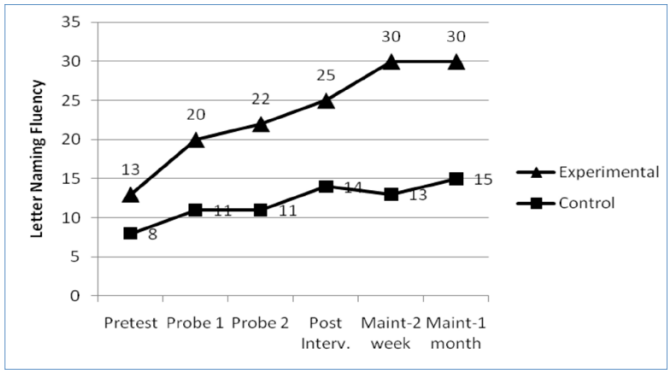
LNF measures children's ability to name letters rapidly. Figure 3 displays data for all time points at which LNF was administered from pre-test to one month post intervention. ANCOVA was used to examine the effect of the intervention at the post-intervention time point and again at maintenance-one month, with pre-intervention LNF scores as the covariate. At post-intervention no statistically significant difference between groups was found, F (1, 34) = 3.17, p = .084, d = .72. However, at maintenance-one month, the intervention group was higher than the control group, F (1,34) = 8.36, p = .007, d = 1.06. The effect size indicates a large effect of the intervention on this variable.

Kindergarten students are expected to achieve a LNF score of 40 by the end of kindergarten, according to DIBELS guidelines. Goals and indicators of risk for the LNF measure at the end of the kindergarten year (month 7–10) are: 0–29, At Risk; 29–40, Some Risk; 40+, Low Risk. Based on these goals and indicators, the group of children in the intervention group, who had pre-intervention LNF scores in the "at risk" range, demonstrated maintenance-one month group mean LNF scores in the "some risk" range. The group of children in the non-intervention control group with pre-intervention LNF scores in the at risk range demonstrated maintenance-one month skills that remained within the at risk range.

Nonsense Word Fluency (NWF)

NWF is designed to measure children's ability to apply letter-sound correspondence to reading words that were not real words. Figure 4 displays data for all time points at which NWF was administered from pre-test to one month post intervention. ANCOVA was used to examine the effect of the intervention on this variable by comparing groups at post-intervention and again at maintenance, with pretest scores as the covariate.

Figure 4. Children's Performance on the Nonsense Word Fluency Measure from Pre-intervention to Maintenance-one Month.



Post-intervention and Maintenance-one month scores were used for the ANCOVA. Means (standard deviations-SDs) for post-intervention scores: Experimental 14.91 (9.446), Control 3.00 (6.547); Means (SDs) for Maintenance-one month: Experimental 17.82 (12.105), Control 3.00 (6.897).

At post intervention, the ANCOVA analysis revealed a statistically significant difference between the groups on the NWF subtest, with the intervention group higher than the control group, F (1,34) = 19.12, p < .001, d = 1.47. At maintenance-one month, analysis again revealed a statistically significant difference between the groups on the NWF Subtest with the intervention group higher than control group, F (1,34) =16.30, p < .001, d = 1.50. The effect sizes at both time points indicate a large effect of the intervention on this variable.

Kindergarten students are expected to achieve a NWF score of 25 by the end of kindergarten. Goals and indicators of risk for the NWF measure at the end of the kindergarten year (month 7–10) are: 0–15, At Risk; 15–25, Some Risk; 25+, Low Risk. The group of children in the intervention group, who had pre-intervention NWF scores in the "at risk" range, demonstrated maintenance-one month group mean scores in the "some risk" range. The group of children in the non-intervention control group, who also had pre-intervention NWF scores in the at risk range, demonstrated maintenance-one month group mean scores that remained within the at risk range.

Amount of treatment time

As noted earlier, the amount of time received by individual children ranged from 12.75 to 21.5 hours. To

Table 2. Comparisons of Pre-intervention Measures between Responders and Non-responders to the Intervention (E=19, C=3, n=22)

Variables	Responders		Non-Responders		Comparison	
Measure	Mean	SD	Mean	SD	*t*	*p*
Age (months)	66.21	4.99	69.67	1.52	-1.17	.26
SES (occupation scale)	3.84	2.29	2.16	1.60	1.21	.24
Mother's Education (grade)	11.47	1.46	11.33	1.15	.157	.88
Minutes of PA Intervention	1066.89	165.47	1031.33	185.58	.342	.74
K-BIT Nonverbal Intelligence	91.95	12.17	90.0	10.39	2.61	.80
CELF-P2 Receptive Language	74.47	9.45	70.00	4.35	.794	.44
CELF-P2 Expressive Language	76.53	9.31	72.33	13.31	.689	.50
TOPEL Print Knowledge	90.58	14.3	90.67	12.01	-.01	.99
TOPEL Phonological Awareness	83.16	6.66	79.33	23.11	.285	.80
DIBELS Initial Sound Fluency	7.68	7.34	7.33	2.51	.081	.94
DIBELS Phonemic Segmentation Fluency	2.37	4.52	.00	.000	.888	.39
DIBELS Letter Naming Fluency	13.79	13.29	9.33	14.46	.535	.60
DIBELS Nonsense Word Fluency	2.95	4.94	1.33	2.30	.547	.59

Note. K-BIT = Kaufman Brief Intelligence Test; CELF-P2 = Clinical Evaluation of Language Fundamentals – Preschool, 2nd Ed.; TOPEL = Test of Early Preschool Literacy; DIBELS = Dynamic Indicators of Basic Early Literacy Skills. Standard scores are reported for the K-BIT, CELF-P2, and TOPEL tests. Raw scores are reported for the DIBELS subtests.subtests.

investigate whether amount of treatment time was related to post-treatment DIBELS scores, we calculated correlations between number of treatment minutes and the 8 DIBELS scores (4 immediately post-intervention, four 1-month post-intervention). To correct for multiple tests, Holm's correction was applied to obtain adjusted alpha levels (Aicken & Gensler, 1996). Of the eight correlations, none was significant. Thus we conclude that amount of treatment time was not related to post-treatment DIBELS scores.

Discriminant Analysis

A discriminant analysis was performed with group as the dependent variable and DIBELS Initial Sound Fluency, Phonemic Segmentation Fluency, Letter Naming Fluency, and Nonsense Word Fluency subtest scores from the post-intervention time point as predictor variables. The discriminant analysis permitted us to determine the number of children for whom the intervention was successful and to identify individual children for whom it had not been effective. Children in the intervention group classified as being in the control group by the analysis would be considered to be children for whom the intervention was not successful.

The total sample of 37 cases was analyzed. A single discriminant function was calculated, which is a mathematical formula that combines the predictor variables to discriminate between the groups (Brace et al., 2006). If the discriminant function is statistically significant, then the predictor variables are successfully discriminating between groups.

Results indicated the value of the discriminant function was statistically significant (Wilks $\lambda = .401$, $\chi^2 = 30.124$, $df = 4$, $p = .000005$). The magnitude of the correlations indicates the strength of the prediction of each variable. Correlations between predictor variables and the discriminant function were as follows: Initial Sound Fluency, .86; Phonemic Segmentation Fluency, .55; Letter Naming Fluency; .30; Nonsense Word Fluency, .59. Each of these scores contributed to the prediction of group membership.

Discriminant analysis yields measures of accuracy of classification for both groups (in this case, the percentage of children demonstrating phonological awareness performance scores indicative of experimental group or control group membership and classified as such). Overall, 89.2% of children were correctly classified. Nineteen children in the intervention group (86.4%) were correctly classified, indicating that the intervention was effective for 19 of the 22 children receiving the intervention. Accurate classification of children in the control group was 93.3%, with only one child misclassified.

Three children in the experimental group were classified as children in the control group, indicating that their scores were not at a level that would differentiate them from children who had not received intervention at post-test. We had expected that children who were not successful might have pre-test measures that were different in some way and thus could be used to predict children's likelihood of success in future research and clinical practice. We compared the responders and non-responders on pretest variables that possibly could account for different responses to intervention. None of the groups were significantly different on any of the variables (See Table 2). Note that the 3 nonresponders obtained scores of 0 for Phonetic Segmentation Fluency, but the group comparison was still not significant, most likely due to the high degree of variance among the responders, many of whom also had scores of 0 at pretest. Thus none of the pretest variables appear to account for the nonresponsiveness of the three children. It is possible that other information such as speech sound abilities that were not collected in this study might help to distinguish responders from non-responders.

DISCUSSION

This study examined the effectiveness of PA and letter-sound awareness intervention in improving these skills for kindergarten children with moderate to severe language impairment and low phonological awareness skills. This group was compared with a no-intervention control group with language impairment. Both groups received their usual classroom instruction. Intervention focused on phoneme segmentation and blending and provided instruction and practice in these skills.

Results indicate that the intervention program was successful at raising the phonological awareness and letter sound-awareness of the intervention group as measured by four DIBELS subtests. Children in the experimental group increased their scores on Initial Sound Fluency, Phonemic Segmentation Fluency, and Nonsense Word Fluency by the end of treatment and maintained their gains one month after the intervention ended. They did not have scores on Letter Naming Fluency that were statistically significantly higher than the control group immediately post-treatment, but did show significantly higher scores at maintenance, one month after intervention. We suspect that the initial lack of a difference is due to an emphasis in children's classrooms on letter naming, which both groups would have experienced. The emergence of a difference by the maintenance point could be due to a consolidation of skills post-treatment in the experimental group, resulting in a smaller standard deviation and a significant group difference.

Thus, by 1 month after the intervention ended if not sooner, children in the experimental group had significantly higher scores on DIBELS measures than children in the control group. Comparison of group scores to indicators of risk provided by the DIBELS indicated that both groups scored in the lowest range of indicators at pretest on all four measures. After intervention, the experimental group scores had moved to levels just below the target for kindergarten children -- levels that indicate that the skill was emerging. Control children remained in the lowest level of the indicators, suggesting that they remained at risk for reading difficulties. While the intervention did not bring experimental group children to a level considered appropriate for their grade, their scores indicated that they were developing their phonological awareness skills, in contrast to the control group, who remained at risk.

It is likely that the focus on initial sound identification and phonemic segmentation skills provided during the intervention positively influenced children's performance on the Nonsense Word Fluency measure. A review of the scoring sheets for the Nonsense Word Fluency measure indicated that each of the students in the intervention decoded the words phoneme by phoneme. This finding was confirmed throughout the assessment fidelity sessions, during which the students were observed pointing to each letter and providing an associated sound. These observations suggest that explicit instruction in initial sound identification and phoneme segmentation, as well as in instruction in connections between letter sounds, may have helped children to apply their phonological awareness skills and letter-sound knowledge more effectively to the phonemic decoding of nonsense words. These results are consistent with research suggesting that the effectiveness of phonemic awareness is enhanced when combined with letter-sound instruction (Bus & van Ijzendoorn, 1999; Byrne & Fielding-Barnsley, 1989; Davidson & Jenkins, 1994; Fox & Routh, 1984; O'Connor et al., 1995; Torgesen et al., 1992). The intervention was effective in helping children phonemically decode nonsense words. Follow-up is required to answer definitively whether children with moderate to severe language impairment blend individual phonemes into nonsense words or not and whether there is generalization from the ability to decode nonsense words to real word recognition as children begin to receive formal reading assessment and instruction in Grade 1.

Visual inspection of the probe data indicates that progress was slow but steady for the children receiving the intervention; children in the control group made little progress on the outcome measures. Children in both groups attended special classrooms for children at risk for academic underachievement, supported by educational assistants and speech-language pathologists. Nevertheless, only the children in the PA intervention increased their phonological and letter-sound awareness. The children who received our intervention appeared to have required explicit, systematic, and focused PA and letter-sound awareness instruction to improve these skills. This finding was consistent with the research for low literacy achievers (Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998; Torgesen, 2000). The consistent, repetitive, and predictable components in the intervention combined with a higher rate of responding opportunities in groups of only two students appeared to facilitate the increase in these PA skills. There was a possibility that the children in the intervention group would become satiated with the programming. However, the videotaped sessions and educational assistant reports indicate that the children demonstrated a consistent interest for the daily 20-minute sessions.

It is possible that the different child outcomes between the groups could have been due to attention received in intervention sessions (i.e., Hawthorne Effect) rather than to the intervention itself, especially since the variation in the time in treatment did not correlate to differences in outcomes for children in the experimental group. However, previous studies of children with typical language that included groups receiving a non-targeted intervention still found effects for PA intervention (Ball & Blachman, 1991; Blachman et al., 1994; Lundberg et al., 1988; O'Connor, Notari-Syverson, & Vadasy, 1996; Tangel & Blachman, 1992). The National Research Panel summary of findings reported some studies compared PA treatment groups to control groups that were given some other treatment while other studies used untreated control groups. Neither type of control group consistently produced larger effect sizes. Failure to find larger effects for untreated than for treated control groups indicates that Hawthorne effects did not inflate effect sizes (National Reading Panel, 2000). While Hawthorne effects are a concern with interventions that are likely to show improvement when participants are simply motivated to perform better due to the attention they receive, we feel that this is not likely with a complex skill such as phonological awareness or with a population such as children with language impairment. As Scheule, Spencer, Barako-Arndt, & Guillot (2007) noted:

"When skill deficiencies are identified, appropriate intervention efforts should be set in motion; for children with LI, assuming that time (i.e. general maturation) and/or increased oral language ability will lead to

adequate early literacy achievement appears misguided. Instruction and intervention are the keys to learning; time or maturation alone is not (pp 37-38)."

We would add that motivation to please is also not sufficient to account for skill improvements in these children.

Clinical Implications

Results of the present study have important implications for children with moderate to severe language impairment and low phonological awareness skills. We found that when direct, explicit, intense, and small-group instruction in initial sound identification, phonemic segmentation and blending, and letter-sound awareness was provided, children with moderate to severe language impairment and low PA skills demonstrated superior performance in their ability to identify, segment, and relate the sounds to letters in a word when compared to a no-intervention control group. Although these findings are consistent with prior research suggesting that children with low phonological awareness skills can develop PA when explicit instruction is provided, much of the research into phonological awareness intervention has excluded children with a diagnosis of moderate to severe language impairment.

Prior studies of PA interventions demonstrated their effectiveness for children at risk for reading difficulties. The knowledge that phonological awareness and letter-sound awareness are strong predictors of later reading skills (Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004; Snow, Burns, & Griffin, 1998; Storch & Whitehurst, 2002) and that effective kindergarten phonological awareness intervention skills helps children attain these skills (Blachman et al., 1994; Foorman et al.,1998) should inform kindergarten curriculum and programming decisions for school districts.

One implication for practice based on the results of the current study is that it is possible to provide intensive, direct, and explicit phonological awareness and letter-sound awareness intervention for children with moderate to severe language impairment who are at risk for reading difficulties and that this intervention will increase these skills. These children should be considered primary candidates for early intervention programs designed to prevent or limit reading disabilities. Identifying and referring these children for effective preventive intervention that includes developing PA prior to formal reading instruction in Grade 1 would decrease the potential challenges these children face when learning to read.

A second implication for practice suggested by intervention results is the effectiveness of implementation of PA programming based on research evidence. The intervention involved teaching that focused on developing skills on a phonemic awareness level and included activities that made explicit the identification of sounds in words, associated sounds with letters, and blended sounds into words, all of which has been found to be effective for children with typical language development in previous studies. Based on evidence from previous research, instruction was of an intensive nature and provided in small groups. However, to confirm that the intensive and small group conditions contributed to the positive effects of the intervention for children with language impairment, future research should include another condition that would compare on these factors.

A third implication for practice is that where educational assistants are available, successful programs can be run with existing personnel; focused allocation of staffing resources would permit the intensive intervention that was effective in this study. Additionally, ongoing instructional support and mentoring is essential for classroom staff that express commitment to such intervention.

A fourth implication for practice is that educational assistants trained on implementation of a commercially available program obtained the findings reported here. Previous studies of PA and letter-sound awareness instruction for students with language impairment have included training by research staff, speech-language pathologists or classroom teachers (Al Otaiba et al., 2009). This study provides an example of the implementation of PA and letter-sound awareness instruction under routine school conditions with trained educational assistants; similar programs could be implemented within existing schools on a regular basis, with similar results.

Study Limitations and Future Directions

These findings are constrained by several limitations. Firstly, a small sample was used. Replicating the findings of this study with a larger participant sample would yield additional data with increased statistical power. Secondly, the consistent following of the DIBELS test script, the filming and reviewing of the test sessions with each educational assistant, and the group meetings focused on assessment procedures contributed to fidelity of implementation of the DIBELS probes; however, the educational assistants were not blind to the students who were in the experimental and control groups. Thirdly, a teacher survey to gather information regarding the teaching of PA and letter-sound awareness was

administered to classroom teachers; however classroom observation to assess the impact of PA and letter-sound awareness instruction within the classroom setting was not scheduled. Fourthly, the generalizability will be limited to intensive small-group treatment using the same or a similar intervention program. Finally, the children in the current study were from a lower socio-economic group. The results may not generalize to other groups. However, since this group is considered to have a higher risk of academic underachievement in general, we believe that there is a high likelihood that it would work with groups in higher socio-economic groups as well.

Future Research

This study explored the effect of a direct, explicit, and intense phonological awareness intervention on the phonological awareness skills of initial sound identification, phonemic segmentation and blending, and letter-sound awareness for kindergarten children with moderate to severe language impairment. Prior research studies with children who did not have a diagnosis of language impairment have followed children after treatment and have found that children receiving direct, explicit, and intensive intervention have better early reading skills than children not receiving intervention (Ball & Blackman, 1988, 1991; Byrne & Fielding-Barnsley, 1991, 1993, 1995; Foorman et al., 1998). However, the effects of PA intervention on early reading with children with a diagnosis of moderate to severe language impairment has not yet been examined. To evaluate the effectiveness of prevention efforts, it would be necessary to examine the subsequent reading progress of the children who receive intervention similar to those in the current study to determine if PA and letter-sound awareness intervention has an effect on reading ability.

More research is needed to examine efficient and effective ways to teach phonological awareness and letter-sound awareness to children with moderate to severe language impairment. Treatment that resulted in children reaching age-appropriate indicators on the DIBELS would be an optimal target. Additional research is needed to examine whether enhanced results would occur if children with moderate to severe language impairment received increased initial sound identification, phonemic segmentation and blending instruction in the classroom in addition to supplemental small-group, direct, explicit, and intensive treatment. For example, if the classroom teachers provided explicit reinforcement of skills taught in the small groups during direct and center time classroom instruction. Additionally, intervention began early in the fall term with a focus on earlier PA skills (e.g., initial sound identification) coinciding with the kindergarten classroom curriculum for PA instruction and extended to the end of the kindergarten year. Future research focused on the development of PA assessment instruments for this population that had the sensitivity to measure small changes in PA growth over time is needed. For example, one student, during the tenth week of intervention, began saying sounds when given a word to segment. They were not the sounds in the word but this progress was significant because, prior to this, the DIBELS PSF score results indicated this student was unaware that there were individual sounds in words. Further, investigation into the relative contribution of vocabulary knowledge to success with phonemic segmentation is necessary. For example, the students in this study were reticent to try to segment words that were unfamiliar to them.

The speech profiles of the students in this study were not thoroughly examined. It would be of benefit if research was conducted with kindergarten children with speech difficulties and oral language impairment accompanied by poor PA skills to learn if intervention begun prior to when PA skills are required to learn to read would increase their success in learning to read.

Studies that include the systematic observation of classroom instruction in PA and letter-sound awareness is necessary to document content, delivery (e.g. scaffolded instruction for struggling PA learners) and amount of instructional time devoted to these activities.

Of crucial importance, we have yet to determine the effectiveness of the intervention if the schools implementing PA intervention in kindergarten utilized the results to guide decisions about supplemental phonological awareness and letter-sound awareness instruction for children continuing to require intervention in Grade 1. Controlling or adjusting the type of instruction that students receive after completing an intervention program should enable them to maintain intervention gains (Coyne, Kame'enui, Simmons, & Harn, 2004). For example, in order to maximize the effect of the intervention, children receiving kindergarten intervention may require a literacy program in first grade that systematically addresses developmentally appropriate phonological and alphabetic instructional principles. Continued intervention with progress monitoring is warranted to ensure stability of these skills.

Conclusion

This study investigated the effectiveness of PA intervention in improving the phonological awareness skills of kindergarten children with moderate to severe language impairment. There were statistically

significant differences between the groups and a large effect of the intervention on three of the four immediate-post-intervention measures and on all four of the maintenance measures. This study provides an example of the implementation of PA and letter-sound awareness instruction under routine school conditions with trained educational assistants. This indicates that similar programs could be implemented within existing schools for English speaking students on a regular basis.

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References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: MIT Press.

Aickin, M., & Gensler, H. (1996). Adjusting for multiple testing when reporting research results: The Bonferroni vs Holm methods. *American Journal of Public Health, 86*, 726-728.

Al Otaiba, S., Puranik, C. S., Ziolkowski, R. A., & Montgomery, T. M. (2009). Effectiveness of early phonological awareness interventions for students with speech or language impairments. *The Journal of Special Education, 43*(2), 107-128.

Alberta Education. (2005). Special education coding criteria. Retrieved from comm.contact@learning.gov.ab.ca

Alberta Health Standards (1993). Developmental Language Severity Rating Scale. Speech and Language Pathology Working Group.

Alberta Speech, Language, Hearing Association (2001). Hearing Identification Procedures. Retrieved from www.acslpa.ab.ca

Ball, E. W., & Blachman, B. A. (1988). Phoneme segmentation training: Effect on reading readiness. *Annals of Dyslexia, 38*, 208–225.

Ball, E. W., & Blachman, B. A. (1991). Does phoneme awareness training in kindergarten make a difference in early word recognition and developmental spelling? *Reading Research Quarterly, 26,* 49–66.

Bishop, D. V. M., & Adams, C. (1990). A prospective study of the relationship between specific language impairment, phonological disorders and reading retardation. *Journal of Child Psychology and Psychiatry, 31*, 1027–1050.

Blachman, B.A. (2000). Phonological awareness. In M. Kamil, P. Mosenthal, D. Pearson, & R. Barr (Eds.), *Handbook of Reading Research, Vol. 3*, (pp. 483–502). Mahwah, NJ: Lawrence Erlbaum Associates.

Blachman, B., Ball, E., Black, R., & Tangel, D. (1994). Kindergarten teachers develop phoneme awareness in low-income, inner-city classrooms: Does it make a difference? *Reading and Writing, 6*, 1–17.

Blachman, B. A., Ball, E. W., Black, R., & Tangel, D. M. (2000). *Road to the code: A phonological awareness program for young children* (5th ed.). Baltimore, MD: Brookes.

Blachman, B. A., Tangel, D. M., Ball, E. W., Black, R., & McGraw, C. K. (1999). Developing phonological awareness and word recognition skills: A two-year intervention with low-income, inner-city children. *Reading and Writing: An Interdisciplinary Journal, 11*, 239-273.

Boudreau, D., & Hedberg, N. (1999). A comparison of early literacy skills in children with specific language impairment and their typically developing peers. *American Journal of Speech-Language Pathology, 8*, 249-260.

Brace, N., Kemp, R., & Snelgar, R. (2006) *SPSS for psychologists: A guide to data analysis using SPSS for Windows* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Bus, A. G., & van Ijzendoorn, M. H. (1999). Phonological awareness and early reading: A meta-analysis of experimental training studies. *Journal of Educational Psychology, 91*, 403–414.

Byrne, B., & Fielding-Barnsley, R. (1989). Phonemic awareness and letter knowledge in the child's acquisition of the alphabetic principle. *Journal of Educational Psychology, 81,* 313–321.

Byrne, B., & Fielding-Barnsley, R. (1991). Evaluation of a program to teach phonemic awareness to young children. *Journal of Educational Psychology, 83*, 451–455.

Byrne, B., & Fielding-Barnsley, R. (1993). Evaluation of a program to teach phonemic awareness to young children: A 1-year follow-up. *Journal of Educational Psychology, 85*, 104–111.

Byrne, B., & Fielding-Barnsley, R. (1995). Evaluation of a program to teach phonemic awareness to young children: A 2- and 3-year follow-up and a new preschool trial. *Journal of Educational Psychology, 87*, 488–503.

Catts, H. W., Fey, M. E., Tomblin, J. B., & Zhang, X. (2002). A longitudinal investigation of reading outcomes in children with language impairment. *Journal of Speech, Language, and Hearing Research, 45*, 1142–1157.

Catts, H. W., Fey, M. E., Zhang, X., & Tomblin, J. B. (1999). Language basis of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies of Reading, 3*(4), 331–361.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences (2nd ed.). Hillside, NJ: Erlbaum.

Coyne, M. D., Kame'enui, E. G., Simmons, D. C., & Harn, B. A. (2004). Beginning reading intervention as inoculation or insulin: First-grade reading performance of strong responders to kindergarten intervention. *Journal of Learning Disabilities, 37*, 90–104.

Davidson, M., & Jenkins, J. (1994). Effects of phonemic processes on word reading and spelling. *Journal of Educational Research, 87*, 148–157.

Farrell, L., Hancock, C., & Smartt, S. (2006). *DIBELS the practical manual.* Longmont, CO: Sopris West Educational Services.

Fazio, B. (1997a). Learning a new poem: Memory for connected speech and phonological awareness in low-income children with and without specific language impairment. *Journal of Speech, Language, and Hearing Research, 40*, 1285-1297.

Fazio, B (1997b). Memory for rote linguistic routines and sensitivity to rhyme: A comparison of low income children with and without specific language impairment. *Applied Psycholinguistics, 18,* 345-372.

Foorman, B. R., Francis, D. J., Fletcher, J. M., Schatschneider, C., & Mehta, P. (1998). The role of instruction in learning to read: Preventing reading failure in at-risk children. *Journal of Educational Psychology, 90*, 37–55.

Foorman, B. R., & Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learning Disabilities, Research and Practice, 16*, 203–212.

Fox, B., & Routh, D. (1984). Phonemic analysis and synthesis as word-attack skills: Revisited. *Journal of Educational Psychology, 76*, 1059–1064.

Ganzeboom, H. B. G., Treiman, D. J., & Donald, J. (1996). Internationally comparable measures of occupational status for the 1988 international standard classifications of occupations. *Social Science Research, 25*, 201–239.

Good, R. H., Simmons, D. S., Kame'enui, E. J., Kaminski, R. A., & Wallin, J. (2002). *Summary of decision rules for intensive, strategic, and benchmark instructional recommendations in kindergarten through third grade* (Technical Report No. 11). Eugene, OR: University of Oregon.

Kaufman, K., & Kaufman, N. L. (2004). *Kaufman Brief Intelligence Test* (2nd ed.). Toronto, ON: Psycan.

Leonard, L. B. (1997) *Children with specific language impairment.* Cambridge, MA: MIT Press.

Lonigan, C. J., Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (no date). Test of Preschool Early Literacy (TOPEL pre-published version). Austin, TX: Pro-Ed.

Lundberg, I., (2009). Early precursors and enabling skills of reading acquisition. *Scandinavian Journal of Psychology, 50*, 611-616.

Lundberg, I., Frost, J., & Peterson, O. (1988). Effects of an extensive program of stimulating phonological awareness in preschool children. *Reading Research Quarterly, 23*, 263–284.

Muter, V., Hulme, C., Snowling, M., & Taylor, S. (1997). Segmentation, not rhyming, predicts early progress in learning to read. *Journal of Experimental Child Psychology, 65*, 370–398.

Nation, K., & Hulme, C. (1997). Phonemic segmentation, not onset-rime segmentation, predicts early reading and spelling skills. *Reading Research Quarterly, 32*, 154–167.

National Early Literacy Panel Report. (2008. Retrieved from http://www.nifl.gov/publications/pdf/NELPReport09.pdf

National Reading Panel (2000, April). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction (NIH Publication No. 00-4769) Washington, DC: U.S. Government Printing Office. Retrieved from http://www.nichd.nih.gov/publications/nrp/smallbook.htm

National Strategy for Early Literacy (2009) Report and recommendations prepared by the Canadian Language and Literacy Research Network. Retrieved from http://docs.cllrnet.ca/NSEL/finalReport.pdf

O'Connor, R. Bocian, K., Beebe-Frankenberger, M., & Linklater, D. (2010). Responsiveness of students with language difficulties to early intervention in reading. *Journal of Special Education, 43*, 220-235.

O'Connor, R., Jenkins, J., & Slocum, T. (1995). Transfer among phonological tasks in kindergarten: Essential instructional content. *Journal of Educational Psychology, 81*, 202–217.

O'Connor, R., Notari-Syverson, A., & Vadasy, P. (1996). Ladders to literacy; The effects of teacher-led phonological activities for kindergarten children with and without disabilities. *Exceptional Children, 63*, 117-130.

Phillips, B., Clancy-Menchetti, J., Lonigan, C. (2008). Successful phonological awareness instruction with preschool children: Lessons from the classroom. T*opics in Early Childhood Special Education, 28*, 03-17.

Portney, L., & Watkins, M. (2000). *Foundations of clinical research: Applications to practice.* Toronto, ON: Prentice-Hall Canada, Inc.

Puranik, C., Petscher, Y., Al Otaiba, S., Catts, H., & Lonigan, C. (2008). Development of oral reading fluency in children with speech or language impairments: A growth curve analysis. *Journal of Learning Disabilities, 41*, 545-560.

Schatschneider, C., Fletcher, J., Francis, D., Carlson, C., & Foorman, B. (2004). Kindergarten prediction of reading skills: A longitudinal comparative analysis. *Journal of Educational Psychology, 96*, 265–282.

Scheule, C. M., & Boudreau, D. (2008). Phonological awareness intervention: Beyond the basics. *Language, Speech, and Hearing Services in Schools, 39*(1), 3-20.

Scheule, C. M., Justice, L., Cabell, S., Knighton, K., Kingery, B., & Lee, M. (2008). Field-based evaluation of two-tiered instruction for enhancing kindergarten phonological awareness. *Early Education and Development, 19*, 726-752.

Scheule, C. M. Spencer, E., Barako-Arndt, K., & Guillot, K. (2007). Literacy and children with specific language impairment. *Seminars in Speech and Language, 28*(1), 35-47.

Schulz, K. F., & Grimes, D. A. (2002). Unequal group sizes in randomized trials: Guarding against guessing. *Lancet, 359*, 966-70.

Segers, E., & Verhoeven, L. (2004). Computer-supported phonological awareness intervention for kindergarten children with specific language impairment. *Language, Speech, and Hearing Services in Schools, 35*, 229-239.

Smith, V. (2004). Preventing early reading failure: An examination of the implementation of a phonological awareness program for young children. *Dissertation Abstracts International, 65* (08), 2939.

Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children: Committee on the prevention of reading difficulties in young children.* Washington, DC: National Academy Press.

Snowling, M. J. (2005). Literacy outcomes for children with oral language impairments: Developmental interactions between language skills and learning to read. In H. W. Catts & A. G. Kamhi (Eds.). *The connections between language and reading disabilities* (pp. 55-75). Mahwah, NJ: Erlbaum.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in reading. *Reading Research Quarterly, 21*, 360–407.

Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology, 38*, 934–947.

Tangel, D., & Blachman, B. A. (1992). Effect of phoneme awareness instruction on kindergarten children's invented spelling. *Journal of Reading Behavior, 24*, 233–261.

Tomblin, J. B., Records, N., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M. (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech, Language, and Hearing Research, 40*, 1245–1260.

Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities, Research and Practice 15*, 55–64.

Torgesen, J. K., Morgan, S., & Davis, C. (1992). The effects of two types of phonological awareness training on word learning in kindergarten children. *Journal of Educational Psychology, 84*, 364–360.

Torgesen, J. K., Wagner, R. K., Rashotte, C., Alexander, A., & Conway, C. (1997). Preventive and remedial interventions for children with severe reading disabilities. *Learning Disabilities: A Multi-Disciplinary Journal, 8*(1), 51–61.

Warrick, N., Rubin, H., & Rowe-Walsh, S. (1993). Phoneme Awareness in language-delayed children: Comparative studies and intervention. *Annals of Dyslexia. 43*, 153-173.

Wiig, E. H., Secord, W., & Semel, E. (2004). *Clinical Evaluation of Language Fundamentals-Preschool-2.* Toronto, ON: The Psychological Corporation.

Yeh, S. (2003). An evaluation of two approaches for teaching phonemic awareness to children in Head Start. *Early Childhood Research Quarterly, 18,* 513–529.

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Un Test de Phonologie du Français : Construction et Utilisation

A Test of French Phonology: Construction and use

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MOTS CLÉS

DÉVELOPPEMENT DE LA PHONOLOGIE

ÉVALUATION DU FRANÇAIS MANITOBAIN

PHONOLOGIE DU FRANÇAIS CANADIEN

TRANSLINGUISTIQUE

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Abrégé

Les orthophonistes n'ont que peu d'options pour l'évaluation phonologique du français canadien et à ce jour il n'y a encore pas de test avec des normes (Brosseau-Lapré, Rvachew, Arcand, & Leroux, 2011). Ce rapport présente un nouvel outil pour l'évaluation de la phonologie pour le français canadien (emphase: Manitoba), dont la structure vise à couvrir l'inventaire complet des phonèmes et des structures de mots du français canadien, dans le cadre théorique de la phonologie non-linéaire. Les objectifs du rapport sont: (a) de présenter un survol de la phonologie non-linéaire et démontrer comment les modèles de phonologie expliquent les phénomènes impliquant des segments non adjacents, (b) de décrire, brièvement, la phonologie du français Manitobain, (c) d'examiner les caractéristiques phonologiques de la liste de mots (p. ex. l'échantillonnage et la structure syllabique) et (d) d'expliquer, en bref, comment administrer, transcrire et analyser les données du test.

Abstract

Clinicians have had limited resources for conducting phonological evaluations of Canadian Francophone children and to this day, there are no standardized tests of French-Canadian phonology (Brosseau-Lapré, Rvachew, Arcand, & Leroux, 2011). The current paper presents a new assessment tool to evaluate the segments and structures of Canadian French phonology (emphasis on Manitoba French) in the context of a nonlinear phonological framework. The objectives of this article are to: (a) present an overview of nonlinear phonology and explain how models of phonology account for non-adjacent segments, (b) provide an overview of Manitoba French phonology, (c) examine the phonological characteristics of the French word list (e.g. segment sampling and syllabic structure), and (d) explain, briefly, how to administer, transcribe, and analyze data from the test.

Jusqu'à récemment, les orthophonistes n'avaient que peu d'options pour l'évaluation phonologique du français canadien et à ce jour il n'y a encore pas de test avec des normes (Brosseau-Lapré, Rvachew, Arcand, & Leroux, 2011). Cet article fait le point sur un nouvel outil d'évaluation du développement phonologique chez l'enfant pour le français canadien (axé sur le français du Manitoba) dont la structure vise à couvrir l'inventaire complet des phonèmes et des structures de mots du français canadien. Le test de phonologie du français s'inscrit dans le cadre théorique de la phonologie non-linéaire que l'on peut utiliser dans plusieurs dialectes du français canadien. L'outil est présentement utilisé par des orthophonistes de la Division scolaire franco-manitobaine.

Phonologie non-linéaire

Dans les premiers modèles phonologiques « linéaires », le développement phonologique chez l'enfant et le répertoire adulte résultant étaient expliqués par des règles dont la formulation n'admettait implicitement que des relations entre segments adjacents (p. ex. Chomsky & Halle 1968). Par exemple, lorsque la production de l'enfant ne correspondait pas à la cible de l'adulte, les modèles linéaires ne pouvaient expliquer que les patrons phonologiques correspondant à un seul changement de trait adjacent (p. ex. omission d'une consonne finale). Par contraste, lorsque la production de l'enfant nécessitait une description plus complexe, les modèles linéaires ne pouvaient pas expliquer facilement les patrons phonologiques. Les modèles phonologiques non-linéaires ont donc pris plus d'ampleur dans les années 1970 (p. ex. Goldsmith, 1976), pour combler les lacunes des modèles précédents quant à la représentation et l'explication des phénomènes impliquant des segments non adjacents (consonnes ou voyelles). Pour plus d'information sur la phonologie non-linéaire, nous suggérons au lecteur de consulter les travaux de Bernhardt & Stemberger (1998), de Bernhardt & Zhao (2010) et de Prince & Smolensky (1993).

Les modèles non-linéaires admettent :

a) Une représentation hiérarchique, où chaque aspect de la phonologie (la consonne, la voyelle, les parties de la syllabe, la syllabe entière, le mot prosodique, etc.) est décrit comme une superposition de plusieurs niveaux phonologiques, de la phrase phonologique au niveau supérieur aux traits phonologiques au niveau inférieur (voir les Figures 1 et 2). Par exemple, selon la représentation hiérarchique, le mot *bol* contient un pied (*bol*), une syllabe (*bol*), une attaque (/b/), et une rime (/ɔl/) qui est composée du noyau (/ɔ/) et de la coda (/l/). La syllabe *bol* contient trois segments (/b/, /ɔ/ et/l/) et chacun des segments est constitué de traits qui sont organisés selon une hiérarchie géométrique (communément appelé « feature geometry ») (voir la Figure 2). Le segment /b/, par exemple, est composé des traits suivants: [+ consonantique], [- continu] (nodale du mode d'articulation), [labial] (nodale du point d'articulation), [+ voisé] (nodale du voisement). Chacun des traits occupe une place dans la hiérarchie géométrique.

b) L'autonomie de la représentation et de la fonction à chaque niveau. Dans un tel cadre, la production phonologique est le résultat des phénomènes opérant à chaque niveau ainsi que des interactions entre divers niveaux (Bernhardt & Stemberger, 1998; Bernhardt & Zhao, 2010).

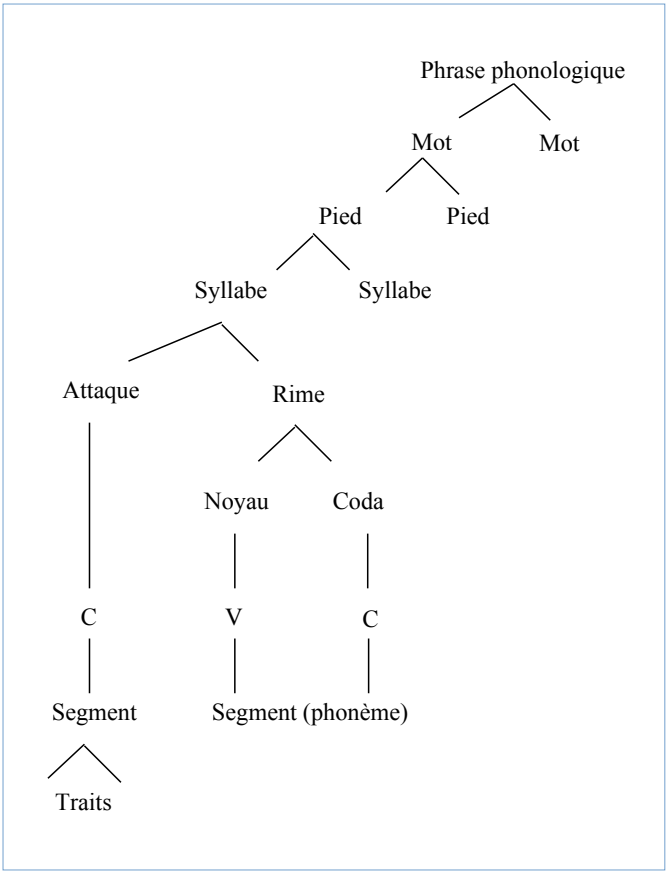

Figure 1. Représentation des divers niveaux phonologiques, du niveau des traits phonologiques jusqu'au niveau de la phrase phonologique.

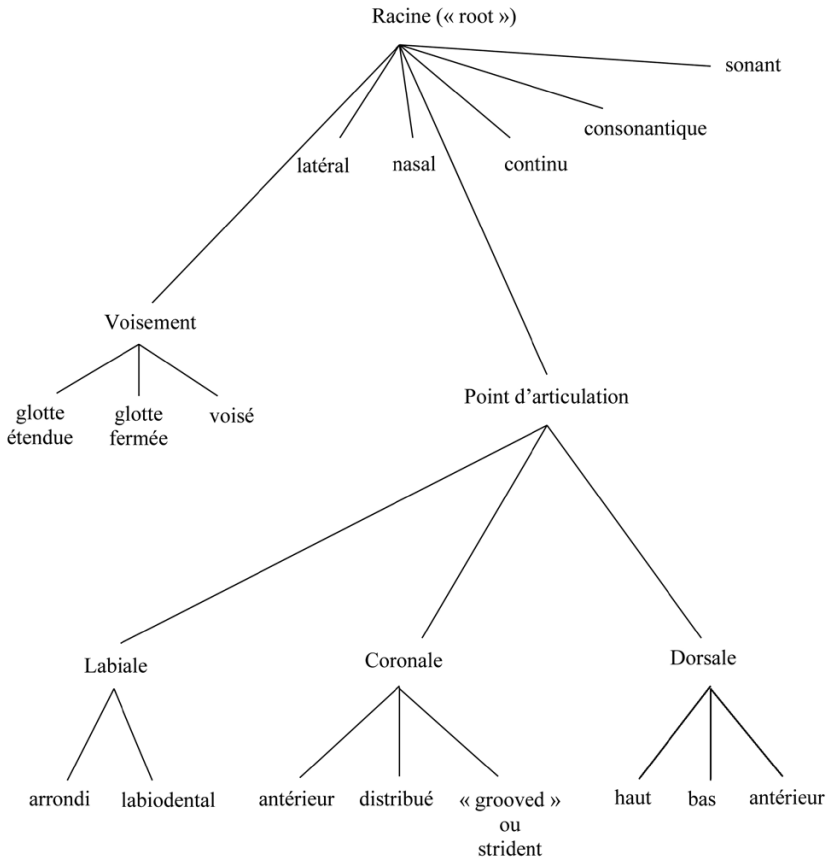

Figure 2. Représentation des divers niveaux des traits phonologiques selon la hiérarchie géométrique, de la racine (« root ») jusqu'au niveau du lieu d'articulation.

Les exemples suivants, tirés du test de phonologie en français, permettent une comparaison des modèles linéaires (L) et non-linéaires (NL).

Adulte	Enfant	Explication (L et NL) avec exemples
1. /éˈtwal/ étoile	[eˈpwal]	Une séquence-cible composée d'une [coronale] (/t/) et d'une [labiale] (/w/) ne peut être produite. La production de la plosive est entièrement [labiale].
2. /ʔipɔpɔˈtam/ hippopotame	[ʔipɔpɔˈpam]	Une séquence-cible composée d'une [labiale] (/p/) et d'une [coronale] (/t/) ne peut être produite. La production de la seconde plosive devient aussi [labiale]. NL: Il existe un niveau phonologique indépendant (ne comportant que les consonnes) où les deux consonnes sont adjacentes et doivent partager le même point d'articulation, dans ce cas, [labial]. L: Requiert une série de règles compliquées et arbitraires parce que les consonnes ne sont pas adjacentes en surface.
3a) /kɔ.ˈʃ ɔ̃/ cochon	[kɔ.ˈʃ ɔ̃]	NL: Il existe un niveau phonologique indépendant entre les niveaux prosodiques et segmentaux où les voyelles accentuées sont distinctes des autres. Ce niveau régit la distribution du trait [nasal], possible dans une syllabe accentuée. Donc, il y a l'élision de la voyelle nasale dans le mot « montagne » ; mais la même voyelle nasale est produite dans le mot « cochon ». L: Requiert une série de règles compliquées, ce qui rend le contraste entre cochon et montagne très arbitraire.
3b) /mɔ̃.ˈtaŋ/ montagne	[ˈtaŋ]	

Dans les exemples 1 et 2, les mots étoile et hippopotame comportent tous les deux une interaction entre une consonne [coronale] et une consonne [labiale]. Dans le cas d'étoile, les deux consonnes (/t/ et /w/) sont immédiatement adjacentes (et adjacentes en surface), alors que dans le cas d'hippopotame, les deux consonnes (/p/ et /t/) sont séparées par une voyelle (et non-adjacentes en surface). Les relations entre des segments qui ne sont pas adjacents en surface sont difficiles à représenter et à expliquer à l'intérieur des théories dites linéaires sans faire appel à plusieurs règles compliquées et arbitraires (dû, entre autres, à leurs prédictions implicites d'une interférence venant de la voyelle interposée). Par contre, dans une représentation non-linéaire, où les consonnes et les voyelles appartiennent à des niveaux phonologiques distincts, le problème des voyelles interposées s'efface et les relations entre les consonnes peuvent être vues comme des relations adjacentes (Bernhardt & Stemberger, 1998) (voir la Figure 3).

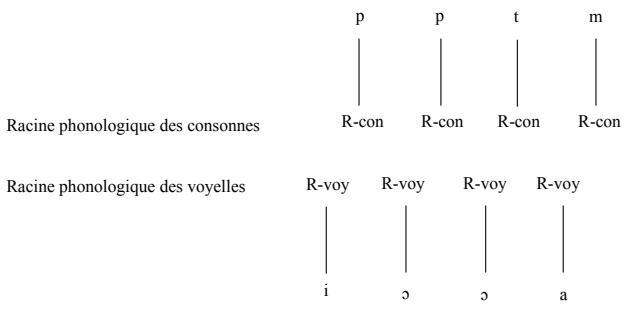

Figure 3. Représentation non-linéaire, où les consonnes et les voyelles appartiennent à des niveaux phonologiques distincts, soit la racine phonologique des consonnes, soit la racine phonologique des voyelles.

De même, le troisième exemple illustre l'avantage de faire appel à une représentation comportant plusieurs niveaux phonologiques pour expliquer le contraste entre la production correcte de cochon (3a) et montagne (3b) en termes d'interaction entre les niveaux prosodiques et segmentaux. Ainsi, bien que les voyelles nasales soient possibles, elles ne le sont qu'en syllabe accentuée, et pas en syllabe inaccentuée, ce qui explique l'élision de la syllabe initiale de montagne.

Les listes de mots pour l'évaluation de la phonologie doivent tenir compte de telles interactions potentielles entre le mode d'articulation, le point d'articulation ainsi que la structure prosodique (p. ex. la longueur du mot, les groupes consonantiques et l'accentuation des syllabes) et doivent représenter une riche variété de contextes pour chaque phonème-cible (Bernhardt & Stemberger, 1998; James, van Doorn, & McLeod, 2007; Kehoe, 2001; Morgenstern et al., 2010).

Dans cette perspective, et en guise de fondement pour la construction de la liste de mots proposée, il convient de considérer brièvement les grandes lignes du français canadien et manitobain.

Phonologie du français manitobain

Le français canadien est la langue majoritaire du Québec et une langue minoritaire dans le reste du Canada. Le français manitobain est parlé par plus de 44 000 personnes, résidant principalement à Winnipeg et St-Boniface (Statistique Canada, 2007). L'information présentée ici se rapporte au français manitobain, dans la mesure où des données suffisantes sont disponibles. Dans le cas contraire, elle se rapporte aux variétés d'autres provinces, et n'est donc peut-être pas entièrement représentative de la variété manitobaine. En outre, le fait que la majorité des franco-manitobains soient bilingues (français-anglais) constitue un niveau de complexité additionnel, puisqu'il est possible que certaines des caractéristiques du français manitobain découlent de ce bilinguisme. Bien que la complexité qu'apporte le niveau du bilinguisme dans la production des phonèmes ciblés soit un phénomène important, cette question va au-delà des objectifs de cet article.

Consonnes

Le français manitobain comporte 21 consonnes: six plosives, trois nasales, sept fricatives, trois semi-voyelles, et deux liquides (voir tableau 1). Ces consonnes sont groupées en classe de segments selon les traits suivants (d'après Bernhardt & Stemberger, 2000):

Mode d'articulation

1. Plosives: [-continu, -sonnant]: /p,t,k,b,d,g/
2. Nasales: [-continu, +sonnant, +nasal]: /m,n{ŋ/ɲ}/
3. Semi-voyelles: [-consonantique, +sonnant]: /w,ɥ,j/
4. Fricatives: [+continu, -sonnant]: /f,v,s,z,ʃ,ʒ, (ʁ)/ (variations de la production /ʁ/)
5. Affriquées: [-continu, +continu], ou [-continu, +strident]: /ts,dz/ (allophones de /t,d/)
6. Liquides:
    a. [+latéral]: /l/
    b. [+roulé] /r, R/ (voir la section « patrons de rhotiques » qui suit)

Point d'articulation

1. Labiales:
    a. [+arrondi]: /w, ɥ/

b. [-arrondi, -labiodental]: /p, b, m/

c. [-arrondi, +labiodental]: /f, v/

2. Coronales:

a. [+antérieur]: /t, d, n, l, s, z, (r)/

b. [-antérieur]: /ʃ, ʒ, ɥ, j, (ɲ)/

3. Dorsales:

a. Vélaire: [+haut]: / k,g,ŋ/

b. Uvulaire: [-haut, -bas]: /(ʁ)/ (voir la section « patrons des rhotiques » qui suit)

4. Labio-dorsale: /w/

5. Coronales-dorsales: /j, ɲ/

6. Labio-coronale: /ɥ/

Voisement

1. Voisés: [+voisé]: /b, d, g, v, z, ʒ, (ʁ)/ (le segment /ʁ/ est produit par certains locuteurs)

2. Sourdes: [-voisé]: /p, t, k, f, s, ʃ/

Nous considérerons maintenant quelques patrons du français manitobain qui impliquent des consonnes (voir Baligand, 1995; Hallion-Bres, 2000; Walker, 1984 pour une description détaillée). Dans les cas où les données sur le français manitobain sont insuffisantes, les données d'autres dialectes du français canadien sont rapportées et les dialectes en question sont clairement identifiés.

1. Patrons des rhotiques: La réalisation de la rhotique du français manitobain peut varier pour un même locuteur, et d'un locuteur à l'autre. Par exemple, Hallion-Bres (2000) a observé que la coronale roulée [r] est plus souvent produite par des locuteurs âgés. La fricative dorsale ([ʁ]) ou roulée ([R]) est plus fréquente chez les plus jeunes locuteurs. La fricative [ʁ] est souvent dévoisée en position de coda, ou entre deux voyelles.

2. 2. Affrication: En français manitobain, comme dans les dialectes de l'Ontario et du Québec, les plosives coronales (/t, d/) deviennent affriquées (assibilation) devant les voyelles et les semi-voyelles antérieures hautes /i, I, y, ʏ, j, ɥ/, par exemple: tuque [tsʏk] et crocrodile [kʁɔkɔˈdzIl].

Tableau 1. Consonnes du français manitobain, par modes et points d'articulation

	Labiales		Coronales			Dorsales	
		[+labiodent]	[+antérieur] (alvéolaire)	[antérieur]		[+haut] (vélaire)	[-haut], [-bas] (uvulaire)
Plosives	p		t d ts[a] dz[a]			k g	
[-cont]	b						
Nasales	m		n		(ɲ)	ŋ	
[+nasal]							
Fricatives		f v	s z	ʃ ʒ			ʁ
[+cont, -son]							
Semi-consonnes	w[b]			ɥ[b]	j	w[b] j[b]	
[-cons]	ɥ[b]						
Liquides			l				
[+latéral]			[+ latéral]				
[+roulé]			(r)				ʀ

NB.: Adaptée de Walker (1984), avec les traits de la phonologie non linéaire. [cont]=[continu], [cons]=[consonantique], [son]=[sonnant], [labiodent]=[labiodental]. Les parenthèses indiquent une variante possible pour certains locuteurs/contextes.

[a] Les affriquées sont les allophones [+strident] des plosives /t/ et /d/ et pourraient être caractérisées comme [-continuant, +continuant].

[b] On considère que les semi-consonnes ont deux points d'articulation.

3. Aspiration: La consonne /h/ et l'aspiration se retrouvent dans plusieurs circonstances:
    a. Débuccalisation (remplacement de /ʃ/ and /ʒ/ par /h/): On rapporte parfois (Hallion-Bres, 2000) des variantes débuccalisées pour des mots comme toujours: /tʏˈʒuʁ/ ~ [tʏhuʁ].
    b. Prononciation du « h » orthographique: Bien que le « h » orthographique soit généralement muet, en français manitobain et dans d'autres dialectes tels que le français de l'Alberta, il arrive qu'il soit prononcé dans des mots comme hiver [hivɛʁ] ou dehors [dəhɔʁ] (Hallion-Bres 2000; Rochet, 1994; Rose & Wauquier-Gravelines, 2007; Walker, 1984).
    c. Aspiration: Le français manitobain, de même que le français acadien, présente parfois un patron d'aspiration qui rappelle celui de l'anglais, dans des mots comme cadeau [kʰado] (Hallion-Bres, 2000; Peronnet, 1995).
4. Élision de consonnes: Il existe plusieurs contextes où les consonnes peuvent être élidées en français canadien:
    a. Élision de /l/. L'élision du /l/ des articles le et la est bien documentée pour le français manitobain, dans des cas comme « (…) met la table » [mɛlatab] ~ [mɛa:tab]. On a aussi rapporté des cas à l'intérieur des mots, entre deux voyelles, comme pour balançoire ([balɑ̃swɑʁ] ~ [baɑ̃:swɑʁ]) (Hallion-Bres, 2000).
    a. Élision de /v/. Un /v/ intervocalique ou dans une séquence impliquant une semi-voyelle est parfois élidé en français manitobain, comme dans hiver [ʔivɛʁ] ~ [ʔiɛʁ] ou voiture [vwatsyʁ] ~ [watsyʁ] (Hallion-Bres, 2000).
    a. Consonnes finales. Comme dans d'autres dialectes du français canadien (p. ex. le français en Ontario), certaines consonnes sont parfois élidées en finale de mot en français manitobain. Cette catégorie d'élision affecte les consonnes suivant une autre consonne [-sonnante], et s'applique aux séquences de deux consonnes (p. ex. dentiste: /dɑ̃tɪst/ ~ [dɑ̃tɪs]) ou de trois consonnes (p. ex. monstre: /mɔ̃stʁ/ ~ /mɔ̃s/) (Hallion-Bres, 2000; Walker, 1984)

Voyelles

Le français manitobain comporte 13 voyelles orales et quatre voyelles nasales (/ɛ̃ œ̃ ɑ̃ ɔ̃/) (voir Tableau 2 et le Tableau 3)

Tableau 2. Voyelles du français manitobain, selon les points d'articulation

Labiales			Coronales		Dorsales		
[+arrondi]	[+tendu]	[-tendu]	[+avant]	[+arrière]	[+haut]	[-haut] & [-bas]	[+bas]
y ʏ ø œ œ u o ɔ œ̃ ɔ̃	i e a y ø	ɪ ɛ ɛˈ ʏ œ	i ɪ e ɛ ɛˈ a	ʌ ə ɔ u	i ɪ y ʏ u	e ɛ ɛˈ ø	a œ ɑ ɑ̃
	u o ɑ ɑ̃	œ ə	y ʏ ø œ	o ɑ ɑ̃ ɔ̃		œ o ɔ ɛ̃	
	ɛ̃ œ̃ ɔ̃		œ ɛ̃ œ̃			œ̃ ɔ̃	

Tableau 3. Fréquence des voyelles accentuées et non accentuées dans la liste de mots pour le français manitobain.

	ə	a	ɑ	o	ɔ	e	ɛ	ɛˈ	i	ɪ	ø	œ	ʊ	ʏ	y	ɔ̃	ɑ̃	ɛ̃	œ̃
Accentuées	0	15	2	6	5	2	3	3	7	2	3	5	3	8	2	2	5	3	2
Non accentuées	3	20	5	2	16	8	14	0	11	1	1	0	4	0	4	8	7	4	0

Voyelles nasales

1. /ɛ̃/: Le français manitobain, comme les autres dialectes de l'Ouest canadien, mais contrairement aux dialectes européens, maintient un contraste entre /ɛ̃/ et /œ̃/ (Larivière, 1994; Rochet, 1994). En outre, on rapporte que /ɛ̃/ est plus tendu que dans les autres dialectes du français canadien (Hallion-Bres, 2000).
2. /ɑ̃/: La voyelle basse non-arrondie comporte deux variantes: [ɑ̃], et sa variante antérieure [ä], qui se retrouve principalement en syllabe accentuée ouverte (Hallion-Bres, 2000)
3. Neutralisation:
    a. Pour certains locuteurs du français manitobain, on observe une neutralisation de /ɑ̃/ vers [ɛ̃]. Cette neutralisation n'a toutefois pas la même ampleur que dans d'autres dialectes canadiens, tels que le français acadien (Peronnet, 1995).
    b. Pour certains locuteurs du français manitobain on observe une neutralisation de /ɔ̃/ vers [ɑ̃], en particulier si la syllabe suivante contient un /ɑ̃/ (Hallion-Bres, 2000).
4. Patrons pour les diphtongues: En français manitobain comme dans les autres dialectes canadiens, chacune des quatre voyelles nasales peut être produite comme une diphtongue nasale, en particulier en syllabe accentuée fermée. Ainsi, des mots comme lampe (/lɑ̃p/) ou ongle (/ɔ̃gl/) peuvent être prononcés [lɑ̃ʊ̃p] et [ɔ̃ʊgl] (Hallion-Bres, 2000).
5. Dénasalisation: Dans certaines régions de l'Est manitobain (p. ex. Ste-Rose du Lac), les locuteurs adultes dénasalisent certaines voyelles nasales, en particulier /ɑ̃/. Les voyelles nasales en syllabes ouvertes inaccentuées semblent particulièrement vulnérables à cette dénasalisation (cf. fontaine: /fɔ̃tɛn/ prononcé [fɔtɛn]) (Hallion-Bres, 2000).

Voyelles orales

Les voyelles orales du français manitobain se comportent de manière similaire à celles des autres dialectes du français canadien.

1. Relâchement des voyelles hautes: Pour certains locuteurs, les voyelles hautes tendues (/y,i,u/) deviennent relâchées (Hallion-Bres, 2000):
    a. En syllabe accentuée fermée, dont la coda est une consonne voisée (p. ex. toujours /tʏʒuʁ/ → [tʏʒʏʁ]).
    a. En syllabe accentuée ouverte (p. ex. vit /vi/ → [vɪ]).
2. Dévoisement/élision: Les voyelles orales sont parfois dévoisées, voire même élidées, entre deux consonnes (Hallion-Bres, 2000). En particulier:
    a. Entre deux consonnes non-voisées. En cas d'élision, la consonne précédente peut, optionnellement, être allongée. Par ex.: assistant: /asistɑ̃/ → [asi̥stɑ̃] ~ [as:tɑ̃] ~ [astɑ̃].
    b. Les voyelles hautes tendues peuvent être élidées entre des consonnes voisées continues. Par ex.: disons: /dizɔ̃/ → [dzɔ̃], vous avez: /vu.zave/ → [vzave].
3. Diphtongues: Selon le corpus de Hallion-Bres (2000), les voyelles orales ne peuvent devenir des diphtongues qu'en syllabe accentuée. Par exemple: icône: /ikon/ → [ikown].

Liste de mots pour un échantillon français manitobain

Ce projet fait partie d'une recherche translinguistique, incluant le français du Manitoba, qui examine le développement phonologique d'enfants. Nous avons construit un test semblable qui contient un échantillon représentatif de la phonologie pour chaque langue. Pour l'évaluation de la phonologie en anglais, Grunwell (1985) a recommandé d'utiliser un échantillon d'au moins 100 mots, pour que l'évaluation de la phonologie puisse être représentative en termes de segments et de structures de mots. C'est dans cette perspective qu'une liste de 111 mots présentée ici pour le français manitobain a été conçue avec deux objectifs principaux:

a. Efficacité: Selon les orthophonistes qui utilisent présentement le test, la liste de mots ne prend que 20 à 30 minutes à compléter (une marionnette et des images sont utilisées pour encourager les enfants à produire les mots). Pour certains enfants qui ont des troubles plus sévères de la phonologie, le test peut prendre jusqu'à 40 minutes.

b. Représentativité: Chaque segment est représenté deux fois dans la liste (une fois dans la syllabe accentuée et une fois dans la syllabe inaccentuée) et apparaît dans des mots de différentes longueurs et dans une variété de structures.

Les mots dans le test sont familiers aux enfants et sont représentés par des images/photos en couleur.

Certains mots ont été tirés des listes disponibles dans les universités françaises et canadiennes comme les Nouvelles épreuves pour l'examen du langage (Chevrie-Muller & Plaza, 2001) et le Protocole expérimental de l'Université de Montréal (Bergeron, 1982) en y ajoutant des mots avec lesquels les Manitobains seraient familiers et en portant attention particulière à la longueur et à la complexité des mots. La plupart des mots se retrouvent dans les Inventaires MacArthur du Développement de la Communication (Boudreault, Cabriol, Trudeau, Poulin-Dubois, & Sutton, 2007), et possèdent un haut degré d'imagerie (principalement des noms et aussi quelques verbes, adjectifs et adverbes). De plus, la proportion des segments représentés dans le test reflète la fréquence des segments de la langue française ; par exemple, il y a une plus grande proportion des segments /s/ et /k/ que les segments /z/ et /ʒ/ (New & Pallier, 2001).

Cet outil est ciblé pour les enfants entre l'âge de 3 à 9 ans et une variété de mots multisyllabiques ainsi que des phonèmes acquis soit plus tôt (p. ex. des bilabiales), soit plus tard (fricatives coronales [–antérieure]), sont utilisés afin d'identifier les enfants qui ont un retard ou un trouble de la phonologie (James et al. 2007). Le clinicien peut sélectionner des mots particuliers dans le test selon le niveau de développement de l'enfant.

Caractéristiques phonologiques de la liste de mots

Considérons maintenant en détails l'échantillonnage et les caractéristiques des mots en ce qui concerne la longueur, l'accentuation, la structure syllabique et les consonnes et voyelles contenus dans la liste (voir le tableau 4).

Tableau 4. Types de mots et fréquence (en ordre croissant de longueur), avec les mots-cibles de la liste pour le français manitobain.

Types de mot	#	Mots-cibles
Monosyllabes		
CVC	20	Bol, Bulle, Phoque, Jambe, Langue, Lampe, Lave, Neige, Pomme, Peigne, Rêve, Robe, Rouge, Singe, Soupe, Tête, Tasse, Tuque, Vache, Vague
CCV	8	Bien, Bleu, Brun, Chien, Doigt, Noix, Nuit, Roi
CV	7	Queue, Feu, Gant, Lait, Nez, Zoo
CCVC	6	Cloche, Clown, Fleur, Fraise, Plume, Soif
CVCC(C)	3	Livre, zèbre, monstre
VCC	2	Ours, ongle
CCVCC	1	Triste
CVV	1	Jouet
VC	1	Oeuf
VCCC	1	Arbre
V	1	Un
Disyllables		
CV.CVC	11	Chandelle, Fontaine, Gorille, Girafe, Montagne, Mouffette, Musique, Saucisses, Salade, Tomate, Valise
CV.CV	9	Cadeau, Cochon, Des oeufs, Gâteau, Lapin, Maison, Nager, Robot, Cheveux
CCV.CV	4	Drapeau, Piano, Plonger, Poisson
CCV.CVC	4	Glissade, Grenouille, Princesse, Voiture
CVC.CVC	4	Cache-cache, Casquette, Docteur, Sorcière
CVC.CV	2	Tortue, Biscuit, Camion
CV.CCVC	2	Lumière, Citrouille
V.CVC	2	Échelle, hiver

CV.CCVC	1	Camion
CV.V	1	Jouet
V.CV	1	Hibou
CV.VC	1	Nuage
CCV.V	1	Bleuet
CCVC.CVC	1	Tracteur
V.CCVC	1	Étoile
Multisyllabes		
CV.CV.CV	6	Kangourou, Chocolat, Champignon, Cheminée, Magasin, Perroquet
V.CV.CV	2	Araignée, Éléphant
V.CV.CVC	2	Écureuil, Hôpital
CV.CV.CCVC	2	Balançoire, Dentifrice
CV.CV.CVC	1	Dinosaure
CVC.CV.CV	1	Restaurant
CCV.CV.CVC	1	Crocodile
VCC.V.CCVC	1	Arc-en-ciel
V.CV.CV.CVC	1	Hippopotame

Longueur

Des études qui ont examiné la phonologie des enfants francophones indiquent que 50% des mots dans le répertoire des enfants sont des mots dissyllabiques, 33% sont des mots monosyllabiques (surtout de forme CV et CVC) et qu'environ 17% sont des mots de trois ou quatre syllabes (Demuth & Johnson, 2003; Rose, 2000). Par conséquent, la liste de mots proposée ici a été construite en tenant compte de cette distribution, de manière à respecter la proportion relative entre les mots monosyllabiques (43%), dissyllabiques (42%) et plurisyllabiques (15%).

Accentuation

On considère que le français est une langue syllabique, c'est-à-dire que la syllabe constitue l'unité rythmique de la structure prosodique (Wenk & Wioland, 1982). L'accent unique est marqué par un allongement vocalique et tombe de manière prévisible sur la dernière syllabe d'une phrase prosodique, qui peut comporter un ou plusieurs mots. Au cours des premiers stades du développement du langage, les enfants francophones ont tendance à produire des mots dissyllabiques (un pied binaire) et à tronquer les mots trisyllabiques pour en faire des mots dissyllabiques. D'ailleurs, les premiers mots ont souvent la forme de syllabes dupliquées, par exemple: porte-monnaie: /pɔʁtmɔnɛ/ → [nɛnɛ] (Demuth & Johnson, 2003; Rose, 2000), où la syllabe dupliquée est souvent celle qui est accentuée. Dans l'exemple de la production [nɛnɛ] pour le mot porte-monnaie, l'accent tombe sur la syllabe finale qui est dupliquée. Le fait d'inclure des mots de différentes longueurs dans la liste permet donc d'observer l'interaction entre l'emplacement de la syllabe dans le mot (l'accentuation est toujours dans la dernière syllabe) et la réalisation des segments. Pour chaque élément de l'inventaire du français (consonnes, voyelles orales et voyelles nasales), la liste comporte au moins un mot disyllabique où cet élément se retrouve en syllabe accentuée et en syllabe inaccentuée. Par exemple, dans les mots cochon et montagne, bien que la production de la voyelle nasale /ɔ̃/ est possible dans la syllabe accentuée (cochon), elle est omise en syllabe inaccentuée (montagne). La comparaison entre les modèles phonologiques linéaires et non-linéaires suggère que l'inclusion de mots avec ces différences est importante.

Structure syllabique

Il existe plusieurs patrons de mots français, selon qu'ils comportent des syllabes ouvertes ou fermées, avec ou sans attaque; les plus communs sont les monosyllabes de types CV, CVC, CCV(C), CVC(C) et (C) VC(C) (New & Pallier, 2001; Sprenger-Charolles & Siegel, 1999). Il n'y aucune donnée en français sur la fréquence des structures syllabiques des mots dissyllabiques et des mots multisyllabiques (Rose & Wauquier-Gravelines,

2007; Stokes, Kerns, & Dos Santos, 2012); cependant, la majorité des mots dissyllabiques choisi dans le test sont des mots familiers qui font partis des Inventaires MacArthur du Développement de la Communication (Boudreault et al., 2007) et dont la structure syllabique est CVCV, CCVCV, et VCV.

Comme l'illustre le tableau 4 (qui contient tous les mots du test), la liste proposée pour le français constitue un échantillon représentatif des patrons de mots chez l'enfant. La majorité des monosyllabes de la liste sont de type CVC et CCV(C), suivi de ceux de types CV(C) and (C)VC(C), alors que la majorité des dissyllabes sont de type CVCV, CVCVC, CCVCV(C) et CVCCV(C). Le test est donc constitué de mots dont les structures syllabiques sont représentatives des patrons de mots en français, tant sur le plan du nombre de syllabes que sur le plan de l'attaque et de la rime. La liste contient en outre 17 mots multisyllabiques.

Consonnes et voyelles

Comme on peut le voir dans les tableaux 3 et 5, la liste comporte chacune des voyelles et des consonnes du français, dans toutes les positions (à l'intérieur des limites permises par les règles phonologiques du français).

En outre, les séquences de consonnes ont été équilibrées de manière à obtenir un échantillon comportant des consonnes avec une variété de modes et de points d'articulation. En ciblant des consonnes dans une variété de modes et de points d'articulation, les cliniciens peuvent observer des patrons phonologiques tels que la métathèse, l'assimilation, l'épenthèse et la coalescence. Par exemple, les consonnes dans le mot grenouille (/gʀənuj/) comportent une plosive, une liquide, une nasale et une semi-consonne (modes d'articulation), de même qu'une vélaire, une uvulaire, une coronale et une coronale-dorsale (point d'articulation).

L'Administration du test

L'administration du test se déroule en deux étapes: une étape de préparation (avec objets) suivie d'une étape de présentation de la liste de mots avec photos en couleur. Une marionnette prénommée Julie est utilisée pour encourager les enfants à participer tout au long du test.

Étape de préparation (avec objets)

Dans un premier temps, dix objets sont introduits afin d'évaluer la variabilité de la production des phonèmes ciblés et pour obtenir plus d'exemplaires des phonèmes à basse fréquence, (p. ex. /z/, /ʃ/, /ŋ/) parmi les phonèmes ciblés (éléphant, kangourou, zoo, fraise, champignon, chandelle, rêve, glissade, vague, cheveux). Cette tâche permet aux cliniciens de vérifier la variabilité dans la production des mêmes mots, surtout pour les mots multisyllabiques qui sont plus susceptibles à la variation chez des enfants avec des troubles de la phonologie (Catts, 1986; Kehoe, 2001). Une poupée, prénommée Julie, et des phrases porteuses telles que « Julie voit deux grands animaux, un joli [éléphant] et un [kangourou] » sont utilisées pour encourager l'enfant à nommer les images. Des phrases porteuses sont suggérées pour chaque mot cible; cependant, les cliniciens peuvent choisir des différentes phrases porteuses selon leur besoin. Devant les cibles dont le mot commence avec une voyelle (p. ex. éléphant),

Tableau 5. Fréquence des consonnes de la liste pour le français manitobain, par position, mode et point d'articulation.

	Plosives						Nasales			Fricatives				Semi-consonnes					Liquides			Groupes consonnantiques
	p	b	t	d	k	g	m	n	ŋ	f	v	s	z	ʃ	ʒ	ʁ[a]	w	ɥ	j	l	ʁ/r	
Initial	3	4	4	3	7	3	6	4	-	3	3	6	2	4	3	-	-	-	-	7	5	29
Central																						16
syllable initiale	6	2	8	2	5	2	2	4	2	2	2	4	5	2	2	-	-	-	-	4	6	
syllable finale					2									1							3	
Final	2	2	4	2	3	2	3	2	2	3	2	4	2	3	4	9	-	-	4	8	-	8
Total	11	8	16	7	17	7	11	10	4	8	7	14	9	10	9	9	-	-	4	19	14	53

[a] *Pour certains locuteurs, la rhotique est réalisée /ʁ/.*

nous recommandons d'utiliser une phrase porteuse qui termine avec une voyelle (p. ex. « Julie voit un joli _____ [éléphant] »), plutôt que d'un mot qui termine par un article (p. ex. « Julie voit un _____ [éléphant] »), car le clinicien sera en mesure de déterminer si la production de l'enfant (p. ex. /nelefã/) est soit influencée par la consonne précédente selon la loi de la liaison (Rose & Wauquier-Graveline, 2007), soit l'enfant préfère insérer une consonne dans la position initiale du mot. Si l'enfant ne connaît pas le mot, le thérapeute donne un choix de deux réponses: « est-ce que l'image représente X ou Y (X représente le mot ciblé)? » Si cette stratégie ne fonctionne pas, le thérapeute donne le mot ciblé et demande à l'enfant de répéter le mot. Nous recommandons d'utiliser en premier les phrases porteuses et ensuite de donner à l'enfant un choix de deux réponses car cette pratique est recommandée en orthophonie (Presser, Hodson, & Paden, 1988).

Étape de présentation de la liste de mots

La présentation de la liste de mots s'effectue à l'aide d'images tirées de banques de photos en téléchargement libre. Les images sont présentées par thèmes situées dans quatre différentes histoires (animaux, restaurant, maison, etc.) dans un cartable ou des diapositives PowerPoint à raison de trois à cinq mots ciblés par page (chaque mot ciblé correspond à une image et chaque page du test contient entre une à cinq images). L'administration de la liste de mot est semblable à la présentation des objets durant l'étape de préparation. La poupée prénommée Julie et des phrases porteuses sont utilisées pour encourager les enfants à nommer les images.

Transcription et analyses

En général, il est préférable qu'un clinicien qui complète la transcription des mots soit un locuteur natif du français ; cependant, dans le cas où le clinicien est anglophone, il est possible d'utiliser un enregistrement de tous les mots ciblés en français comme modèle pour la transcription (l'enregistrement est disponible gratuitement auprès des auteurs sur demande). Les mots ciblés sont organisés par thème composé de quatre histoires et les cliniciens sont encouragés à choisir les mots cibles selon leur besoin et peuvent utiliser d'autres mots pour compléter une analyse plus détaillée. Plusieurs programmes sont disponibles pour analyser la transcription de la phonologie des enfants, tels que PHON (Rose et al., 2006, childes.psy.cmu.edu/phon/), un programme canadien gratuit ainsi que le « Computerized Articulation and Phonology Evaluation System » (CAPES, Masterson & Bernhardt, 2001). La production des mots ciblés est cotée avec la transcription de l'alphabet phonétique international et il est possible d'analyser tous les niveaux de la phonologie (p. ex. les traits) avec chacun des deux programmes. Les phonèmes ciblés dans ce test, ainsi que tous autres phonèmes choisis par le clinicien, permettront à l'orthophoniste de compléter une analyse détaillée du mode d'articulation, du point d'articulation et du voisement (p. ex. l'analyse des substitutions ou des omissions des consonnes simples). Une fois que la transcription est complétée, les résultats peuvent être transcrits dans une grille d'analyse de dépistage non-linéaire (voir Annexe 1) qui permettra au clinicien de compléter l'analyse et de choisir les objectifs pour la thérapie.

Bien que le test de phonologie en français ait été conçu pour cibler la phonologie des enfants francophones du Manitoba, la tâche peut être adaptée pour les enfants qui parlent plusieurs dialectes du français au Canada. Par exemple, si l'enfant parle un dialecte particulier du Nouveau-Brunswick, le clinicien ajustera les productions ciblées pour qu'elles reflètent le dialecte du français de la région. Le clinicien pourra ensuite vérifier si la production de l'enfant correspond aux cibles adultes.

Caractéristiques psychométriques du test

Le test de phonologie en français est un outil très flexible qui s'adapte facilement au développement phonologique de l'enfant, c'est-à-dire que le clinicien peut choisir de compléter le test en entier ou de présenter seulement certaines parties du test. Le clinicien peut aussi ajouter d'autres mots (des cibles) pour vérifier la production de l'enfant.

L'outil n'a pas encore été normalisé; il n'y a donc aucune information quant à l'effet de plancher et de l'effet plafond. La fidélité du test est reflétée par le fait que les orthophonistes qui utilisent couramment la liste de mots rapportent que l'outil est précis et les résultats entre les items sont stables. La validité est assurée par le fait que les mots ciblés correspondent aux objectifs du test, soit l'analyse de la phonologie du français au Manitoba. De plus, la validité du contenu a été assurée par le fait que plusieurs experts dans d'étude de la phonologie non-linéaire ont examiné chaque mot-cible dans le test. Des experts en phonologie non-linéaire ont évalué les caractéristiques phonologiques (p. ex. la longueur, l'accentuation et la structure syllabique) de chaque mot dans la liste. A partir de la proportion des mots produits sans erreur («whole word match») nous avons aussi été en mesure de distinguer les enfants qui ont un trouble de la phonologie de ceux qui ont un développement typique de la phonologie (Ingram, 2002). La proportion des mots produits sans erreur est indiquée par la proportion de mots dans le test où tous les phonèmes dans un mot correspondent aux cibles de l'adulte (Schmitt, Howard, & Schmitt, 1983).

Une collecte de normes ainsi que des analyses statistiques afin de déterminer les meilleurs mots ciblés sont prévues comme prochaines étapes. Ces deux composantes ajouteront énormément de valeur à l'outil en ce qui concerne la fidélité et son utilité comparativement aux autres tests de phonologie en français qui n'ont pas de normes.

Données préliminaires

Nous présentons ici des données préliminaires (certains mots sélectionnés du test de phonologie) qui montrent la production d'un enfant âgé de 4;1 ans qui présente un trouble modéré-sévère de la phonologie (participant 1) et d'un enfant âgé de 3;11 qui a un développement typique de la phonologie (participant 2) (voir tableaux 6 et 7).

Tableau 6. Production des mots cibles par un enfant âgé de 4;1 avec un trouble modéré-sévère de la phonologie (participant 1)

Mot ciblé	Adulte	Particip. 1	# Syl	Initiale		Voy. 1		Médiale		Voyelle Méd. (1)		Voyelle Méd. (2)						Voyelle Méd. (3)		Finale	
								SF				SI				SF		SI			
				A	E	A	E	A	E	A	E	A	E	A	E	A	E	A	E	A	E
Lait	lɛ	lɛ	1	l	l	ɛ	ɛ														
Plume	plʏm	plʏm	1	pl	pl	ʏ	ʏ													m	m
Cheveux	ʃ(v)(ə)vœ	səfe	1(2)	ʃ	s	ə	ə					v	f	œ	e						
Glissade	ɡlisad	gʰiçal	2	gl	gʰ	i	i					s	ç	a	a	d	l				
Plonger	p(ʰ)lɔ̃ʒe	plɔçe	2	pl	pl	ɔ̃	ɔ					ʒ	ç	e	e						
Musique	myzɪk	gʏz>ik	2	m	g	y	ʏ					z	z>	ɪ	i	k	k				
Balançoire	balɑ̃swɑʁ	pajɸwæ:	3	b	p	a	a					l	j	ɑ̃	-			sw	ɸw	ɑ	æ:	ʁ	-
Éléphant	ʔelefɑ̃	ʁiβæ	3	ʔ	-	e	-					l	ʁ	e	i			f	β	ɑ̃	æ		
Kangourou	kɑ̃guʁu	tauɥu	3	k	t	ɑ̃	a					g	-	u	-			ʁ	ɥ	u	u		
Champignon	ʃɑ̃piŋɔ̃	ʑjɔ̃	3	ʃ	-	ɑ̃	-					p	-	i	-			ŋ	ʑj	ɔ̃	ɔ̃		

Note. A= Production de l'adulte; E = Production de l'enfant; SF = Syllabe finale; SI = Syllabe initiale.

Tableau 7. Production des mots cibles par un enfant âgé de 3;9 avec un développement typique de la phonologie (participant 2).

Mot ciblé	Adulte	Particip. 1	# Syl	Initiale		Voy. 1		Médiale		Voyelle Méd. (1)		Voyelle Méd. (2)						Voyelle Méd. (3)		Finale	
								SF				SI				SF		SI			
				A	E	A	E	A	E	A	E	A	E	A	E	A	E	A	E	A	E
Lait	lɛ	lɛ	1	l	l	ɛ	ɛ														
Plume	plʏm	plʏm	1	pl	pl	ʏ	ʏ													m	m
Cheveux	ʃ(v)(ə)vœ	ʃəvœ	1(2)	ʃ	ʃ	ə	ə					v	v	œ	œ						
Glissade	ɡlisad	ɡlisad	2	gl	gl	i	i					s	s	a	a					d	d
Plonger	p(ʰ)lɔ̃ʒe	pʰlɔ̃ʒe	2	pʰl	pʰl	ɔ̃	ɔ̃					ʒ	ʒ	e	e						
Musique	myzɪk	myzɪk	2	m	m	y	y					z	z	ɪ	ɪ					k	k
Balançoire	balɑ̃swɑʁ	balɑ̃swaʁ	3	b	b	a	a					l	l	ɑ̃	ɑ̃			sw	sw	ɑ	a	ʁ	ʁ
Éléphant	ʔelefɑ̃	ʔelefɑ̃	3	ʔ	ʔ	e	e					l	l	e	e			f	f	ɑ̃	ɑ̃		
Kangourou	kɑ̃guʁu	kɑ̃guru	3	k	k	ɑ̃	ɑ̃					g	g	u	u			ʁ	ɾ	u	u		
Champignon	ʃɑ̃piŋɔ̃	ʃɑ̃piŋɔ̃	3	ʃ	ʃ	ɑ̃	ɑ̃					p	p	i	i			ŋ	ŋ	ɔ̃	ɔ̃		

Note. A= Production de l'adulte; E = Production de l'enfant; SF = Syllabe finale; SI = Syllabe initiale.

Le participant 1 a démontré une proportion des mots produits sans erreur à un taux de 27.5% tandis que le participant 2 a obtenu une proportion des mots produits sans erreur à un taux de 92.5%. Nous observons que le participant 1 démontre un grand nombre d'omissions et de substitutions des fricatives, des rhotiques et des groupes consonantiques, surtout dans les mots multisyllabiques et les syllabes inaccentuées ; tandis que le participant 2 ne démontre pas de patron d'erreur. De plus, le participant 1 connaît beaucoup d'erreurs avec les voyelles nasales (patrons de dénasalisation) dans les syllabes inaccentuées alors que les mêmes voyelles sont produites correctement dans les syllabes accentuées, compte tenu de la longueur du mot. Par contraste, le participant 2 ne démontre aucune difficulté dans la production des voyelles nasales en syllabes accentuées et en syllabes inaccentuées. Les deux enfants produisent les plosives bilabiales et coronales dans les mots dissyllabiques et multisyllabiques avec un taux de réussite de 90%, ce qui est typique pour des enfants âgés de 4 ans (Morgenstern et al. 2010).

Nous observons par les nombreux exemples dans les tableaux 6 et 7 que le test de phonologie est en mesure de discriminer la production phonologique entre un enfant qui a un trouble modéré-sévère et un enfant avec un développement typique de la phonologie. Dans les prochaines étapes, nous prévoyons compléter une plus grande collecte de données, ce qui ajoutera plus de valeur à l'outil en ce qui a trait à la fidélité.

Conclusion

Cet article visait à présenter un nouvel outil d'évaluation phonologique conçu spécifiquement pour le français canadien (en particulier pour le dialecte manitobain, mais facilement applicable à d'autres dialectes canadiens). La liste de mots à été construite dans un cadre de phonologie non-linéaire (Bernhardt & Stemberger, 1998), de manière à refléter la phonologie adulte du français manitobain. L'outil d'évaluation présenté ici permet une évaluation représentative et efficace (20 à 30 minutes) de l'ensemble du système phonologique du français, au moyen d'un échantillonnage de chaque phonème dans une variété de patrons et de longueurs de mot. Le test de phonologie en français est maintenant utilisé par plusieurs orthophonistes au Manitoba et celles-ci rapportent que la procédure plaît aux enfants, particulièrement avec la marionnette. Le test s'inscrit également à l'intérieur d'un programme de recherche en cours portant sur l'interaction entre la longueur des mots et la structure de mots et les séquences de phonèmes comportant des liquides, des fricatives ou des voyelles nasales (Bérubé et al., 2010, 2011). Le test de phonologie en français, les images, la liste de mots organisée dans un tableau, les fichiers audio pour le français manitobain et une grille d'analyse de dépistage non-linéaire sont disponibles gratuitement auprès des auteurs sur demande.

Références

Baligand, R. (1995). Problèmes de consonantisme en franco-ontarien: La variation du /R/. *Le français des Amériques, Trois-Rivières, Presses Universitaires de Trois-Rivières, 12*, 23-36.

Bergeron, M. (1982). *Protocole expérimental de l'Université de Montréal*. Montréal, Canada: Université de Montréal.

Bernhardt, B. H., & Stemberger, J. P. (1998). *Handbook of phonological development: From the perspective of constraint-based nonlinear phonology.* San Diego, CA: Academic Press.

Bernhardt, B. H., & Stemberger, J. P. (2000). *Workbook in nonlinear phonology for clinical application.* Austin, TX: PRO-ED (Copyright reverted to authors 2011).

Bernhardt, B.M., & Zhao, J. (2010). Nonlinear phonological analysis in assessment of Mandarin speakers. *Canadian Journal of Speech Language Pathology and Audiology, 34*, 168-180.

Bérubé, D., Bernhardt, B. M., Adler-Block, M., Chávez-Peón, M., Dacquay, D., Girard, R.,... Stemberger, J. P. (2011, April). *Étude translinguistique des enfants ayant des troubles phonologiques: Comparaison entre le français manitobain et l'espagnol.* Paper presented at Canadian Association of Speech-Language Pathology and Audiology Conference, Montréal, Canada.

Bérubé, D., Harvey, S., Dacquay, D., Girard, R., Ly, M., Marinova-Todd, S.,... Stemberger, J. P. (2010, May). *Crosslinguistic study in protracted phonological development: Preliminary data in Manitoba French.* Paper presented at Canadian Association of Speech-Language Pathology and Audiology Conference, Whitehorse, Canada.

Boudeault, M. C., Cabriol, E.-A., Trudeau, N., Poulin-Dubois, D., & Sutton, A. (2007). Les Inventaires MacArthur du développement de la communication: Validité et données normatives préliminaires. *Revue Canadienne d'Orthophonie et d'Audiologie, 31*(1), 27-37.

Brosseau-Lapré, F., Rvachew, S., Arcand, S., & Leroux, E. (2011, April). *Production of complex words by French-speaking children with DPD.* Paper presented at the Canadian Association of Speech-Language Pathologists and Audiologists Conference, Montreal, Canada.

Catts, H. W. (1986). Speech production/phonological deficits in reading-disordered children. *Journal of Learning Disabilities, 19*(8), 504-508.

Chevrie-Muller, C., & Plaza, M. (2001). *Nouvelles épreuves pour l'examen du langage.* Paris, France: Éditions du Centre de Psychologie Appliquée.

Chomsky, N., & Halle, M. (1968). *The sound pattern of English.* New York: Harper & Row.

Demuth, K., & Johnson, M. (2003). Truncation to subminimal words in early French. *Canadian Journal of Linguistics, 48*(3/4), 211-241.

Goldsmith, J. (1976). Autosegmental phonology. Thèse de doctorat, MIT. New York, NY: Garland Press.

Grunwell, P. (1985). Phonological assessment of child speech. San Diego, CA: College-Hill Press.

Hallion-Bres, S. (2000). *Étude du francais.* Unpublised doctoral thesis, Université X-Marseilles, France.

Ingram, D. (2002). The measurement of whole-word productions. *Journal of Child Language, 29*, 713-733.

James, D., van Doorn, J., & McLeod, S. (2007). *Does the number of syllables in words affect weak syllable deletion in typically developing children aged 3 to 7 years speaking Australian English?* Paper presented at World congress of the International Association of Logopedia and Phoniatrics, Copenhagen, Denmark.

Kehoe, M. M. (2001). Prosodic patterns in children's multisyllabic word productions. *Language, Speech and Hearing Services in Schools, 32*, 284-294.

Larivière, L. (1994). Diversité ou unité du français parlé dans l'ouest canadien. In J. Poulin and P. Y. Mocquais (Eds.), *Les discours de l'altérité, Actes*

du douzième colloque du CEFCO: 22-24 octobre 1992. Institut de formation linguistique (pp. 243-253). Regina, SK: University of Regina.

Masterson, J., & Bernhardt, B. (2001). Computerized Articulation and Phonology Evaluation System (CAPES). San Antonio, TX: Pearson Assessment.

Morgenstern, A., Caet, S., Collombel, M., Parisse, C., Sekali, M., & Yamagushi, N. (July, 2010). *From buds to flowers: The blossoming of child language and multimodal analyses.* Paper presented at PhonBank workshop, St. John's, Newfoundland.

New, B., & Pallier, C. (2001). Lexique: Une base de donnée lexicales libre. Retrieved from http://www.lexique.org/

Peronnet, L. (1995). Le français acadien. In P. Gauthier and T. Lavoie (Eds.), Centre d'études linguistiques Jacques Goudet: Vol. 3. *Français de France et français du Canada: Les parlers de l'Ouest de la France, du Québec et de l'Acadie* (pp. 399-439). Lyon, France: University of Lyon III.

Preisser, D. A., Hodson, B., & Paden, E. (1988). Developmental phonology. *Journal of Speech, Language, & Hearing Research, 53*, 125-130.

Prince, A. S., & Solensky, P. (1993). Optimality theory: Constraint interaction in generative grammar. Piscataway, New Jersey. Blackwell Publishing.

Rochet, B. (1994). Tendances phonétiques du français parlé en Alberta. In C. Poirier (Ed.), *Langue, espace, société: Les variétés du français en Amérique du Nord,* (p.433-455). Laval, Québec: Les Presses de l'Université Laval.

Rose, Y. (2000). *Headedness and prosodic licensing in the L1 acquisition of phonology. Unpublished doctoral thesis,* Montreal, Canada: University McGill.

Rose, Y., MacWhinney, B., Byrne, R., Hedlund, G., Maddocks, K., & O'Brien, P. (2006). Introducing Phon: A Software Solution for the Study of Phonological Acquisition. In D. Bamman, T. Magnitskaia & C. Zaller (Eds.), *Proceedings of the 30th Annual Boston University Conference on Language Development,* (p. 489-500). Somerville, MA: Cascadilla Press.

Rose, Y., & Wauquier-Gravelines. (2007). French speech acquisition. In McLeod, S (Eds.), *The International Guide to Speech Acquisition* (pp. 364-384). Clifton Park, NY: Thomson Delmar Learning.

Schmitt, L., Howard, B., & Schmitt, J.H. (1983). Conversational speech sampling in the assessment of articulation proficiency. *Language, Speech and Hearing Services in Schools, 14*, 210-214.

Sprenger-Charolles, L., & Siegel, L. (1999). A longitudinal study of the effect of syllabic structure on the development of reading and spelling in French. *Applied Psycholinguistics, 18*(4), 485-505.

Statistics Canada (2007, December 4). *Population by mother tongue and age groups, 2006 counts, for Canada, provinces and territories, and census metropolitan areas and census agglomerations - 20% sample data.* Retrieved from http://www12.statcan.caçensus-recensement/2006/dp-pd/hlt/97-555/T401-eng.cfm?Lang=E&T=401&GH=6&GF=46&SC=1&S=0&O=A

Stokes, S. F., Kern, S., & Dos Santos, C. (2012). Extended statistical learning as an account for slow vocabulary growth. *Journal of Child Language, 39*(1), 105-129.

Walker, D. C. (1984). *The pronunciation of Canadian French.* Ottawa: Canada: University of Ottawa Press.

Wenk, B. J. & Wioland, F. (1982). Is French really syllable-timed? *Journal of Phonetics, 10*, 93-216.

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ANNEXE

Analyse non-linéaire – canadien français ©
Auteurs: Bernhardt, B.M.H., Stemberger, J.P., Bérubé, D.
Adapté selon: Bernhardt, B.H. & Stemberger, J.P. (2000).
Workbook in Nonlinear Phonology for Clinical Application.
Austin, TX: PRO-ED (tous droits réservés aux auteurs)

Niveau	Forme	Acquis/Capacité	Plus d'analyses sont nécessaires
Structure prosodique	Longueur du mot L'enfant produit des consonnes, mais le mode d'articulation, le point d'articulation ou le voisement ne correspond pas à la cible adulte	Longueur du mot ☐ Consonnes initiales ☐ Consonnes médianes ☐ Consonnes finales ☐ Groupes consonantiques ☐	Longueur du mot ☐ Consonnes initiales ☐ Consonnes médianes ☐ Consonne finale ☐ Groupes consonantiques ☐ **Pages 3, 7** ☐
Voyelles	Non-nasales Nasales	Non-nasales ☐ Nasales ☐	**Page 4** ☐ **Page 4** ☐
Consonnes	Mode d'articulation (autre que les plosives, nasales et semi-voyelles?)	Plosives, nasales, (semi-voyelles) ☐ Fricatives ☐ Affriquées ☐ /l/ ☐ {ʁ/ʀ/r} ☐	**Pages 5,6** ☐
	Point d'articulation	Labiale ☐ Coronale ☐ Dorsale ☐	**Pages 5,6** ☐
	Voisement (laryngé)	Non-voisé (non-aspiré) ☐ Voisé ☐	**Pages 5,6** ☐
Variabilité et séquences	a. Même mot	Aucune ☐ Rare ☐	**Pages 7** ☐
	b. Même segment	Aucune ☐ Rare ☐	
	Assimilation, dissimilation, coalescence, métathèse	Aucune ☐ Rare ☐	

Testing Local: Small-Scale Language Sample Databases for ESL Assessment

Évaluation Locale. Petites Bases de Données d'échantillons Linguistiques Pour l'évaluation de l'anglais Langue Seconde

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Judith R. Johnston

KEY WORDS

LANGUAGE ASSESSMENT

ESL

LANGUAGE SAMPLE ANALYSIS

NARRATIVE LANGUAGE

SCHOOL-AGED CHILDREN

Abstract

Purpose: This study describes the development of a small scale, local language sample database of children who were learning English as a second language. Goals were to develop a clinically useful, cost efficient means for comparing second language learning children to an appropriate peer group, and to determine whether a localized approach to database development could provide a practical solution to English Second Language (ESL) assessment.

Method: Narrative language samples were gathered from 18 typically developing 7 year olds learning English as a second language. These children spoke either Mandarin or Cantonese as their first language, and had entered kindergarten with little or no knowledge of English. Samples were compared on a full range of linguistic variables to samples collected from age-matched monolingual English speakers, drawn from a Systematic Analysis of Language Transcripts database.

Results: ESL children performed similarly to monolingual children on measures of lexical diversity, syntax, and language processing, but made more morphological errors.

Conclusion: The pattern of strengths and weaknesses observed in the ESL children differentiates them from monolingual English speakers and also from children with learning impairments, and thus demonstrates the potential usefulness of language sample databases in the assessment of this population.

Abrégé

But : Cette étude décrit le développement d'une petite base de données d'échantillons locaux de langage d'enfants qui apprenaient l'anglais comme langue seconde. Les buts étaient de développer un moyen économique et cliniquement utile pour comparer un groupe d'enfants apprenant une langue seconde à un groupe de pairs approprié, et de déterminer si le développement d'une base de données locale pourrait offrir une solution pratique à l'évaluation de l'anglais langue seconde.

Méthodologie : Des échantillons de langage narratif ont été recueillis auprès de 18 enfants de sept ans au développement typique qui apprenaient l'anglais comme lange seconde. Ces enfants parlaient le mandarin ou le cantonais comme langue maternelle et étaient entrés à la maternelle avec peu ou pas de connaissances de l'anglais. Les échantillons ont été comparés selon des variables linguistiques à des échantillons recueillis auprès de locuteurs unilingues anglophones du même âge, tirés d'une base de données d'analyse systématique de transcriptions linguistiques.

Résultats : Les enfants ayant l'anglais comme langue seconde ont obtenu un niveau de réussite égal à celui des enfants unilingues sur les mesures de diversité lexicale, de syntaxe et de traitement du langage, mais ils ont fait plus d'erreurs morphologiques.

Conclusion : Le tableau regroupant les forces et des faiblesses observées chez les enfants apprenant l'anglais comme langue seconde se différencie de celui des enfants anglophones unilingues ainsi que de celui des enfants ayant des troubles d'apprentissage. Les résultats illustrent donc l'utilité potentielle des bases de données d'échantillons linguistiques dans l'évaluation de cette population.

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Providing speech-language services to multilingual children and their families is a challenging task that is becoming an everyday occurrence for many speech-language pathologists (S-LPs). In urban areas, large numbers of children are entering the school system with little or no exposure to English. In Vancouver, British Columbia, for example, the school board reported that in 2009 over 60% of the students spoke a language other than English at home, and listed over 126 home-languages (Vancouver School Board, 2011). Facts such as these help to explain the growing attention being paid to the practice of speech-language pathology among culturally and linguistically diverse populations. In this paper we focus in particular on the assessment of language abilities in ESL children, and propose a new approach to this task.

The Challenge of ESL Assessment

A primary source of difficulty in the identification of language disorder in children who are learning a second language is the similarities seen in the language characteristics of second language learners and children with specific language impairment (SLI). This similarity has been identified in languages of diverse typology including Swedish, Quebec French, and English. Hakansson and Nettelbladt's (1993) longitudinal study compared the development of subject verb inversion in two Swedish second language learners (L2), two Swedish children with SLI (SLI) and two typically developing children (L1) matched for MLU. The L1 children used varied word order patterns from the outset of their grammatical development. In contrast, the L2 and SLI children shared a clear pattern of progression through three stages, beginning with a stage in which there was exclusive and uniform use of subject verb object (SVO) word order. In regard to word order, the Swedish children who were second language learners resembled the children with SLI more than they resembled the typical first language learners. Studies of morphological development report similar findings. Paradis and Crago's (2000) study of Quebec French second language learners and Quebec French children with SLI found that both groups of children used significantly fewer finite verb constructions than monolingual children of the same age. Paradis (2005) later tested a group of 24 typically developing ESL children with less than two years of exposure to English, and found that 87.5% fell within the clinical range on morphological measures included in the Test of Early Grammatical Impairment (Rice & Wexler, 2001). Finally, in a study of English as L2, Gutierrez-Clellan, Simon-Cereijido, and Wagner (2008) found comparable levels of finite verb accuracy in typically developing ESL children, monolingual children with language impairment, and bilingual children with language impairment.

The similarities observed in SLI and L2 populations can make it difficult to interpret any language limitations observed in a second language learner, which can ultimately result in the over-identification of SLI. Alternatively, clinicians aware of similarities between second language learners and children with SLI may fail to diagnose language disorder by attributing a child's difficulty to their second language status. This dilemma has received significant attention in recent years, and a variety of solutions have been proposed: the translation of standardized tests into various home-languages, the use of interpreters (Laing & Kamhi, 2003), and the creation of alternate norms for bilingual children (Oller & Eilers, 2002).

Lack of Feasibility in Current Proposals

Educators and researchers in the field of bilingual assessment agree that bilingual children should be assessed in both of their languages (Bedore & Pena, 2008; Oller & Eilers, 2002; Kohnert, 2010; Miller et al, 2006). Indeed, assessment in L1 has been enshrined in the Individuals with Disabilities Education Act Amendments of 1997 in the United States (US) in an effort to avoid under- or over-diagnosis of language disorder in culturally and linguistically diverse (CLD) populations. This requirement rests on the reasonable assumption that assessment in both L1 and L2 will provide a truer picture of a child's language capabilities than assessment in L2 alone. However, with the exception of a few European languages, tools for assessment in languages other than English remain quite limited, and culturally and linguistically appropriate translations of English assessment tools are very difficult to create (Bedore & Pena, 2008). Furthermore, even if such tools existed it is not clear who would use them. A recent survey of S-LPs in British Columbia (Simmons & Small, 2011) showed that only 24 (18%) of the 136 clinicians included in the study were bilingual. Matching the few bilingual S-LPs to the many ESL children needing assessment is virtually impossible, especially in cities such as Vancouver that are linguistically diverse and contain a number of language preserving communities. Interpreters can assist in assessment sessions, but require significant training to be effective (Langdon & Quintanar-Sarellana, 2003). It is unlikely that the resources necessary to train and employ this additional group of professionals would be available in many jurisdictions.

Bilingual Norms for L2

Faced with the difficulties of assessing ESL children in L1, researchers have looked for alternate approaches. One possibility would be to compare a given ESL child's knowledge and use of English to the knowledge and

use of English seen in a normative group of bilingual children. There would be challenges in the development of the database since a number of factors such as nature of L1, length of exposure to L2, age at acquisition of L2, and home language environment are known to influence L2 learning (Oller and Eilers, 2002). Some of these factors would need to be specified as inclusion criteria; all of them would require careful description. Further research would be needed to determine the points at which heterogeneity compromised validity. However, once the normative database is created, this approach seems quite feasible, less costly, and well within the capabilities of most S-LPs. Substantial normative work has been done with Spanish-English bilingual children; Oller and Eilers' "Miami Project" gathered data on the performance of nearly one thousand bilingual children on standardized tests of English and Spanish vocabulary and literacy skills, and also collected data on socioeconomic status, home language environment, and school language environment. In the US, Pena and colleagues (Pena, Gutierrez-Clellen, Iglesias, Goldstein & Bedore, in development), have developed an experimental standardized assessment for Spanish-English bilingual children called the Bilingual English Spanish Assessment (BESA). Miller et al. (2006) have developed a database of Spanish and English narrative language samples from over 1500 Spanish speaking ESL children. These large-scale projects in the US provide rich sources of data, in both English and Spanish, for the assessment of Spanish speaking children who are learning English at school. As well as showing the importance of normative groups of bilingual children, they show the feasibility and potential value of assessments conducted in L2 and provide the tools to conduct them – but only for Spanish-English bilingual children.

The unfortunate fact is that despite these demonstrations of best practice, many S-LPs will not have appropriate normative data for bilingual children on their caseload or the ability to assess all children in their home language. For these clinicians, the current literature suggests a multi-pronged approach to assessment, including extensive child and family histories, classroom observation, peer-based comparisons, and dynamic assessment approaches (Bedore & Pena, 2008; Kohnert, 2010). Once again these practices are time consuming, costly and thus unlikely to be available to the number of children needing them. Clinicians remain in need of assessment solutions that are sensitive to cultural and linguistic differences yet feasible within the available resources.

Localized and Focused Language Sample Databases

Discussions of language assessment with ESL children have tended to focus on the appropriateness and availability of standardized tests. The work of Miller and colleagues (Miller et al, 2006) is a noteworthy exception to this trend. The Systematic Analysis of Language Transcripts (SALT) software (Miller & Iglesias, 2012) uses naturalistic samples of spontaneous speech (e.g. conversation, narrative, expository) as the basis for language assessment. The program compares the language of one child to the language of a normative peer group, providing standard scores for a number of language characteristics in a variety of domains (e.g., semantic, syntactic, lexical). Use of spontaneous language avoids the cultural specificity of test items and the need for "test-taking" skill. The most important feature of the SALT program may be that it allows individual users to develop their own normative databases for use with children who are learning languages other than English or who represent some particular population. Thus far this capability has led to the development of databases of language samples from children learning Spanish (now provided with SALT), Quebec French (Thordardottir, 2005), and Turkish (Acarlar & Johnston, 2006).

SALT's ability to work with the user's own databases would seem to provide exactly the tools needed to differentiate ESL and SLI learners. A reference database of English (L2) language samples could be collected from typically developing second language learners. This database could then form a standard of comparison for children who seem to be having difficulty learning English. This evaluation could function as an initial "screening" in which the assessment question would be: Does this child speak English as well as other ESL children at the same age and from similar language and cultural groups? If a child was found to compare poorly to the pertinent reference database, his/her language abilities could be more fully examined, including, where possible, an assessment in L1. To our knowledge, the only normative SALT database containing language samples from bilingual children is the one described by Miller et al. (2006), consisting of Spanish and English narrative language samples from over 1500 Spanish speaking ESL children. This database is now available for download with SALT (Miller & Iglesias, 2012), and provides rich data for the assessment of Spanish speaking children who are learning English in school.

SALT software invites clinical researchers to develop additional large-scale SALT databases that target various groups of second language learners (e.g. Spanish ESL children in California; Chinese ESL children in Vancouver, Canada; Punjabi ESL children in the United Kingdom). However, the cost of such a project would be considerable and perhaps, as in the US, could be justified only for the largest groups. However, as an alternative to large-N databases spanning a range of ages, one could

build small-scale databases that focused on children of a particular age or experience. Large or small, these databases could be used by clinicians to evaluate a bilingual child's English (L2) proficiency by comparison to other ESL children with similar cultural backgrounds and learning opportunities. This evaluation would help to identify children who warranted an in-depth assessment.

The Current Study

This paper describes the development of a small-scale database containing language samples collected from Grade 2 Chinese ESL learners. We used the SALT program to determine whether the language of the bilingual children in this database showed consistent areas of strength and weakness when compared to that of monolingual age peers and if so, whether the identified profile was also likely to distinguish ESL and SLI learners. If so, small-N normative databases that were focused on particular points of developmental might provide a feasible solution to the immediate clinical needs of S-LPs serving multilingual caseloads.

Methods

Participants

Participants in this study consisted of 18 children enrolled in the first semester of Grade 2 in English-speaking public schools in the Greater Vancouver area. The mean age of these children was 7;2 years with a range from 6;10 to 7;9. Local schools use a three level framework to describe the language proficiency of ESL children at school entry. Table 1 lists the criteria for each of the three levels of English proficiency. To be included in this study, participants needed to speak Mandarin or Cantonese as their first language and to have been judged by school personnel to speak English at Levels 1 or 2 when they entered kindergarten. They were also required, in the teacher's opinion, to be progressing in their current classrooms as expected given their ESL status, and could not have participated in any intensive English programs outside the normal classroom environment. Information pertinent to the selection of participants was obtained from school personnel and from parents via a written questionnaire, in both English and Chinese, regarding language knowledge and use in the home (see appendix). Table 2 summarizes the information that parents provided.

All of the children were reported to have learned Cantonese or Mandarin as their first language. Two thirds of the families reported speaking only Chinese at home, with the remaining third using both Chinese and English. The mean age of initial exposure to English reported by parents was 3;10 years, indicating that most of the children did have some pre-kindergarten exposure to English. Despite this apparent early exposure, English proficiency at kindergarten entry was reported to be quite limited. Twelve of the children were judged to know only a few words (Level 1) at kindergarten entry, and 4 were judged to be able to use only short phrases (Level 2). The remaining 2 children were judged to be more advanced by their parent, but at Level 2 by their teacher and school S-LP. An explanation for this otherwise surprising outcome may lie in the fact that first exposure occurred primarily in the context of preschool or daycare programs. There are wide

Table 1. Three-level classification of early English proficiency.

Level 1: Emerging	Level 2: Beginning	Level 3: Developing
• Very limited understanding. • Speaks in isolated words or short phrases. • Often silent. • Repeats, uses body language to be understood. • Limited pronunciation of English sounds	• Has difficulty following what is said even when slowed. • He sitant in everyday conversation. • Understands/uses simple concrete words, phrases, sentences. • Often silent. Requires long wait before answering questions. • Needs extensive support with content language. • Repeats, uses body language to be understood. • Often hard to understand.	• Usually understands and engages in conversations with peers. • Begins to participate in classroom discourse. • Uses varied vocabulary, sentence structure. • Requires less waiting prior to answering questions. • Needs support with content language. • Uses/requires repetition and rephrasing of new material. • Begins to self-correct. • Occasionally hard to understand.

Table 2. Parent responses to language use survey regarding use of Chinese languages (Cantonese or Mandarin) and English.

Question:	Parent Responses:		
	Chinese only:	Chinese/ English:	English only: 0
Language used by parents:	12	6	0
Language used by child:	13	4	1
Child's L1:	18	0	0
Mean age of initial exposure (SD):	3;10 (0;11)		
Location of initial L2 exposure:	Preschool/Daycare	14	
	Other:	4	
Level of English ability at kindergarten entry:	"Spoke only a few words":	12	
	"Could put a few words together":	4	
	"Could talk about most topics but made lots of mistakes...":	2	

differences in patterns of language use in Vancouver preschools and daycares. Those designated as "English" may still have a significant number of Cantonese/ Mandarin speaking teachers and peers. The English immersion expected in these schools is frequently absent. Children attending different preschools for the same number of years could have widely differing exposure to English. Based on the low ratings of proficiency at kindergarten entry, it seems improbable that any of the participants were early coordinate bilinguals.

Our inclusion criteria address at least five of the factors known to influence the learning of a second language: age, L1, home culture, context of L2 learning, and length of exposure to L2. This study was not, however, designed to confirm these influences or to delineate the factors in detail. Our more practical purposes led us to prioritize variables that were currently available and feasible in a school service setting. For example, in the absence of appropriate standardized tests we relied on the ability of teachers to describe the language level of the bilingual children as they entered kindergarten and to identify children in Grade 2 whose English was advancing at a satisfactory rate. Given the ethnic profile of the school district, all teachers would have considerable experience observing and interacting with children from the Chinese community, including many children who entered kindergarten with little or no English.

Our inclusion criteria and selection process also did not guarantee a representative sample of children who enter kindergarten with English proficiency at Levels 1 or 2. Teachers might not have referred children unless they were confident about the normalcy of his/her progress in learning L2. If our database were intended for use as a full diagnostic instrument, this potential bias towards more competent speakers would be problematic. However, our database was intended only to identify children for whom further assessment seems warranted and a tendency toward over-identification, if present, could be viewed as suitably cautious.

We decided to focus this analysis exclusively on Chinese children in grade 2 for several reasons. First, the use of a smaller, but focused database required fewer resources. If the outcomes of the analysis were to indicate that this assessment approach is viable, similar databases would be economically feasible in most school settings. Second, although we would prefer to identify children with learning problems at an earlier age, the initial months of Grade 2 had been identified as an important educational decision point by the S-LPs who participated in this study. Although the development of English proficiencies that can fully support classroom learning requires some four years of school experience (Ramirez, 1998, as cited in Johnston, 2006), after two years of English schooling, many Grade 2 bilingual children have considerable English language and literacy capabilities. Those who do not are beginning to be referred for S-LP services. Finally, including only children from a single culture group reduced the need to identify cultural differences that could lead to differences in English proficiency, e.g., differences in family support or expectations for academic achievement.

Potential participants identified by their school-based S-LP were sent home with an explanatory letter, a consent form, and a questionnaire regarding the child's developmental history (see appendix). Children whose parents provided consent were then interviewed individually by the school-based S-LP to ensure that the child met inclusion criteria.

A comparison group of monolingual English speaking children was drawn from an existing database of samples gathered during the standardization of Gillam and Pearson's (2004) Test of Narrative Language (TNL). Eighteen age-matched monolingual English children were randomly selected from the database. The mean age of the monolingual group was 7;2, with a range of 6;10 to 7;9. This comparison group was included to in order to determine whether and in what ways the C-ESL group could be expected to differ from monolingual English speakers, i.e. to identify the 'normal' limitations of a C-ESL child at this point in development.

Procedure

Narrative Task

A substantial body of literature attests to the value of narrative in language assessment. Narrative draws on a child`s social, linguistic, world, and conceptual knowledge as well as knowledge specific to storytelling (Johnston, 2008). Narratives require more intensive planning and coordination of cognitive processes than conversational speech (Hadley, 1998), and they tend to elicit longer utterances (Miller & Leadholm, 1992). These features contribute to the usefulness of narratives in the assessment process. Indeed, Masterson and Kamhi (1991) suggest that narrative discourse may reveal areas of difficulty where conversational data do not. This is particularly important where second language learners are concerned, as their competence in L2 may be adequate for conversation after a short exposure but be inadequate for more complex discourse forms (Ramirez, 1998, as cited in Johnston, 2006). A secondary, but important consideration in our decision to use a narrative task was the goal of reducing cultural bias in the assessment process. Although narrative traditions vary across cultures, Fiestas and Pena (2004) found that Spanish-English bilingual children were able to produce narratives of equivalent complexity in both Spanish and English on a picture-book task. Cleave, Girolametto, Chen and Johnson (2010) compared the performance of monolingual and bilingual children with SLI on a narrative task, and found similar levels of performance in the two groups. In short, there is growing consensus that narratives provide a supportive context in which to elicit maximum linguistic complexity while minimizing the effects of cultural bias (Bedore, Pena, Gillam & Ho, 2010; Cleave et al, 2010; Rojas & Iglesias, 2009).

Each child in this study was asked to produce two narratives. The children were informed that the S-LP was conducting a project to learn more about how children tell stories. S-LPs then asked the children to produce two stories, each based on a different picture stimulus taken from the Test of Narrative Language (Gillam & Pearson, 2004). The first stimulus was a sequence of five pictures showing a boy waking up late and his ensuing difficulties in getting to school on time. The second stimulus was a single picture showing two children watching an alien spaceship landing in a park. The children were reminded that stories should have a beginning, a middle, and an end, and were encouraged to make them as long as possible. The samples were audiotaped and returned to the University of British Columbia for transcription and analysis by the authors. The monolingual comparison group samples had been gathered using identical stimuli during the standardization of the Test of Narrative Language (Gillam & Pearson, 2004). It should be noted that the entire Test of Narrative Language was administered to the monolingual comparison group, while only the two sections described above were used in the current study.

Transcription

Language samples were transcribed by trained graduate students using SALT coding conventions. In addition to the standard coding of inflectional

morphemes, mazes, and abandoned utterances, the transcribers coded any words that were omitted or incorrectly selected. This additional coding was also carried out on the monolingual language samples. Utterances were divided into C-units (communication units), which consist of an independent clause and its modifiers (Miller & Leadholm, 1992), as this is the unit of analysis used in the language samples of the TNL database available with SALT (SALT Software, 2010).

The process of *consensus transcription* developed in the SALT lab (Heilmann, Miller, Nockerts, & Andriacchi, 2006) was used to ensure the reliability of the transcriptions. Each sample was transcribed by one coder and then checked by a second, who listened to the sample, reviewed the original transcript, and noted any disagreements. These disagreements were resolved through discussion between the two transcribers. The initial level of agreement between transcribers was calculated to determine the accuracy of the transcriptions on a number of aspects of the transcript: disagreements on utterance boundaries, words, and morphemes were each considered separately. Agreement levels were above 95% for all measures, on all transcripts.

Analysis

SALT software (Miller & Iglesias, 2003-2007) was used to compare the ESL and monolingual groups on a number of measures across the domains of vocabulary, morphology, syntax, and language processing (see Table 2). In each domain we measured aspects of expressive language that have been considered the hallmarks of specific language impairment in children learning English as a first language. If, as suggested by recent studies (Hakansson & Nettelbladt, 1993; Paradis & Crago, 2000; Paradis, 2005; Paradis 2010), these measures also reveal areas of difficulty for our second language learners, there would be little support for using L2 Language Sample Analysis as a screening tool to differentiate between the two groups. If, on the other hand, the performance of the ESL children on some or all of these variables fails to indicate learning difficulties, it would suggest the viability of this approach for distinguishing between language impaired children and second language learners. Since this project was also intended to inform current practice patterns, we selected variables that were both clinically relevant and readily accessible. All of the measures could be calculated using the basic operations of the SALT Program and most were included in the standard set of SALT analyses. These measures are outlined in Table 3 and discussed in the following sections.

Vocabulary:

NDW. The number of different word (NDW) roots in a language sample is one of a variety of measures of lexical diversity, which include the traditional type-token ratio (TTR, Templin, 1957), as well as more complex measures such as "D" (Richards & Malvern, 1997). Significant debate has occurred over the usefulness of various measures and their potential confounds with syntax and sample size (Hewitt, Hammer, Yont & Tomblin, 2005; Richards & Malvern, 1997; Watkins, Kelly, Harbers & Hollis, 1995). Nevertheless, NDW has been shown to differentiate typical and language disordered populations when the total number of words in a sample is controlled (Hewitt et al., 2005). NDW-100 has also been found to distinguish typical and language disordered populations in monolingual Cantonese pre-schoolers (Klee, Stokes, Wong, Fletcher & Gavin, 2004). Thus, we opted to use NDW calculated in 100 word samples (NDW-100) as our measure of lexical diversity.

Content word errors and omissions. In addition to lexical diversity, we also investigated the number and rate of incorrectly selected content words ("word errors") and omitted content words ("word omissions"). Word errors were coded when a child used the wrong word for the context. For example, a word error was judged to occur when a child said, "I saw TV" instead of "I watched TV." Word omissions were judged to occur when a word was omitted, as in "I *VERB to the park," where the necessary verb was omitted. Note that only word errors and omissions that expressed primary propositional content were included in this category. Errors or omissions of grammaticized words such as articles, pronouns and prepositions were coded separately.

Morphology:

English-speaking children with specific language impairment have difficulty with grammatical morphemes, including both affixes and unbound functors (Johnston & Schery, 1976; Rice & Wexler, 1996; Bedore & Leonard, 1998). Children who are learning English as a second language have also been shown to make errors in their use of grammatical morphemes (Paradis, 2005). We calculated the number of types of bound morphemes used in the samples, and the number of omissions of bound morphemes and unbound functors. Finally, we investigated the number of word errors that involved grammaticized forms such as articles, pronouns and prepositions. For example, in "Him went to the park", the case of the pronoun is incorrect, but the propositional content is not lost. Errors involving these closed-class words were coded as morphosyntactic word errors.

Table 3. Measures of language ability used to compare samples.

Domain	Measure	Description
Vocabulary	NDW	Number of different words used in the transcript.
	NTW	Total number of words used in the transcript.
	Word Errors (Content)	Number of content words used incorrectly.
	Word Omissions (Content)	Number of content words omitted.
Morphology	Types	Types of bound morphemes used.
	Rate omitted	Rate of omission of obligatory bound morphemes
	Word Errors (Morphosyntactic)	Number of morphosyntactically based word errors.
	Word Omissions (Morphosyntactic)	Number of morphosyntactically based word omissions.
Syntax	MLUw	MLU, calculated in words
	Conj/Wh-comps (Types)	Types of conjunctions and complementizing wh-words used in non-initial positions.
	Subordination Index	Ratio of total number of clauses to the total number of C-units.
Processing	Mazes (Number)	Total number of mazes (linguistic non-fluencies such as false starts, revisions, pauses, and repetitions)
	Mazes (Rate)	Percentage of utterances with mazes.

Syntax:

MLU. Mean length of utterance (MLU) has a long history of use as an index of syntactic complexity (McCarthy, 1943) and general level of language proficiency. Hewitt et al (2005) examined MLU in kindergarteners and found that MLU was lower for children with SLI as compared to typically developing peers. Additionally, Klee et al.'s (2004) study of monolingual Cantonese pre-schoolers found lower values for MLU in children with SLI. MLU has been shown to increase with age throughout the school years (Miller & Chapman, 1981; Miller & Leadholm, 1992). Despite this correlation, it has been argued that the validity of MLU as a measure of syntactic ability is lower in older children, as the length of children's utterances becomes relatively less dependent on syntactic ability and relatively more dependent on discourse factors (Johnston, Miller, Curtiss, & Tallal, 1993). Johnston (2001) introduced an alternate calculation of MLU2 that serves to reduce the effect of discourse context on MLU by eliminating exact repetitions and responses to questions. Due to the narrative nature of these transcripts, there were no opportunities for these discourse factors to affect the calculation of MLU, and so this procedure was not necessary. To prevent a confound between morphological and syntactic abilities, mean length of communication units was calculated in words, rather than morphemes.

Use of Conjunctions and Wh-words. The use of conjunctions (e.g., *He cried because the bus left*) and complementizing wh-words (e.g. *I know where my shoes are*) was investigated as a second measure of the syntactic complexity. Complementizing wh-words were defined as wh-words used in non-initial positions. The number of different types for each of these categories was counted. This syntactic measure was included to determine whether the utterance length measure reflected utterances with propositional complexity as well as expansions of the primary verb or noun phrase (Johnston & Kamhi, 1984).

Subordination Index. A final analysis of syntactic complexity was conducted using the subordination index (SI), which is a ratio of the total number of clauses divided by the total number of C-units. The coding required for the SI is described in detail in the documentation available with SALT (SALT Software, 2010). Codes for SI are now included in the standard databases provided with SALT. While this improves clinical accessibility for SI, it remains more time consuming to code for this than to calculate other measures of syntactic complexity (e.g. MLU, conjunctions/wh-words). We nevertheless included SLI in our measures of SI to ensure that we accurately described the syntactic complexity of the ESL language samples, and to validate any findings based on the simpler measures used.

Language Processing:

Mazes were used as an index of processing difficulties with the narrative task. Mazes have been defined as linguistic non-fluencies that do not form part of the intended utterance (Loban, 1976). Mazes include repetitions, revisions, false starts, and abandoned utterances. They occur in the utterances of typical children and adults, as well as in children with language disorders. Mazes are linked to the processing required for planning and producing sentences (Rispoli & Hadley, 2001), and their frequency tends to increase when children are using more complex or newly learned language patterns (Miller & Leadholm, 1992; MacLachlan & Chapman, 1988). They also occur more frequently in the language of children who have known difficulty with language processing; as in SLI (Bond & Schneider, 2005; Thordardottir & Ellis Weismer, 2002).

Results

The narrative language samples of the Chinese-ESL (C-ESL) and monolingual English (ML) groups were compared on the variables described above, and the reliability of any group difference was evaluated using one-tailed t-tests. Tests were one-tailed as we were expecting the ML group to outperform the C-ESL children. Direct comparisons of the raw scores from various measures were not made as they would be uninterpretable due to differences in scale. We considered standardizing the scores then using repeated measures ANOVA with 'families' of variables, e.g., syntactic, lexical, etc. This design would increase the likelihood of a main effect of Group but it also assumes a dimensional relationship among family members that research has yet to demonstrate. With these considerations in mind a series of t-tests seemed most appropriate. However, due to the increased risk of Type 1 error with multiple comparisons, alpha levels were set family-wise at 0.05. The alpha level for individual tests was .017 or .013 depending upon the number of tests conducted within the family. Cohen's d was used to calculate effect size for all measures. Table 4 provides an overview of all comparisons conducted.

Sample Size

Given that both groups of children were completing the same constrained narrative task, we chose not to control for differences in the length of the language samples, but treated length as a dependent variable. If group differences did emerge, statistical controls could be used where pertinent in the analysis of other variables. The C-ESL group had a mean of 26.7 utterances per sample (SD = 12.6), while the monolingual control group had a mean of 25.8 utterances per sample (SD = 10.8). This difference was not significant, $p > 0.4$: the two groups produced narrative samples of a similar length.

Vocabulary

Analysis of NDW-100 revealed highly comparable values for the C-ESL children (M = 47.4, SD = 5.4) and the ML children (M = 50.1, SD = 8.2). There was no significant difference between the two groups on this measure, t(34)=1.15, $p > 0.13$, and the effect size was small, d = 0.39. Overall, the C-ESL and ML children showed similar levels of lexical diversity. Analysis of errors in lexical selection showed that these errors were infrequent in both groups, with $M_{\text{C-ESL}}$= 2.1 ($SD_{\text{C-ESL}}$=2.3) and $M_{\text{ML=}}$1.0 ($SD_{\text{ML=1.6}}$). This difference did not achieve significance, $p > 0.09$, however there was a medium effect size, d = 0.55. It is possible that in longer language samples or with a larger sample size, this measure would reveal differences. Omissions of content words were not analyzed as there were so few in the entire database: only 2 instances in the C-ESL samples and only 1 instance in the ML samples. Overall, our analysis of vocabulary measures suggests that the C-ESL children in this study had an adequate range of vocabulary for this narrative task after two years of English schooling.

Morphology

Analysis of the different types of morphemes used by the two groups of children suggested that both groups used a similar variety of bound morphemes ($M_{C\text{-}ESL}$ = 3.89, SD = 1.60, M_{ML} = 4.17, SD = 1.69, $t(34)$=0.51, p > 0.30, d = 0.19). Children in the C-ESL group omitted a mean of 17.6% of bound morphemes (SD = 21.6%), compared with just 4.10% of bound morphemes in the ML group (SD = 12.2%). This difference was significant ($t(34)$ = 2.31, p = 0.016), and the effect size was medium-large, d = 0.77. The large values for standard deviation suggest this was a measure on which the performance of the C-ESL group varied considerably. Analysis of errors in grammaticized words showed that C-ESL children made significantly more word errors ($t(34)$ = 4.73, p < 0.0001, d = 1.57) than did ML children ($M_{C\text{-}ESL}$=4.83, $SD_{C\text{-}ESL}$=3.49, M_{ML}=0.83, SD_{ML}=0.86). Taken together, these data seem to suggest that the C-ESL group are continuing to struggle with the morphosyntactic system of English in their Grade 2 year.

Syntax

Table 4 shows the mean values for MLU in each group. Although the ML (M_{ML}= 7.67, SD_{ML}=1.55) group had a slightly higher MLU than the C-ESL ($M_{C\text{-}ESL}$=7.30, $SD_{C\text{-}ESL}$=1.24), group, there was no significant difference in utterance length between the two groups, $t(34)$ = 0.79, p > 0.79, d = 0.56. Children in the ML and C-ESL groups also had similar variety in the different types of conjunctions and complementing wh-words ($M_{C\text{-}ESL}$=3.89, $SD_{C\text{-}ESL}$=1.60, M_{ML}=4.17, SD_{ML}=1.69, $t(34)$=0.51, p > 0.12, d = 0.17). Finally, there were no differences between the two groups on the subordination index, t(34) = 0.05, p > 0.90. In summary, none of the syntactic measures used in this study showed group differences. This suggests that the syntactic complexity evident in the oral narratives of the C-ESL children was comparable to that seen in monolingual English speaking children of the same age.

Language Processing

There were no statistically significant differences between the two groups for total number of mazes in the sample ($M_{C\text{-}ESL}$ = 12.8, SD = 9.87; M_{ML} = 10.78, SD = 8.59; $t(34)$ = 0.64, p > 0.25, d = 0.22). There was also no significant difference in the rate of maze occurrence between the two groups (p > 0.95). As measured by mazes, it seems that this oral narrative task did not

Table 4. Comparisons between Chinese ESL (C-ESL) and monolingual (ML) samples on selected language measures. Significance was determined using a family-wise alpha of 0.05. Statistically significant differences noted with an asterisks.

Language Domain	Measure	Mean C-ESL (SD)	Mean ML (SD)	t(34)	d
Sample Size	**Number of Utterances**	26.7 (12.6)	25.7 (10.8)	0.22	0.09
Vocabulary	**NDW-100**	47.4 (5.39)	50.1 (8.21)	1.15	0.39
	Word Errors (Content)	2.11 (2.27)	1.00 (1.61)	1.70	0.56
	Word Omissions (Content)	not analyzed			
Morphology	**Morphemes (Types)**	4.28 (1.23)	4.50 (1.04)	0.59	0.19
	% Morphemes Omitted	17.6 (21.6)	4.10 (12.2)	2.31*	0.77
	Word Errors (Morphosyntactic)	4.83 (3.49)	0.83 (0.86)	4.73*	1.57
Syntax	**MLUw**	7.30 (1.24)	7.67 (1.55)	0.79	0.26
	Conj/Wh-comps (Types)	3.89 (1.60)	4.17 (1.69)	0.51	0.17
	Subordination Index	1.33 (0.27)	1.33 (0.22)	0.05	0.0
Language Processing	**Number of Mazes**	12.8 (9.87)	10.8 (8.59)	0.65	0.22
	Rate of Mazes per Utterance	0.46 (0.26)	0.40 (0.24)	0.81	0.24

cause more processing difficulties for the C-ESL children in this study than for their monolingual peers.

Discussion

Comparing the language profiles of Grade 2 monolingual, C-ESL and SLI children

This project was undertaken with the goal of improving the diagnosis of language disorder in learners of English as a second language. To this end, we investigated the viability of an assessment strategy that would begin with language sample analysis of narratives in L2, using a database of language samples from typically developing ESL children in the local community as a reference point. This strategy would only work if ESL children presented a profile of language strengths and weaknesses that differed from the profile seen in children with SLI and also from children who are monolingual speakers of English. The literature primarily points to similarities in the language patterns of ESL and SLI children (Gutierrez-Clellen et al, 2008; Hakansson & Nettelbladt, 1993; Paradis & Crago, 2000; Paradis, 2005), but studies comparing these two groups have focused primarily on grammatical morphology. Our study compared the three groups on a broader set of language variables.

Consider first the language measures taken individually. The C-ESL learners in this study demonstrated some difficulty in their use of grammatical morphology compared to the monolingual children, with higher rates of omissions and errors in their use of bound morphemes and unbound functors. This finding is consistent with earlier reports (Paradis & Crago, 2000; Paradis, 2005; Guitierrez-Clellen et al, 2008), and indicates that analysis of ESL children's morphological abilities alone would not differentiate between typical and atypical second language learners. It also points to an important function of bilingual L2 reference databases: to identify those errors that are commonly found in the language of bilingual children in grade 2 and should not be treated as evidence of language learning difficulties.

The fact that our second language learners had levels of lexical diversity (NDW, number of different words) similar to those of monolingual children may seem to run counter to evidence that second language learners have smaller vocabularies in L2 than do monolingual speakers of that same language (Genesee, Paradis & Crago, 2004). A measure of lexical diversity, however, does not directly evaluate vocabulary size. Instead, it evaluates the ability to use a variety of words within a communicative task - an ability that seems to imply a lower cost for lexical processing and greater attention to differences in meaning. School-aged English speaking children with language disorders and Cantonese speaking preschool children with SLI have been shown to score lower than their age peers on this measure (Hewitt et al., 2005; Klee et al., 2004). The current data suggest that while ESL children may know fewer words than their monolingual peers, they use what they know in a more mature fashion than is seen in children with SLI.

Values for MLU have been shown to increase throughout the school years, and MLU has long been used in the identification of language disorder (Miller & Leadholm, 1992). For example, Hewitt et al. (2005) recently found lower values of MLU in a group of Kindergarten and Grade 1 students with language disorder as compared to a group of typically developing peers. Klee et al.'s (2004) study of Cantonese speaking pre-schoolers with SLI likewise showed reduced MLU in the language-disordered group. In contrast, the typically developing C-ESL students sampled in the current study had values of MLU that were similar to those of the monolingual children. Lexical indicators of syntactic complexity such as conjunctions and the calculated indices of clausal complexity were in accord with MLU.

Complex syntax is generally motivated by complex ideas. It makes sense that since children in the C-ESL group were normal learners, they would know from experience that language is capable of indicating pragmatic focus and expressing abstract relationships between ideas and/or events. They would thus attempt these same functions in L2, creating language that was syntactically complex, though not always grammatical.

Finally, children with language disorder have been reported to have higher rates of maze occurrence than age-matched peers (MacLachlan & Chapman, 1988; Bond & Schneider, 2005; Thordardottir & Ellis Weismer, 2002). The C-ESL children in this study did not show this pattern; their rates of maze occurrence were at the same low level seen in monolingual age peers. This pattern of group differences suggests that the presence or absence of mazes may be another way to distinguish between children learning English as L2 and children with language learning disorders. However, since interpretation of maze data is best done with knowledge of a given child's familiarity with specific lexical and syntactic forms as well as detailed syntactic analyses, clinical decisions should probably not be based on frequency of mazes alone.

We turn next to consider our findings on the various language measures taken as sets. When compared with monolingual peers, there was evidence that children in our C-ESL group were more likely to omit or make errors in their use of bound morphemes and unbound

functors. However, there were no reliable group differences on measures of lexical diversity (NDW-100), syntactic complexity (MLU, use of conjunctions/wh-words, SI), or language processing (maze rates). All of our measures were chosen because prior research had shown them to be areas of characteristic difficulty for children with SLI (Hewitt et al., 2005; Johnston & Kamhi, 1984; Johnston & Schery, 1976; Klee, et al, 2004; Paradis, 2005; Bond & Schneider, 2005; Thordardottir & Ellis Weismer, 2002). The fact that the ESL group did show significant difficulty with two of the morphological measures but resembled native L1 speakers in the remaining variables, suggests that it should be possible to distinguish the language profile of a typically developing ESL child from the profile of a bilingual child with SLI. Although we would have liked to further test this conclusion with a comparison group of Chinese SLI children learning English in a primary school setting, an extended search for such children in Vancouver, Canada and in Hong Kong was unsuccessful.

Typical "norms" are drawn from large, carefully identified samples, not language samples collected from 18 children who are "doing just fine". Without denying that a larger number of participants would improve our database, two factors do seem to mitigate this concern. First, our normative database focuses on a very narrow developmental window, i.e., the first three months of Grade 2. If we think of our normative sample as a cell within a larger database, and each school year had four cells with 18 samples, the entire normative sample would consist of 72 children at each grade level, a more readily acceptable size. Secondly, our normative data were collected in the home communities of the children who will be evaluated with them. This design feature is rare and virtually guarantees a level of pertinence that is usually achieved through increases in the size of the normative database.

The individual variability seen in the performance of the Chinese ESL children on each of the measures described here may also raise concern. However, such variability is reported in many studies of second language learners (Genesee, Paradis, & Crago, 2004), and similar variability exists within language-disordered populations (Hewitt et al., 2005). The degree to which this variability reflects sampling decisions or is inherent in the learning process is unknown. However, when local SALT L2 databases are available, it becomes possible to investigate a child's performance on a range of measures with reference to the same normative group for all areas of language proficiency. This, in effect, controls for sampling differences and allows us to focus on differences in individual variability among the different language domains.

To summarize the argument thus far, our data suggest that there are a number of areas of language in which C-ESL children, after two years of schooling in English, can be as proficient as their monolingual peers – at least when telling stories in English. Two such measures, MLU and NDW, would seem to be particularly useful in the early phases of assessment; they are comprehensive, independent of topic, reliable across samples of varying length, and included among the standard SALT variables. In clinical practice, children whose stories were comparable in length and lexical diversity to those told by children in a local ESL SALT database would be judged to have low priority for in-depth assessment despite morphological errors. In contrast, the SLI literature indicates that language disordered children, including those who are bilingual, are likely to have difficulty in lexical diversity, syntax, and language processing in addition to grammatical morphology. If a child's L2 English usage fell below the levels evident in the local ESL reference database in several areas, that child could be scheduled for additional assessment.

These preliminary practice guidelines will need confirmation in further research, as studies of language impairment and bilingualism to date have not typically looked at the full profile of language measures simultaneously, nor have there been many studies of bilingual children with language impairment. Also, as discussed earlier, the relatively small number of participants and our selection process make our conclusions somewhat less certain. It is important to remember, however, that the goal of this project was not to provide normative data on the English competencies of second grade children from Chinese speaking homes. We intended only to provide empirical support for further research on assessment strategies. Findings reported here do seem to indicate that use of local reference databases of L2 narratives in the early stages of language assessment is a strategy that merits further investigation.

Current research does not yet support the creation and use of a single database of L2 samples elicited from children who have learned a variety of first languages, nor does it support using an L2 database from one language, cultural or socioeconomic group to evaluate the same L2 spoken by children from some other group. Several lines of evidence suggest caution in generalizing from one language or cultural group to another. Johnston and Wong (2002) and Simmons and Johnston (2007), for example, identified significant cultural differences in the verbal interaction patterns of parents with young children, and in the beliefs of parents about their role in language learning. These differences in parental beliefs and practices could well affect the course of language learning although the

necessary research has yet to be done. The nature of the child's first language is known to influence the timing and sequence in which its grammatical forms are learned (Aksu-Koc, 1998; Slobin, 1973). For example, in a recent comparison study of 11 languages, grammatical morphology was learned earliest in languages with the richest morphological systems (Xanthos, et al, 2011). In the area of child L2 acquisition, recent research has confirmed that transfer effects do play some role in children's acquisition of English morphosyntax (Paradis, 2011; Zdorenko & Paradis, 2011). For example, Zdorenko and Paradis (2011) compared article use in L2 English children learning from L1 languages with and without articles. Children from all backgrounds overused the definite article, a developmental trend that has long been identified in L1 acquisition of English (e.g., Brown, 1973). Additionally, however, Zdorenko and Paradis found that children from no-article L1s (Cantonese/Mandarin) frequently omitted articles, while such omissions were very unusual in the language of children from article-including L1s (Spanish, Hindi/Urdu/Punjabi). Similarly, Paradis (2011) found that verb tense and agreement marking of a child's L1 was one predictor of L2 children's performance on the Test of Grammatical Impairment (Rice & Wexler, 2001). Overall, current research suggests that it would be advisable to minimize language, cultural and social differences between the children being assessed and the children in the reference databases.

The Feasibility of "Testing Local"

If confirmed, the patterns of performance reported in this study would emphasize the importance of assessment methods that allow children to demonstrate their language strengths as well as weaknesses. Language sampling provides just such a tool. With relatively little assessment time and minimal coding, we were able to obtain a snapshot of children's performance in a variety of language domains and the resultant profiles served to distinguish the groups. Narrative samples as short as about 25 utterances require little time to collect and transcribe but have been shown to yield the same values as longer samples for general measures such as MLU, NDW and rate of maze occurrence (Heilmann, Nockerts & Miller, 2010). A 1997 survey of S-LPs in the US indicated that some 83% of them were already using language sample analysis in their work with children Kemp & Klee, 1997). Data regarding use of SALT are not available, but our teaching experience indicates that the basic analyses necessary to implement the assessment strategy presented here can be learned in 30-60 minutes by a computer literate S-LP. The skill needed to create a database might require another hour or two, but would not be required of all users. Interpretation of the SALT profile for a given bilingual child requires only the same body of knowledge that all practice with children with language disorders requires. In short, the local SALT database approach thus seems to provide a practical and feasible means by which to identify those ESL children who require more extensive assessment.

Conclusion

Findings from this study point to the potential value of an assessment strategy that begins by comparing a given ESL child's English narratives to those of typically developing ESL children in a local normative database. The bilingual children in our local reference database displayed a profile of language abilities that showed many similarities to monolingual children, despite a distinct difficulty in the domain of morphology. This contrasts with the profile of SLI children found in the literature, in which children with SLI have been shown to demonstrate difficulty in morphology, but also in vocabulary, syntax, and language processing. Assessments of the language learning ability of ESL children have been limited by cultural bias (e.g. standardized tasks), lack of standardization (e.g., observational data), or extreme logistical challenges (e.g. assessment in child's first language). The use of computer assisted language sample analysis could substantially reduce these limitations. A local normative database such as the one described here could be created and a profile for ESL learners from that particular cultural, linguistic and economic group could be determined. Armed with this information, clinicians could implement a step-by-step process to decision making in the assessment of an ESL child. We are suggesting here that the initial step in this process would be the use of the local normative database to assess the child's performance on a short, narrative language sample in L2. If the child were to perform poorly relative to ESL peers, further investigation of the child's language learning ability in L1 or L2 would be warranted. If the child performed well relative to ESL peers, in-depth assessment at that time would not be required.

Further work will be required to assess the sensitivity and specificity of this assessment strategy, to identify the most discriminating variables, and to establish the predictive validity of language sample data with ESL learners. The findings reported here would seem to indicate the value of continuing this line of investigation. Small-scale databases representing the language proficiencies of children from specific language and cultural communities would seem to be an appropriate and practical option for improving our standard of care among culturally and linguistically diverse communities.

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References

Acarlar, F. & Johnston, J. (2006). Computer-based analysis of Turkish child language: Clinical and research applications. *Journal of Multilingual Communication Disorders, 4*, 78-94.

Aksu-Koc, A. (1998) The role of input versus universal predispositions in the emergence of tense-aspect morphology: evidence from Turkish. *First Language, 54*, 255-280.

Bedore, L.M., & Leonard, L.B. (1998). Specific language impairment and grammatical morphology: A discriminant function analysis. *Journal of Speech, Language and Hearing Research, 41*, 1185-1192.

Bedore, L.M., & Pena, E.D. (2008). Assessment of bilingual children for identification of language impairment: Current findings and implications for practice. *International Journal of Bilingual Education and Bilingualism, 11*, 1-26.

Bedore, L.M., Pena, E.D., Gillam, R.B., & Ho, T.H. (2010). Language sample measures and language ability in Spanish-English bilingual kindergarteners. *Journal of Communication Disorders, 43*, 498-510.

Bond, S. & Schneider, P. (2005). Maze usage by typically developing and impaired children in a story context. *Poster presented at the convention of the American Speech and Hearing Association,* San Diego, CA.

Brown, R. (1973). *A first language: The early stages.* London: George Allen & Unwin.

Cleave, P.L., Giralometto, L.E., Chen, X., & Johnson, C.J. (2010). Narrative abilities in monolingual and dual language learning children with specific language impairment. *Journal of Communication Disorders, 43*, 511-522.

Fiestas, C.E., & Pena, E.D. (2004). Narrative discourse in bilingual children: Language and task effects. *Language, Speech, and Hearing Services in Schools, 35*, 155-168.

Genesee, F., Paradis, J., & Crago, M.B. (2004). *Dual language development and disorders: A handbook on bilingualism and second language learning.* Baltimore, MD: Paul H. Brookes Publishing Co.

Gillam, R. & Pearson, N. (2004). *The Test of Narrative Language.* Austin, TX: Pro-Ed.

Gutierrez-Clellan, V.F., Simon-Cereijido, G., & Wagner, C. (2008). Bilingual children with language impairment: A comparison with monolinguals and second language learners. *Applied Psycholinguistics, 29*, 3-19.

Hadley, P.A. (1998). Language sampling protocol for eliciting text-level discourse. *Language, Speech, and Hearing Services in Schools, 29*, 132-147.

Hakansson, G., & Nettelbladt, U. (1993). Developmental sequences in L1 (normal and impaired) and L2 acquisition of Swedish syntax. *International Journal of Applied Linguistics, 3*, 131-157.

Heilmann, J., Miller, J.F., Nockerts, A., & Andriacchi, K. (2006, June). Agreement and reliability of language sample analysis revisited. *Paper presented to the Symposium on Research and Child Language Disorders,* Madison, Wisconsin.

Heilmann, J., Nockerts, A. & Miller, J. (2010) Language sampling: Does the length of the transcript matter? *Language, speech and hearing services in schools, 41,* 393-404.

Hewitt, L.E., Hammer, C.S., Yont, K.M., & Tomblin, J.B. (2005). Language sampling for kindergarten children with and without SLI: Mean length of utterance, IPSYN, and NDW. *Journal of Communication Disorders, 38,* 197-213.

Johnston, J.R. (2001). An alternate MLU calculation: Magnitude and variability of effects. *Journal of Speech, Language, and Hearing Research, 44*, 156-164.

Johnston, J.R. (2006). *Thinking about child language: Research to practice.* Eau Claire, WI: Thinking Publications.

Johnston, J.R. (2008). Narratives: Twenty-five years later. *Topics in Language Disorders, 28*, 93-98.

Johnston, J.R. & Kamhi, A. (1984). The same can be less: Syntactic and semantic aspects of the utterances of language impaired children. *Merrill-Palmer Quarterly, 30*, 65-86.

Johnston, J.R., Miller, J.F., Curtiss, S., & Tallal, P. (1993). Conversations with children who are language impaired: Asking questions. *Journal of Speech and Hearing Research, 36*, 973-978.

Johnston, J.R. & Schery, T. (1976). The use of grammatical morphemes by children with communication disorders. In D.M. Morehead & A.E. Morehead (Eds.), *Normal and deficient child language* (pp. 239-258). Baltimore, MD: University Park Press.

Johnston, J.R. & Wong, M.Y. (2002). Cultural differences in beliefs and practices concerning talk to children. *Journal of Speech, Language and Hearing Research, 45*, 916-926.

Kemp, K. & Klee, T. (1997) Child language sampling practices: Results of a survey of speech language pathologists in the United States. *Child Language Teaching and Therapy, 13,* 161.

Klee, T., Stokes, S.F., Wong, A.M.Y., Fletcher, P., & Gavin, W.J. (2004). Utterance length and lexical diversity in Cantonese-speaking children with and without specific language impairment. *Journal of Speech, Language, and Hearing Research, 47*(6), 1396-1411.

Kohnert, K. (2010). Bilingual children with primary language impairment: Issues, evidence and implications for clinical actions. *Journal of Communication Disorders, 43*, 456-473.

Laing, S.P., & Kamhi, A. (2003). Alternative assessment of language and literacy in culturally and linguistically diverse populations. *Language, Speech, and Hearing Services in Schools, 34*, 44-55.

Langdon, H.W. & Quintanar-Sarallana, R. (2003). Roles and responsibilities of the interpreter in interactions with speech-language pathologists, parents, and students. *Seminars in Speech and Language, 24*(3), 235-244.

Loban, W. (1976). *Language development: Kindergarten through grade twelve* (Research Report 18). Urbana, IL: National Council of Teachers of English.

MacLachlan, B.G., & Chapman, R.S. (1988). Communication breakdowns in normal and language learning-disabled children's conversation and narration. *Journal of Speech and Hearing Disorders, 53*, 2-7.

Masterson, J.J. & Kamhi, A.G. (1991). The effects of sampling conditions on sentence production in normal, reading-disabled, and language-learning-disabled children. *Journal of Speech and Hearing Research, 34*, 549-558.

McCarthy, D. (1943). Language development in the preschool child. In R.G. Barker, J.S. Kounin, H.F. Wright (Eds), *Child behavior and development: A course of representative studies* (pp. 107-128). New York, NY: McGraw-Hill.

Miller, J.F. & Chapman, R.S. (1981). The relation between age and mean length of utterance in morphemes. *Journal of Speech and Hearing Research, 24*, 154-161.

Miller, J.F., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D.J. (2006). Oral language and reading in bilingual children. *Learning Disabilities Research and Practice, 21*(1), 30-43.

Miller, J.F. & Iglesias, A. (2012). Systematic Analysis of Language Transcripts (SALT, Version 9) [Computer Software]. Madison, WI: Language Analysis Laboratory, University of Wisconsin.

Miller, J.F. & Leadholm, B. (1992). *Language sample analysis guide: The Wisconsin guide for identification and description of language impairment in children.* Wisconsin Department of Public Instruction.

Oller, D.K., & Eilers, R.E. (2002). *Language and literacy in bilingual children.* Clevedon: Multilingual Matters.

Paradis, J. (2005). Grammatical morphology in children learning English as a second language: Implications of similarities with specific language impairment. *Language, Speech and Hearing Services in Schools, 36*, 172-187.

Paradis, J. (2010). The interface between bilingual development and specific language impairment. *Applied Psycholinguistics, 31*, 227-252.

Paradis, J. (2011). Individual differences in child English second language acquisition: Comparing child-Internal and child-external factors. *Linguistic Approaches to Bilingualism, 1*(3), 213-237.

Paradis, J. & Crago, M. (2000). Tense and temporality: Similarities and differences between language-impaired and second-language children. *Journal of Speech, Language and Hearing Research, 43*(4), 834-848.

Pena, E.D., Gutierrez-Clellen, V., Iglesias, A., Goldstein, B., & Bedore, L.M. Bilingual English-Spanish Assessment (BESA). Manuscript in preparation.

Richards, B.J. & Malvern, D.D. (1997). *Quantifying lexical diversity in the study of language development.* Reading, U.K.: The University of Reading, New Bulmershe Papers.

Rice, M. & Wexler, K. (1996). Toward tense as a clinical marker of SLI in English-speaking children. *Journal of Speech, Language and Hearing Research, 39*, 1239-1257.

Rice, M. & Wexler, K. (2001). Test of Early Grammatical Impairment. New York: The Psychological Corporation.

Rispoli, M., & Hadley, P. (2001). The leading edge: The significance of sentence disruptions in the development of grammar. *Journal of Speech, Language, and Hearing Research, 44*, 1131-1143.

Rojas, R., & Iglesia, A. (2009). Making a case for language sampling: Assessment and intervention with (Spanish–English) second-language learners. *The ASHA Leader, 14*, 10- 13.

SALT Software (2010). Gillam Narrative Tasks Reference Database. Retrieved from http://www.saltsoftware.com/salt/downloads/referencedatabases.cfm.

Slobin, D. (1973) Cognitive prerequisites for the acquisition of grammar. In C. Ferguson & D. Slobin (Eds.), *Studies of child language development* (pp. 175-208). New York: Holt, Reinhardt & Winston.

Simmons, N. & Johnston, J.R. (2007). Cross-cultural differences in beliefs and practices that affect the language spoken to children: Mothers with Indian and Western heritage. *International Journal of Language and Communication Disorder, 42*(4), 445-465.

Simmons, N. & Small, J. A.. *A survey of speech-language pathology service to bilingual clients in British Columbia.* Manuscript in preparation.

Templin, M.C. (1957). *Certain language skills in children; Their development and inter-relationships*. Minneapolis, MN: University of Minnesota Press.

Thordardottir, E.T. (2005). Early lexical and syntactic development in Quebec French and English: Implications for cross-linguistic and bilingual assessment. *International Journal of Communication Disorders, 40*(3), 243-278.

Thordardottir E.T., & Ellis Weismer, S. (2002). Content mazes and filled pauses in the spontaneous speech of school-aged children with specific language impairment. *Brain and Cognition, 48*, 587-592.

Vancouver School Board (2011). About VSB. Retrieved from http://www.vsb.bc.ca/about-vsb.

Watkins, R.V., Kelly, D.J., Harbers, H.M., & Hollis, W. (1995). Measuring children's lexical diversity: Differentiating typical and impaired language learners. *Journal of Speech and Hearing Research, 38*(6), 1349-1355.

Xanthos, A., Laaha, S., Gillis, S., Stephany, U., Aksu-Koc, A., Christofidou, A.,... Dressler, W. (2011). On the rule of morphological richness in the early development of noun and verb inflection. *First Language, 31*(4), 461-479.

Zdorenk, T. & Paradis, J. (2011). Articles in child L2 English: When L1 and L2 acquisition meet at the interface. *First Language*, 1-25. DOI: 10.1177/0142723710396797

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Appendix

Language Use at Home:

Please answer the following questions to give us a better idea of your Grade 2 child's language experience. (You may write your answers in English or in your native language, whichever you prefer).

Birth date of Grade 2 Child: _____

1. What language do you use when you talk to your Grade 2 child at home?
2. If you have older children, what language do they use when talking to your Grade 2 child at home?
3. What language did your child learn first?
4. What language does your child usually use when he/she talks to you at home?
5. How well does your child speak his/her first (native, home) language?

   ___ Was later and slower than most children in learning to talk.

   ___ Just as well as most children of the same age.

   ___ Better than other children of the same age.

6. At what age did your Grade 2 child start to learn English?

   Where did he/she first learn English?

   ___ Preschool/Daycare ___ Babysitter ___ Other

7. How much English did your child speak when he/she first went to school in kindergarten in Canada?

   ___ Only a few words

   ___ Could put a few words together to say simple things about play activities, food, or TV programs.

   ___ Could talk about most topics, but made lots of mistakes and didn't always know the words he/she needed.

   ___ Knew a lot of English and used everyday.

Outcomes That Matter for Children With Severe Multiple Disabilities who use Cochlear Implants: The First Step in an Instrument Development Process

Des Retombées qui Comptent Pour des Enfants Ayant des Handicaps Multiples et qui Utilisent des Implants Cochléaires : La Première Étape dans le Processus de Développement d'un Instrument

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Kathryn Ritter
Jane Grueber
Tanis Howarth

KEY WORDS
COCHLEAR IMPLANT
MULTIPLE DISABILITY
COMPLEX NEEDS
OUTCOMES
BENEFIT
PARENT REPORT
INSTRUMENT DEVELOPMENT

Abstract

The goal of the current study was to begin an instrument development process for a tool that would capture outcomes of cochlear implantation for children with severe multiple disabilities that parents report matter most to themselves and their children. Participants comprised mothers of children who had profound hearing impairments and additional severe disabilities, and who had received cochlear implants within the last 10 years. Participants completed one to four interviews with a structured interview question set designed to capture participants' perceptions and observations of their child's communication, listening, behaviour, social interactions, and device management post-cochlear implantation.

Reported gains following cochlear implantation included increased: (a) awareness of sound in general, (b) receptive and expressive communication, (c) connectedness within the family and broader community, and (d) quality of life. Themes related to 'listening', 'expressive communication', and 'family systems' were the most frequently reported by participants; however, when asked to rank themes with respect to their importance to themselves and their child, 'child affect', 'connectedness/inclusion', and 'receptive communication' were ranked the highest. These results will form the basis for instrument development.

Abrégé

Le but de cette étude était d'amorcer le processus de développement d'un outil sensibles aux retombées de la pose d'un implant cochléaire chez des enfants ayant des handicaps multiples sévères, qui, au dire des parents, ont le plus d'importance pour eux et leurs enfants. Les participants étaient des mères d'enfants ayant une surdité profonde et d'autres handicaps sévères, et qui avaient reçu un implant cochléaire depuis moins de dix ans. Les mères ont participé à des entrevues (entre une et quatre) avec une série de questions structurées conçues pour recueillir leurs perceptions et observations de leur enfant concernant sa communication, son écoute, son comportement, ses interactions sociales et sa gestion de l'appareil après la pose de l'implant cochléaire.

Les améliorations rapportées après l'implantation cochléaire comprenaient une augmentation de (a) la conscience des sons en général, (b) de la communication au plan réceptif et expressif, (c) du lien au sein de la famille et avec la communauté, et (d) de la qualité de vie. Des thèmes reliés à « l'écoute », à « la communication au plan expressif » et aux « systèmes familiaux » ont été le plus souvent notés par les participants; toutefois, quand on leur demandait d'évaluer les thèmes par ordre d'importance pour eux et leurs enfants, ce sont « l'affect de l'enfant », « la connectivité/inclusion » et « la communication au plan réceptif » qui ont été classés les plus hauts. Ces résultats formeront les fondements pour le développement de l'instrument.

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Cochlear implantation (CI) has proven to be an important treatment option for children with severe-to-profound hearing loss. However, 30-40% of children with severe-to-profound hearing loss have additional disabilities, many of which are also severe in nature, and CI has been inconsistently available to these children (Edwards, 2007; Johnson & Wiley, 2009). A number of factors have limited CI as a treatment option for this population including: (a) lower expectations in listening and spoken language outcomes, (b) increased surgical and medical risks, (c) possible outcome disappointments for families, (d) challenges programming the device, and (e) lack of adequate assessment and tools for monitoring progress to aid clinical decision-making (Berrettini et al., 2008; Johnson & Wiley, 2009; Schramm, Fitzpatrick, & Seguin, 2002; Trimble et al., 2008; Wiley, Meinzen-Derr, & Choo, 2008)

The goal of the present study was to undertake an instrument development process to assist in reliably documenting outcomes for children with severe multiple disabilities who use cochlear implants. Our goal evolved in response to a clinical need identified by the authors who provide services to children with severe multiple disabilities and their families following CI. Parents described positive changes in their children following CI yet the improvements were either too subtle to be captured or not captured at all by the standardized assessment instruments currently used to monitor CI effectiveness.

Background

Cochlear implantation has become a common and widely accepted treatment option for children with profound hearing loss (Filipo, Bosco, Mancini & Ballantyne, 2004). Advancements in CI technology and success in rehabilitation have led to opening CI to additional groups including infants, and children with disabilities in addition to profound hearing loss. However, there is currently no widespread consensus in the literature or among CI centres regarding the implantation of children with multiple disabilities (Berrettini et al., 2008; Johnson & Wiley, 2009). For children where profound hearing loss is the sole disability, CI decisions are based on expected benefits to audition, speech, and language acquisition; however, what constitutes a benefit or how it should be quantified remains questionable for children with multiple disabilities. Compared to children with profound hearing loss as a sole disability, children with multiple disabilities achieve lower scores on measures of audition, speech perception, speech intelligibility, and language acquisition following CI (Berrettini et al, 2008; Johnson & Wiley, 2009; Waltzman, Scachuns, & Cohen, 2000). Notwithstanding poor scores on standardized assessment instruments, improved quality of life, increased connectedness and social interactions along with greater interest in the environment have been reported for children with multiple disabilities following CI (e.g., Berrettini et al, 2008; Filipo et al, 2004; Waltzman et al, 2000; Wiley, Jahnke, Meinzen-Derr, & Choo, 2005) and were reported as both relevant and significant to families (Hermannova, Phillips, O'Donoghue, & Ramsden, ND; Johnson & Wiley, 2009).

For example, analyzing post-CI outcomes for children with and without additional disabilities Waltzman et al. (2000) found that auditory skill development was not as immediate or favorable for the children with multiple disabilities. However, anecdotal observations revealed positive benefits, such as increases in social interaction and connectedness to the environment. Waltzman and colleagues stated

> "the ability to provide greater access to the surrounding environment to a child otherwise deprived of that opportunity, should, in its own right, be considered as an achievement despite the lack of immediate gratification obtained from excellent results on test measures" (p. 334).

These authors suggested that although it is currently challenging to measure improvements in auditory and communication skills, social interaction, and connectedness for children with multiple disabilities, such changes are noticeable and reported with regularity. Similarly, Filipo et al. (2004), Donaldson, Heavener, and Zwolan (2004), and Wiley et al. (2005) all report positive benefits of CI for children with multiple disabilities including improved quality of life, speech perception, communication skills, and self sufficiency, along with greater awareness of environmental sounds, increased attentiveness and interest in their environment.

The accumulated evidence, although promising, does not yet provide clinicians consistent procedures to support CI candidacy decision-making or for measuring outcomes for children with multiple disabilities. Additionally, studies that have attempted to analyze post-CI outcomes for this population include children with a wide array of additional disabilities (e.g., cerebral palsy, learning disability, autism, cognitive delay, oral motor difficulties), and ranging from mild to severe diagnoses, making it difficult to draw conclusions about outcomes. Thus, in the present study we focus exclusively on post-CI outcomes for children with severe additional disabilities. For the purpose of this study, this meant that hearing loss was not the most significant influence on the child's development.

Establishing and quantifying the benefits of CI for this population is a critical issue due to the reported unsuitability of standardized instruments to capture the changes observed for these children. Moreover, the few standardized measures that do evaluate benefits in daily life (Berrittini et al., 2008; Waltzman et al., 2000) have limitations for this population. *The Glasgow Children's Benefit Inventory* (Kubba, Swan, & Gatehouse, 2004) aimed at capturing general quality of life benefits specific to children following an operation or medical intervention, lacks specificity in relation to the contribution of access to sound that participants described for their children with multiple disabilities and for themselves. While the *Champion's Evaluation Profiles* (Hermannova, et al., n.d.) a recently developed tool for documenting both process and outcomes for pediatric cochlear implant users with additional disabilities, is valuable as a guide in the process of evaluating children with multiple disabilities for CI candidacy, it has not been subjected to reliability studies and thus, does not lend itself to measurement at present.

Parent identified benefits due to CI reported in previous research and observed in our own clinical practice form an important source of evidence related to both CI candidacy and outcome benefits for children with severe multiple disabilities (Herrmannova, et al., n.d.; Johnson & Wiley, 2009; Ritter & Peters, 2003). Measures need to be developed that reliably capture the benefits that parents witness, experience, and value on a daily basis (National Roundtable Steering Committee, 2011).

Method

Participants

Participants comprised mothers of seven children who had (a) profound hearing impairments, (b) received cochlear implants within the last 10 years, and (c) additional severe disabilities. Participants came from diverse social backgrounds, their first language was English, four had completed high school and three had post-secondary education. One participant resided in rural Alberta and six participants resided in the metropolitan area of Edmonton, Alberta, a large Western Canadian city. Edmonton has a tertiary rehabilitation facility that provides comprehensive multidisciplinary assessment and treatment services to families of children with hearing impairment, including determination for candidacy and CI follow-up.

Participants' children were all diagnosed with severe multiple disabilities and their hearing loss was a secondary diagnosis in terms of its influence on their overall functioning. Cochlear implantation for participants' children occurred between 2000 – 2009. This group of children represented approximately 80% of children with severe multiple disabilities with cochlear implants in northern Alberta at the time the study was conducted. Children were involved in community placements and were followed by a variety of assessment and follow-up clinics for their medical and developmental needs. In addition, the second author followed all seven children for communication habilitation support related to CI function. Table 1

Table 1. Characteristics of Participants' Children

Participant	Child Age at Cochlear Implant[a]	Implant Type[b]	Additional Diagnoses
1	1;8	AB - Clarion	Autism
2	2;4	CA - Freedom	Severe neuromotor delay (unknown cause)
3	1;6	AB - 1.2	Autism; Seizure disorder
4	1;8	CA - Freedom	Autism; Chromosome 10 deletion
5	2;4	AB – Hi Res 90K	Pervasive Developmental Disorder
6	3;5	AB – Hi Res 90K	Blind; Peroxysomal disorder,
7	5;7	CA – N-24	Cerebral Palsy (quadriplegic); Pervasive Developmental Disorder

Note. a = Age is expressed in years;months.
b = Cochlear Implant Company: AB -Advanced Bionics; CA-Cochlear Americas

describes relevant characteristics of the participants' children.

Recall the aim of our study was to begin development of an instrument that captured outcomes parents' consider significant related to CI for children who have severe multiple disabilities, which in turn influenced our methodological choice, development of the structured interview question protocol, and procedures. Our methodological approach was qualitative and informed by grounded theory (Lincoln & Guba, 1985) because a main tenant of the grounded theory approach supports the discovery and description of real concerns and perceptions of participants. Thus, it was well suited to our aim.

Procedure

Interview Protocol: A structured interview question set was developed based on previous research related to outcomes of CI coupled with the second author's extensive clinical experience working with families of children with hearing impairment and CI. Questions were specifically tailored to capture participants' perceptions and observations of their child's (1) communication, (2) listening, (3) behaviour, and (4) social interactions, post- cochlear implantation. Additionally, participants were asked about managing the device, and offered the opportunity to add observations that were not captured in the interview question set (see Appendix for structured interview questions).

Interview Procedure: Participants granted consent to complete the interview question set and completed one to four interviews (face-to-face or written). The second author conducted the face-to-face interviews as part of scheduled visits (home or clinic). The initial interview question sets were administered to participants 1, 2, 4, 6, and 7 following their child's implantation. For participants 3 and 5, whose children received their implants prior to the start of the study, initial interview question sets were administered upon enrolment in the study. Interviews two-through-four were conducted at convenience intervals, that is, with available participants, and at times the participants were accessible. Interviews were continued until data saturation was reached, resulting in a total of 18 interviews; 15 face-to-face and three written. Data saturation is the process by which sufficient data is obtained so that there is repetition of previously collected information, which allows for variation in participant responses to be accounted for and understood (Morse, 1994). Table 2 shows the number and interval of interviews completed for each participant.

During each interview the researcher took extensive field notes of the participants' responses and sought confirmation or clarification before concluding the interview that her notes accurately reflected participants' responses. A written summary of participants' responses was compiled after each interview (face-to-face and written) and participants

Table 2. Number and Intervals of Participant Interviews

Participant	Total Number of Interviews	Interview 1	Interview 2	Interview 3	Interview 4
1	2	CA: 7;4a W	CA: 12;6		
2	4	CA: 1;6	CA: 2;4 W	CA: 2;10	CA: 3;5
3	1	CA: 10;6			
4	3	CA: 0;5 W	CA: 0;11	CA: 0;17	
5	1	CA: 0;2			
6	4	CA: 0;3	CA: 0;5	CA: 0;16	CA: 4;0
7	3	CA: 0;7	CA: 1;7	CA: 2;11	

Note. CA = Child age at time participant completed interview
a = Age is expressed in years;months
W = Participant completed interview protocol in writing

were asked to review the summary to confirm accuracy and provide clarification if necessary.

Following the content analysis approach of Lincoln and Guba (1985) and Neuendorf (2002), as data was collected, classification themes were developed whereby the content of participants' responses were grouped into categories of similar responses, after which major themes were derived from the categories, and illustrative participant response examples extracted. Participants were asked to confirm that both the categories and themes accurately represented their responses. All participants were in agreement with the final set of categories and themes derived from their responses. Once agreement was achieved for major themes, the number of responses participants provided within each theme was tallied. Finally, participants were asked to rank the importance of each theme for themselves and their child.

Quality and Credibility

In qualitative research, the equivalents of the quantitative research concepts of validity and reliable are quality and credibility. "The credibility of qualitative enquiry is especially dependant on the credibility of the researcher because the researcher is the instrument of data collection and the center of the analytic process" (Patton, 1980, p. 461). The second author has in excess of 35 years experience working with families of young children with hearing loss along with a clinical and academic background related to instrument development and program evaluation (Ritter, 1997).

Quality and credibility of the data and interpretation was further enhanced by triangulation of sources (Patton, 1980) which involves data collection from multiple sources as a means of cross-checking regularities in the data, and overcoming intrinsic biases (Patton & Westby, 1992). Multiple data sources within the present study included seven participants' whose children varied in disabilities and age at the time of interviews as well as field notes summarizing observations and discussion with participants (see Tables 1 and 2).

Credibility of our findings was further enhanced via member checks throughout the study. Member checks, also referred to as respondent validation, and informant feedback, is a technique used to improve accuracy, quality, credibility, transferability, and validity of a study (Schwartz-Shea, 2006). Member checking was completed during all phases of the study, during and after interviews, and following classification and interpretation of participant responses, thus allowing participants multiple opportunities to critically analyze our interpretations. The use of member checks throughout an entire study serves to decrease the incidence of data inaccuracy and incorrect interpretation of the data (Schwartz-Shea, 2006).

Results

Our goal was to gain information to support the development of an instrument that captured outcomes of CI for children with severe multiple disabilities that participants reported were substantive to their child, themselves, and their families. To accomplish this goal we first conducted a content analysis (e.g., Lincoln & Guba, 1985; Neuendorf, 2002) of the repeated structured interview question sets to identify the themes in participants' observations and comments. Seven distinct themes were identified: (a) listening (non-linguistic), (b) expressive communication, (c) family systems outcomes, (d) receptive communication, (e) connectedness/inclusion (f) child affect, and (g) challenges. Themes, response categories that characterized individual themes, and illustrative participant exemplars are displayed in Table 3. In the next section we describe each of the themes and provide examples of participant observations and comments related to the particular theme.

Themes

Listening (non-linguistic). A total of 40 participant responses related to the theme, listening to non-linguistic sounds, that is, environmental sounds and tone of voice. Participants described children reacting to environmental sounds after CI activation, such as laughing when sounds were heard or attempting to locate the source of a sound. The importance of access to sound for such purposes is shown in the comment by Participant 6 *"It's [sound] his WHOLE world, because he's totally blind and immobile. He can't compensate through vision or movement, he can't entertain himself, sound IS his entertainment."* Another participant spoke of the importance of their child's newly acquired ability to orient to sound, *"Our daughter will turn to look at me when I make one of her favorite sounds. It is the only time she orients toward me and it literally thrills me when she does it. Our daughter is not terribly relational, so to get that interaction from her is very meaningful to me. When she looks at me, even it is really only to see the sound, so to speak, she looks into my face and into my eyes and I get a chance to love her with my eyes. I use her ears, to get to her eyes, to get to her heart."* Participants also indicated that CI gave children access to sound as a means of enjoyment, be it music or other sounds heard within the child's environment, including the child's own voice.

Expressive Communication. Within this theme participant responses illustrated children's use of voice, sign, pictures, words and gestures. Similar to Listening,

participants provided a total of 40 responses related to this theme. Participant 5's comment, *"He now knows for sure that his voice has power. He has differentiated tone of voice for a long time. But now it seems more deliberate. It's easier now to tell what his mood is from another room,"* reveals not only that the child was using his voice more deliberately as a means of communication but that the parent was understanding the communicative intent of the child's vocalizations. Participants also commented that CI resulted in their child actively monitoring their vocal loudness and imitating some sounds upon request. Further, participants felt that they could make more demands for expressive communication from their child following CI.

Table 3. Description of Themes, Response Categories, and Participant Exemplars

Theme Definitions	Response Categories	Participant Exemplars
Listening (non-linguistic): Child reacts appropriately to some environmental sounds or voice (not spoken words); enjoys music	• Awareness/responsiveness to environmental sounds • Child responds to voice from another room • Child loves/appreciates music • Child laughs at funny sounds • Child reliably communicates when CI signal is bad or off • Child searches for environmental or voiced sound • Child removing CI headpiece is a good indicator of lack of engagement • Child independently replaces headpiece	• *When he lost his hearing nothing was funny anymore. Now we have fun during meals.* • *Taking his head piece off himself is a good way to both gauge quality of sound and engagement. It is important communication.*
Expressive Communication: Child is able to express self with voice, signs, pictures, words or gestures	• Meaningful communication regardless of modality (behaviour/gesture, sign, oral) • Child makes non-verbal efforts to engage others • Child's vocal volume moderated to socially acceptable level • Increase in amount and variety of vocalizations post-CI • Child uses inflection with meaning • Child imitates vocal patterns/melody • Child imitates C-V combinations • Expressive communication is inconsistent	• *We now ask her to ask for something, "Do you want the ball? Say bah." We wait her out a couple of minutes. Asking her a few times to say, "Bah" if she wants the ball. She purses her lips together and emphatically says, "Bah". My son plays this game with her now.*
Family Systems Outcomes: Family interactions are easier because child has access to sound	• Family feels more 'normal' to parent • Less effort for parent and siblings to include child in family interactions • CI technology easier to manage than hearing aids • Ability to interact through sounds brings parent joy • Family has more fun with child • Parents now feel that they have done everything possible to support child's optimal function	• *One of the best things is how far away he can hear. Now I can be washing dishes at the sink and be talking to him and he understands. That is a freedom no money can buy. He is a high needs kid; being able to engage and support him from a distance is HUGE.* • *You used to have to work so hard just to get her to look at you. Now it is effortless on our part, she's on her own steam.*

Receptive Communication: Child is able to understand at least some of what you say	• Child turns consistently to name • Child continues to progress in auditory comprehension • Child responds with appropriate actions to familiar songs • Child follows some routine verbal directions • Child demonstrates some open set auditory comprehension • Comprehension is inconsistent	• *He objects when you are talking to another adult about him as if he wasn't there.* • *I mentioned the S-LP's name in the midst of a conversation and he sat up and clapped. It seemed like a return to the time when he understood, and could demonstrate that he did. We were trying to decide at that point if we should send him back to school after a long illness. He had one day back, saw his S-LP and I was telling his father about his day, and he perked right up and clapped. We decided to send him back to school.* • *"Our daughter will turn to look at me when I make one of her favourite sounds. It is the only time she orients toward me and it literally thrills me when she does it. Our daughter is not terribly relational, so to get that interaction from her is very meaningful to me. When she looks at me, even it is really only to see the sound, so to speak, she looks into my face and into my eyes and I get a chance to love her with my eyes. I use her ears, to get to her eyes, to get to her heart.*
Connectedness/ Inclusion: Child is better able to connect and be included within the family or community because of access to sound with CI.	• Child's participation and overall inclusion in family activities/interactions; tolerance of new experience, social interaction • Others interact more with child simply because they know the child can hear • Child more able to tolerate new experiences • Child's ability to interact with others enhanced • Child more present, more engaged • Broadened social sphere, not restricted to signers • Child more connected to family and peers	• *Before her implant it was extremely hard to first capture her attention and then secondly, hold her attention. Action could be happening all over the house and she would be sitting facing the wall completely missing everything and not taking part. Very shortly after her implant we were noticing her looking for where sounds were coming from, watching people's lips and faces more and paying attention.* • *She may not be a star in society's standard, but as her mother I see her as having woken up.*
Child Affect: Child is happier because of access to sound with CI	• Reduction in self stimulating behaviour • Less effort for child to participate in family and community interactions • Better quality attention • Child happier overall	• *The family gets more joy in interacting with her, life is more meaningful for her and for us. It's a shame when a dollar figure is put on it.* • *He seems to be immensely happy to be socially involved in others' lives. It was too hard to get him to focus, and hold focus (before the implant). Sound has definitely changed this.*
Challenges: Difficulty managing equipment or in keeping device on child	• Child removes headpiece to get attention or to protest • Child can't wear CI when doing some favorite things, e.g. roughhouse or trampoline play	• *The headpiece often falls out in the car.* • *The headpiece falls off during rough house play.* • *[Managing the device] isn't too big a problem.*

Family Systems. Twenty-six responses were classified within the Family Systems theme. Participants frequently stated that after their child's CI family interactions and family life in general felt more 'normal.' For example, *"We could not pleasantly go to a restaurant, people would look at her for her loudness and we felt that we were always bothering people. We often decided not to go places because of this. Almost immediately after her implant she toned down to normal volumes when her implant was on. This one factor alone to our family was worth her getting the implant."* Another participant stated *"One of the best things is how far away he can hear. Now I can be washing dishes at the sink and be talking to him and he understands. That is a freedom no money can buy. He is a high needs kid, being able to engage and support him from a distance is HUGE."* Additionally, participants described a reduction in the effort needed by family members to include the child with severe multiple disabilities in family interactions, along with feeling like they had done everything they could to help their child.

Receptive Communication. A total of 20 participant responses related to the theme of Receptive Communication. Responses exemplified children's understanding of verbal communication, even if inconsistent, orienting toward spoken sounds, and responding to their names or the names of familiar people. The following participant observation exemplifies the impact of CI on the receptive communication *"Our daughter seems to be getting the point faster with not as much need of repetition. On a funny note she also understands when we tell her that she is being silly, goofy, or a 'stinker.' She will do something silly to get our attention and then we comment verbally, saying, You're being silly! and she promptly signs 'stinker,' and starts to laugh."*

Connectedness/Inclusion. Participant comments described an increase in the children's interactions with both family and community, *"She's more present, more responsive, more connected to her environment. She's no longer alone in the room."* An intent on their child's part to connect with people in their environment was also noted. Participants also reported an increased inclusion of their child by others. Adults and children interacted more often with their child because they knew the child could now hear them *"Awareness of others has increased, others outside of her family, e.g. at church people will talk to her and she will smile. It takes less specialized effort to engage her so a wider circle of people can do it successfully."* Thus, a child's social sphere was broadening not only because others felt the child could hear them but also because now community members needed no specialized skills to interact successfully with the child (i.e., sign language).

Child Affect. A total of 19 participant responses were classified within the Child Affect theme. Participants described children's increased happiness as being due to access to sound as shown in the statement, *"He seems to be immensely happy to be socially involved in others' lives. It was too hard to get him to focus, and hold focus [before the implant]. Sound has definitely changed this."* Changes also included a reduction in self-stimulating behaviours and improved attention.

Challenges. Responses related to Challenges included difficulties keeping the child from removing the device, particularly in the car and concerns about activities during which the device could not be worn. A total of six responses were reported by participants as Challenges. To overcome the child's initial resistance to the CI one participant reported *"At first she wanted nothing to do with sound and quickly learned to take it [the CI] off. We got a hat for her and my mom attached straps [helmet style] and we tied it under her chin."* Another participant kept her child's hair short in order to improve headpiece retention.

Importance of Themes

After themes were derived and collated from categories, participants were asked to rank each theme in terms of importance to themselves and their child. This step was necessary to determine which themes mattered most to the participants. Six out of seven participants provided rankings. One participant did not rank the themes because she felt that all of the themes were of equal importance.

A rank of 1 indicated 'most important' and a rank of 7 indicated 'least important.' Rankings were summed and the modes were obtained for each theme. The six participants' rank ordering from most to least important amongst themes was as follows: (1) Child Affect, (2) Connectedness/Inclusion, (3) Receptive Communication, (4) Family Systems, (5) Listening, (6) Expressive Communication, and (7) Challenges. The total number of responses for each theme and rank ordering of themes by importance to participants are displayed in Table 4.

As can be seen in Table 4 the rank ordering of themes by importance to participants did not relate to the number of propositions participants described for each of the seven themes. For example, the two themes for which participants provided the highest number of responses, Listening and Expressive Communication, were ranked fifth and sixth respectively, while themes (Child Affect, Connectedness/Inclusion, Receptive Communication) with half the number of reported

Table 4. Total Number of Responses and Participant Ranking of Importance of Identified Themes

Theme	Total number of participant responses	Participant ranking in order of importance
Child Affect	19	1
Connectedness/Inclusion	19	2
Receptive Communication	20	3
Family Systems	26	4
Listening (non-linguistic)	40	5
Expressive Communication	40	6
Challenges	9	7

responses were ranked the three most important to participants.

Discussion

The benefits of CI for children with severe-to-profound hearing loss have been well documented. However, the lack of consensus in the literature and at CI centres regarding the benefits of CI for children with multiple disabilities has resulted in the inconsistent availability of this treatment option for this population. Further, the heterogeneity of this population and small numbers of children with similar disabilities limits what we currently understand about their outcomes (Wiley et al., 2005).

One of the major obstacles facing clinicians and implant teams is the challenge of measuring improvements for children with multiple disabilities following CI because these children are not only difficult to test with standard speech perception and language tests but as many researchers (e.g., Berrettini et al., 2008; Johnson & Wiley, 2009; Waltzman et al., 2000) attest, formal tests do not adequately capture gains within this population either because the changes are too subtle to be captured by these tests or the tests do not measure changes observed with these children at all. For example, the following observations *'my child is happier,' 'including my child is much easier than it was,' or 'my child's response to sound brings me joy'* are not captured yet considered foundational to parenting success, and therefore to parent well-being. These ideas require specific attention in the instrument development process particularly for children with multiple disabilities.

The current literature indicates that after implantation the majority of children with multiple disabilities do make progress in speech perception and communicative skills although at considerably lower rates compared to the progress achieved by children with hearing loss as a sole disability. A growing number of studies all report a variety of important benefits of CI for children with multiple disabilities resulting from greater access to the surrounding environment which include improved awareness to sounds, communication skills, attentiveness and interest in the environment, social interaction and connectedness, and quality of life (e.g., Berrettini et al., 2008; Donaldson et al., 2004; Filipo et al., 2004; Waltzman et al., 2000; Wiley et al., 2005). While these results have been consistently reported for children with and array of disabilities, severity of additional disabilities was not considered. In the present study participants' children all presented with severe multiple disabilities and the reported gains were strikingly similar to previous studies, that is, awareness to sound in general, receptive and expressive communication, connectedness within the family and broader community, and quality of life.

In our attempt to understand parents' perspective in interpreting outcome benefits of CI a unique contribution important to the instrument development process resulted from asking participants to rank the broad themes they identified in relation to their importance to themselves, and their child. If the number of times a theme was cited by participants were taken to be representative of its level of importance to participants, the interpretation of benefits as perceived by parents would have been in error. As

shown in Table 4 the number of times a theme was mentioned from most to least was as follows: listening, expressive communication, family systems, receptive communication, child affect, connectedness/inclusion and challenges. However, when these themes were ranked by importance to the participant the order was as follows: child affect, connectedness/inclusion, receptive communication, family systems, listening, expressive communication, and challenges.

This finding is key in informing the practice of cochlear implant clinicians when working with families of children with multiple disabilities and severe to profound hearing loss. Historically, cochlear implant clinicians and implant teams focus on receptive and expressive auditory oral communication outcome benefits and on the possible challenges the cochlear implant procedure may present with this population. The fact that 'expressive communication' and 'challenges' were ranked the least important by participants and that 'child affect' and 'connectedness/inclusiveness' were ranked as the two most important themes suggest that cochlear implant clinicians working with these families and children need to be aware that what is considered important regarding clinical outcomes is different from their traditional frames of reference. Furthermore, clinicians need to be cognizant that their communication interactions with parents and caregivers about benefits and challenges influence the scope of questions that are asked and answered as a consequence of the clinician-client relationship. Thus, it is no surprise that the highest number of participants' comments and observations related to receptive and expressive communication, given that clinicians ask questions about these topics and parents understand that this is what clinicians want to hear about. In order to provide the best services and opportunities for these children clinicians must be willing to broaden the scope of their discussions regarding benefits beyond those conventionally considered (i.e. receptive and expressive communication) to understand both the specific needs of this population and family perceptions of benefit. Children with severe multiple disabilities challenge a clinician's ability to predict the likely benefit of CI. We concur with Wiley et al. (2005), that observations reported by parents of children with severe multiple disabilities are essential in evaluating and monitoring the benefit of CI. Parents are able to observe capabilities in their child in a variety of settings that are less structured and more familiar for the child. Therefore more skills are likely to be observed than in a structured unfamiliar clinic environment (Wiley et al., 2005). Although parental observation may introduce some bias it has the potential to add important information regarding child function in everyday situations (Berrettini et al., 2008). In fact, the 2011 National Roundtable Steering Committee on the health of families of children with disabilities concluded that it is necessary to embed the values and well being of caregivers into every aspect of service delivery for children with disabilities. The growing body of research makes clear the need for instruments that will allow the benefits observed and valued by parents and caregivers to be captured and become part of the candidacy and outcome benefit analysis for children with multiple disabilities.

Similar to formal tests, cost utility studies (e.g., Bergeron, 2003; Cheng et al., 2000; Francis, Koch, Wyatt, & Niparko, 2000) do not take into account the family's perspective and thus, do not adequately capture meaningful benefit for children with multiple disabilities, particularly for severely involved children.

Additionally, cost utility studies for children with disabilities focus on the cost to educate, yet many children with severe multiple disabilities will not participate in general education programming leading to questions regarding what cost utility might constitute for this population. Such questions remain unanswerable at this time; however, with the development and application of instruments that adequately capture meaningful changes reported by parents in the present and previous studies, these important issues may begin to be addressed.

Limitations

There are specific limitations that the reader needs to consider when evaluating the merits of the present study. The first relates to recall bias of the participants. While it is possible that participants overstate benefits accredited to CI, Cheng, et al (2000) point out that this may be substantially less for participant reports following CI. Participants and their children revisit the state of deafness when the processor is removed daily for bathing and sleeping, when the battery power is exhausted, and when equipment fails, thus, the benefits are likely well-understood and less prone to recall bias.

Secondly, this study is subject to the limitations of all qualitative research. The sample is small, and local. No assumptions regarding generalization can be made. However, issues with a small participant sample are inherent with this population whether using qualitative or quantitative methods due to the low numbers of children with multiple disabilities who use cochlear implants. Nonetheless, our results are strikingly similar to reports from studies conducted across North America, which lends support to the credibility of our findings. However, it is ultimately important for the reader to

judge the applicability of the research to their setting and client base.

Conclusions

With expanding CI criteria more children with multiple disabilities are receiving cochlear implants. It is crucial that parents' perspectives, observations, and values be included in our assessments of their children's abilities, and that we accept as legitimate such evidence in evaluating CI candidacy, progress, and success. Identifying CI outcomes that parents themselves describe as important provides the foundation for developing an outcome instrument that more closely reflects parental and family priorities. We believe that such instruments, combined with those currently used by clinicians, will result in a better informed process for determining CI candidacy, and provide a more complete profile of cochlear implant outcomes for children with severe multiple disabilities.

Finally, although the specific focus of this work was outcomes of cochlear implantation, the core issue that we were exploring was the contribution that access to sound makes to the lives of children with multiple disabilities and to their families. Because of this, it is possible that the instrument under development will have application beyond the cochlear implantation process.

Acknowledgements

We owe profound gratitude to the participants in this study, who gave unstintingly of their time and wisdom. The authors also gratefully acknowledge the support of their managers at Glenrose Rehabilitation Hospital and Alberta Health Services. The authors wish to express gratitude to Eleanor Stewart and Amy McConkey Robbins for their incisive critical review of progressive drafts.

References

Bergeron, F. (2003, April). Rehabilitation with cochlear implants in a public funded health system: The Quebec approach. Paper presented at the 9th *Symposium on Cochlear Implants in Children,* Washington, D.C.

Berrettini, S., Forli, F., Genovese, E., Santarelli, R., Arslan, E., Chilosi, A.M., & Cipriani, P. (2008). Cochlear implantation in deaf children with associated disabilities: Challenges and outcomes. *International Journal of Audiology, 47*(4), 199-208. doi:10.1080/14992020701870197

Cheng, A., Rubin, H., Powe, N., Melon, N., Francis, H., & Niparko, J. (2000). Cost utility analysis of the cochlear implant in children. *Journal of the American Medical Association, 284*(7), 850-856. doi: 10.1001/jama.284.7.850

Donaldson A. I., Heavner, K. S., & Zwolan, T. A. (2004). Measuring progress in children with autism spectrum disorder who have cochlear implants. *Archives of Otolaryngology: Head & Neck Surgery, 130*, 666-671.

Edwards, L.C. (2007). Children with cochlear implants and complex needs: A review of outcome research and psychological practice. *Journal of Deaf Studies and Deaf Education, 12*(3), 258-268. doi: 10.1093/deafed/enm007

Filipo, R., Bosco, P., Mancini, P., & Ballantyne, D. (2004). Cochlear implants in special cases: Deafness in the presence of disabilities and/or associated problems. *Acta-Otolaryngologica Supplementum, 552*, 74-80. http://dx.doi.org/10.1080/03655230410017193

Francis, H., Koch, M., Wyatt, J., & Niparko, J. (2000). Trends in educational placement and cost-benefit considerations in children with cochlear implants. In S. Waltzman & N. Cohen, (Eds.), *Cochlear Implants* (pp. 265-267). New York, NY: Thieme.

Herrmannova, S.D., Phillips, R., O'Donoghue, G., & Ramsden, R. (n.d.). Champions Evaluation profiles for pediatric cochlear implant users with additional disabilities. Nottingham UK: The Ear Foundation. Retrieved from http://www.earfoundation.org.uk

Johnson, K.C., & Wiley, S. (2009). Cochlear implantation in children with multiple disabilities. In L.S. Eisenberg (Ed.), *Clinical management of children with cochlear implants* (pp. 573-632). San Diego, CA: Plural Publishing.

Kubba, H., Swan, I., & Gatehouse, S. (2004). The Glasgow Children's Benefit Inventory: A new instrument for assessing health-related benefit after an intervention. *Annals of Otology, Rhinology and Laryngology, 13*, 980-986.

Lincoln, Y.S. & Guba, E.G. (1985). *Naturalistic Inquiry.* Newbury Park, CA: Sage.

Morse, J. (1994). Designing funded qualitative research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 1-17). Thousand Oaks, CA: Sage.

Neuendorf, K. A. (2002). *The content analysis guidebook.* Thousand Oaks, CA: Sage.

Patton, M.Q. (1980). Qualitative evaluation and research methods. Newbury Park, CA: Sage.

Patton, M.Q., & Westby, C. (1992). Ethnography and research: A qualitative view. *Topics in Language Disorders, 12*(3), 1-14.

Ritter, K. (1997). *The intervention influences and outcomes profile for early intervention programs.* (Unpublished doctoral dissertation). University of Alberta, Edmonton, Canada.

Ritter, K., & Peters, S. (2003, April). Cochlear implantation in a child with autism. Poster presented at the 9th *Annual Symposium on Cochlear Implants in Children*, Washington, DC.

Schramm, D., Fitzpatrick, E., & Seguin, C. (2002). Cochlear implantation in adolescents and adults with prelingual deafness. *Otology & Neurotology, 23*(5), 698-703. 10.1097/00129492-200209000-00016

Schwartz-Shea, P. (2006). Judging Quality. Evaluative criteria and epistemic communities. In D. Yanow & P. Schwartz-Shea (Eds.), *Interpretation and method: Empirical research methods and the interpretive turn* (pp 86 - 113). New York, NY: ME Sharpe.

The National Roundtable Steering Committee. (2011, February). *The health of families of children with disabilities. Report from a national roundtable.* Retrieved from http://www.canchild.ca/en/childrenfamilies/resources/health_families children_disabilities_national_roundtable.pdf

Trimble, K., Rosella, L. C., Propst, E., Gordon, K. A., Papaioannou, V., & Papsin, B. C. (2008). Speech perception outcome in multiply disabled children following cochlear implantation: Investigating a predictive score. *Journal of the American Academy of Audiology, 19*(8), 602-611.

Waltzman, S., Scachuns, V., & Cohen, N. (2000). Performance of multiply handicapped children using cochlear implants. *The American Journal of Otology, 21*, 329-335.

Wiley, S., Jahnke, M., Meinzen-Derr, J., & Choo, D. (2005). Perceived qualitative benefits of cochlear implants in children with multi-handicaps. *International Journal of Pediatric Otorhinolaryngology, 69*, 791-798. http://dx.doi.org.login.ezproxy.library.ualberta.ca/10.1016/j.ijporl.2005.01.011

Wiley, S., Meinzen-Derr, J., & Choo, D. (2008). Auditory skills development among children with developmental delays and cochlear implants. *Annals of Otology, Rhinology & Laryngology, 117*(10), 711-718.

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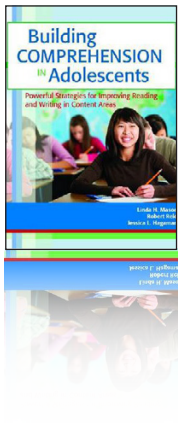
Appendix
Structured Interview Questions

1. Please describe any differences you have seen in your child's behaviour that you believe are due to cochlear implantation.
2. Please describe any differences you see in your child's communication that you believe are due to cochlear implantation.
3. Please describe any differences in family interactions that you believe are due to cochlear implantation.
4. Please describe any differences in your child's social interactions that you believe are due to cochlear implantation.
5. Please describe any differences in your child's listening behavior since cochlear implantation.
6. Please describe any difficulties that you have had in managing your child's cochlear implant.
7. Is there anything you would like to add?

Book Review
Évaluation de Livre



Title: Building comprehension in adolescents

Publisher: Paul H. Brookes

Authors: Linda H. Mason, Robert Reid, Jessica L. Hagaman

Cost: $34.95 (softcover)

ISBN: 978-1598572100

Reviewer: Ellen A. Rhoades

Affiliation: Consultant
www.AuditoryVerbalTraining.com

Across all communication options, some adolescents with hearing loss demonstrate delays in reading comprehension, written expression, and executive functioning. In many studies, it has been demonstrated that such strategies as task analysis, prompts, behaviorally stated problems, cognitive coaching, verbalization of the process, mnemonic cues, visual imagery and graphic organizers can help students develop good executive capacities, particularly when integrated into ongoing systematic intervention. The unfortunate reality, however, is that many practitioners do not apply systematic, strategic evidence-based instruction toward improving the executive capacities, reading comprehension, or written expression of students with hearing loss, either in general or special education classrooms (Berkeley, Scruggs, & Mastropieri, 2010; Easterbrooks & Stephenson, 2006; Luckner, Sebald, Cooney, & Goodwin, 2005).

Any intervention approach for students with hearing loss should be both systematic and strategic. Mason, Reid, and Hagaman (2012) provide such an evidence-based systematic instructional model for practitioners working with adolescent students who are struggling learners, and they have done quite a good job of it. Their Self Regulated Strategy Development model explicitly focuses on developing goal-directed problem solving skills that, in turn, facilitate reading comprehension and writing skills.

This book, *Building comprehension in adolescents,* is well organized across four sections, with each section being easy to read. Section I includes three chapters. The first chapter in this section provides readers with an overview of the authors' evidence-based model. The next two chapters inform readers of effective strategy acquisition and self-regulation that should be carefully read and fully absorbed by practitioners before reading subsequent sections.

Section II of this book focuses on *Reading to Learn*, while section III focuses on *Writing to Learn*. Then section IV ties these academic skill domains together by focusing on Homework. Within each of these three sections, practitioners are advised of the language to use, the steps they should go through, and the specific strategies to use. Lesson plans, objectives, and reading materials are included. A variety of pages are ready to be copied by practitioners and shared with students; these clear handouts include mnemonic charts, graphic organizers, worksheets, outlines for notes, checklists, stories, and evaluation forms. The mnemonic cues of TRAP, IDEAS, TWA + PLANS, C-SPACE, POW, A-WATCH, as well as STOP & DARE strategies are nicely incorporated into this instructional model. These three sections also include strategies to facilitate group collaboration, peer practice, scaffolding practices, and the fading of instructional supports.

The many strengths of this book include the fact that strategies discussed within all its sections are referenced with research findings from peer-review journals at the end of the appropriate chapters. It is difficult to note any weaknesses of this book that the authors themselves did not already recognize, e.g., "*Self-regulation strategies do not create new behaviors. They help to enable students to use behaviors that they can already perform. Self-regulation strategies can increase the frequency of behaviors (e.g., persisting on a task), or help students talk themselves through a task.*" (p. 23). This book, then, is designed for practitioners serving those students who come into adolescence with minimal behavioral and language tools needed for academic learning.

Rather than re-inventing the wheel, teachers and other practitioners involved with adolescents who have hearing loss would do well to employ the instructional model provided by the authors of this book. Implementation of such evidence-based strategies enable students to optimize those meta-cognitive

and self-regulatory skills needed for reading, writing, and learning. And for those students who do not yet possess the minimal tools, practitioners can extract and use ideas from this model as they work with atypical students of any age.

This 255-page book is replete with instructional tools that can be wisely and effectively used by practitioners serving students with hearing loss. This book is important for practitioners who strive to enable children with hearing loss to become independent, self-regulated learners. That it is also a book full of excellent information based on current empirical findings makes it a worthy item for teacher training libraries, regardless of whether students are taught individually or in group educational settings.

References

Berkeley, S., Scruggs, T. E., & Mastropieri, M. A. (2010). Reading comprehension instruction for students with learning disabilities, 1995-2006: A meta-analysis. *Remedial and Special Education, 31*, 423-436.

Easterbrooks, S. R., & Stephenson, B. (2006). An examination of twenty literacy, science, and mathematics practices used to educate students who are deaf or hard of hearing. *American Annals of the Deaf, 151*, 385-397.

Luckner, J. L., Sebald, A. M., Cooney, J. Y., & Goodwin, S. M. (2005). An examination of the evidence-based literacy research in deaf education. *American Annals of the Deaf, 150*, 443-455.

CASLPA Conference 2013 – Abstracts
Victoria, British Columbia
April 24 – 27, 2013

Preconference Workshop

Supporting Literacy Learning Across the Grades: From Preschool Foundations to Higher-Level Language Learning Strategies for High School Success

Geraldine P. Wallach, PhD, CCC-SLP

Intermediate: This presentation will cover literacy-based language intervention strategies with a focus on the integration of spoken and written language. It will highlight practical guidelines for including background knowledge, semantic and structural skills and connected discourse abilities. We will also discuss how to write goals and objectives that connect to social studies and other curricular content.

Learning Outcomes

Participants will be able to:

- *Discuss current intervention practices across the language learning continuum that integrate literacy-based approaches.*
- *Write goals and objectives that are contextually-relevant and curriculum based.*
- *Ask at least three critical questions that help clinicians develop and deliver strategy-based intervention.*
- *Describe some of the popular misconceptions related to the diagnoses and treatment of children and adolescents with a variety of language disorders.*

Audiology Workshop

Health and Aging — The Impact of Hearing Loss

Ulrike Lemke, PhD

Intermediate: Many health problems, including hearing loss, are often age-related, meaning that prevalence and severity increase with age. With a large aging population that is living longer, more people are having to deal with co-occurring health problems.

This workshop will give an overview of age-related health conditions and typical multi-morbidities with a focus on the interaction with hearing loss. Hearing loss is considered in terms of its connections with and impact on physical health management, mental health and brain function. Dr. Lemke will discuss hearing interventions and how they can benefit healthy aging by supporting social interaction and cognitive functioning.

Speech-Language Pathology Workshops

Childhood Apraxia of Speech and Other Speech Sound Disorders: Differential Diagnosis, Assessment and Treatment Principles

Christina Gildersleeve-Neumann, PhD, CCC-SLP

Intermediate: This seminar covers diagnosis, assessment and treatment of childhood apraxia of speech and the similarities and differences between CAS and speech sound disorders (SSDs). The seminar will profile children with CAS, SSDs and a diagnostic protocol. It will also review current intervention for CAS and applicability for SSDs, including motor learning principles, dynamic temporal and tactile cueing and other articulatory and phonological views.

Learning Outcomes

Participants will be able to:

- *Differentiate childhood apraxia of speech from SSD.*
- *Describe the components of phonological knowledge as they relate to all speech sound disorders.*
- *Utilize motor learning principles in treatment for SSD and CAS.*
- *Adapt current treatment approaches to match the needs of individual clients.*

The Role of Attention in Neurogenic Communication Disorders

Jacqueline Hinckley, PhD, CCC-SLP

Intermediate: This seminar will include:

1. The three attentional subsystems and their neurobiology;
2. Typical patterns of possible attention impairments associated with different diagnoses;
3. Evidence-supported assessments for each attentional subsystem; and
4. Evidence-supported treatments that target both attention and communication.

The seminar will also incorporate case studies to illustrate major points.

Learning Outcomes

Participants will be able to:

- *Match neurological conditions with potential attention impairments*
- *Describe clinical characteristics of different attention impairments*
- *Conduct evidence-supported assessments and interventions for attention and communication*

Speech and Swallowing in Neurodegenerative Disease

Jay Rosenbek, PhD, CCC-SLP, BC-NCD

Intermediate: Treating clients with neurodegenerative diseases (such as Parkinson's and spinocerebellar atrophy) is becoming increasingly common for S-LPs; however, most traditional training ignores or slights the clinical challenges and advantages of treating the millions of people world-wide who are affected. This presentation will describe how these conditions should be identified and organized for treatment. Most of the session will be a discussion on management approaches that are most likely to have positive therapeutic effects.

Learning Outcomes

Participants will be able to:

- *Recognize and describe the major categories of neurodegenerative disease.*
- *Select appropriate treatments for individual patients.*
- *Describe the steps in several major treatment approaches.*

Evidence-Based Voice Therapy: A Physiologic Approach

Joseph Stemple, CCC-SLP, ASHA-F

Intermediate: This workshop presents a critical review of outcomes research related to treatment methods for functional voice disorders. We will review studies discussing specific treatment methods within the primary orientations to voice therapy. This workshop will also review and demonstrate Physiologic voice therapy protocols, including vocal function exercises and resonant voice therapy.

Learning Outcomes

Participants will be able to:

- *Identify voice therapy methods supported by outcomes studies*
- *Design treatment programs supported by the current evidence base*
- *Implement "best-practice" voice therapy programs*

Apps for Adult Rehab

Megan Sutton, MS, RSLP, S-LP(C), CCC-SLP

Introductory: This session is intended for clinicians working with all stages of acquired disorders who want to enhance their practice with new tools & technology. Focusing on the iPad and iPhone, participants will learn how to use adult-appropriate apps for assessment, therapy, AAC and personal/clinical support for aphasia, apraxia, dysarthria, dysphagia and cognitive disorders.

Learning Outcomes

Participants will be able to:

- *Identify apps appropriate for the treatment of acquired disorders in communication and swallowing*
- *Evaluate apps based on evidence, design and content*
- *Implement an app-based therapy program for use in and out of the clinic.*

Speech-Language Pathology and Supportive Personnel Workshops

Multi-Modal Communication and Learning Strategies for Children who Face Significant Challenges: Including Severe Multiple Disabilities and Children on the Autism Spectrum

Linda Burkhart

This two-day workshop will address communication and learning strategies for young children or children functioning at young levels, who struggle to access communication, interaction and learning. This includes children with significant physical and multiple challenges, CVI and young children on the more severe end of the autism spectrum.

Learning Outcomes

Participants will be able to:

- *Discuss how the brain develops and describe implications for teaching and learning for students who are developing differently.*
- *Describe strategies for increasing motivation, cognitive engagement and active participation in the learning process.*
- *Discuss a variety of ways to adapt materials to facilitate cognitive and communication skills in young children.*
- *List characteristics of students who have cortical visual impairment along with physical and other multiple disabilities; and, describe useful strategies to help develop vision and communication skills.*
- *Describe strategies that help children who are on the severe end of the autism spectrum develop skills in receptive, expressive and cognitive processing language.*
- *Describe how to utilize what is known about how typical children learn language and apply these principles to creating a multi-modal communication learning environment for children who face complex challenges.*
- *Briefly explain how the use of Pragmatic Organization Dynamic Display (PODD) provides an appropriate tool for children at the beginning stages of language development and describe how to implement this tool in natural contexts.*

"Cup starts with K, right?" Supporting Emergent Literacy in Preschoolers from Diverse Backgrounds

Janice Greenberg, B.Sc., D.S.P., Reg. CASLPO

Intermediate: This workshop provides strategies for using book reading and conversations to promote vocabulary, story comprehension, print knowledge and phonological awareness. Drawn from ABC and Beyond®, the Hanen Centre's program for building emergent literacy, these strategies can be implemented by S-LPs, parents and early childhood educators with children from multilingual homes.

Learning Outcomes

Participants will be able to:

- *List emergent literacy strategies that can be implemented in clinical, home and early childhood education settings to support the development of vocabulary, narratives, print knowledge and phonological awareness in children from monolingual and bilingual homes*
- *Summarize the evidence that supports and informs these strategies.*
- *State effective practices for sharing strategies that support emergent literacy with diverse groups of parents and early childhood educators.*

iDevices - Assistive Technology Tools of Choice

Lori Wiebe & Val Buissé, M.Sc., S-LP(C)

Intermediate: New technologies such as the iPod Touch and iPad bring fantastic new possibilities for children with special needs. With the booming development of special education apps, iDevices have largely become the assistive technology tools of choice.

Learning Outcomes

Participants will be able to:

iDevices and our "tried and tested" apps can be used as tools to:

- promote communication;
- build independence;
- encourage self-regulation;
- and much more!

Understanding the Nature of Autism and the Power of Perspectives

Catherine B. Zenko, MS, CCC-SLP

Intermediate: This presentation will outline the characteristics of autism spectrum disorder (ASD). It will discuss how these characteristics affect social communication, learning and behavior and provide examples of effective interventions. This presentation will demonstrate successful strategies for incorporating the perspective of individuals with ASD in order to create functional and meaningful interventions.

Learning Outcomes

Participants will be able to:

- *Identify the diagnostic criteria of autism spectrum disorder.*
- *Understand how ASD affects social communication, learning and behavior.*
- *Incorporate evidence-based practices (EBP) discussed during the presentation into their own practice.*
- *Understand the role of perspective taking in both the person with ASD and the clinician.*
- *Create and implement meaningful intervention goals and strategies for their patients/clients with ASD.*

Supportive Personnel Workshops

Treating Childhood Apraxia of Speech

Christina Gildersleeve-Neumann, PhD, CCC-SLP

Introductory: This seminar for supportive personnel provides understanding of core speech production difficulties in children with childhood apraxia of speech (CAS) and appropriate treatment techniques. Treatment information includes an overview of motor learning principles essential for treating CAS and fundamentals of dynamic temporal and tactile cueing, a treatment approach effective with children with CAS.

Learning Outcomes

Participants will be able to:

- *Define core difficulties in childhood apraxia of speech*
- *Understand motor learning principles needed for treatment of CAS*
- *Understand basic cueing strategies helpful in treating CAS*

Helping Children with Auditory Processing Disorder at Home and School

Pam Millett, PhD

Introductory: This session for supportive personnel will focus on management of auditory processing disorder for children at home and school. There will be a discussion of challenges in interpreting clinical reports and implementing recommendations and a multi-faceted management approach addressing personal and environmental factors at home and school.

Learning Outcomes

Participants will be able to:

- *Describe the classroom and learning challenges related to auditory processing disorder.*
- *Understand how the WHO's International Classification of Functioning, Disability and Health model can be applied at home and school for children.*

Audiology Contributed Papers

Dichotic Listening Training to Treat CAPD

Carol Lau, MA, Sound idEARS Hearing & Listening Clinic, Vancouver, BC

Intermediate: This study examines the pre- and post-training scores of a group of 50 CAPD children who completed a web-based, dichotic listening program. Findings revealed significant improvements in SCAN-C, Dichotic Digits Test and Compressed Speech scores. This project also involved interviewing parents upon completion of the auditory training.

Using the International Classification of Functioning, Disability and Health as a Theoretical Framework for Auditory Processing Disorder

Pam Millett, PhD

Intermediate: This session will provide an overview of the Canadian Guidelines on Auditory Processing Disorder in Children and Adults. There will be a discussion of the use of the WHO's International Classification of Functioning, Disability and Health (ICF) as a theoretical framework, with a focus on using the proposed management model with children and adults.

Learning Outcomes

Participants will be able to:

- *Describe the ICF model as it has been applied to APD.*
- *Understand how the model can be applied to management for children and adults.*

Improving Hearing Screening of NICU Babies Using 1000 Hz Tympanometry

Li Qi, PhD, MSc, R.Aud, Aud(C), Vancouver General Hospital, Vancouver, BC; Brian Schmidt, MSc, R.Aud, Aud(C), Glenrose Rehabilitation Hospital, Edmonton, AB; Leonora Hendson, MB.BCh, M.Sc, FRCP(C), FAAP, Glenrose Rehabilitation Hospital & Royal Alexandra Hospital, Edmonton, AB; Kathy Packford, MSc, R.Aud, Aud(C), Glenrose Rehabilitation Hospital, Edmonton, AB; Michelle Ryan, MSc, R.Aud, Aud(C), Glenrose Rehabilitation Hospital, Edmonton, AB; Michelle Wiley; Tanis Howarth; and Melissa Polonenko; Ming Zhang, MD, PhD, University of Alberta
& Glenrose Rehabilitation Hospital, Edmonton, AB

Introductory: Middle-ear dysfunction may cause high false-positive rates in the neonatal intensive care unit (NICU). This study is an investigation of the sensitivity and specificity of 1-kHz tympanometry in NICU babies using Auditory Brainstem Response results as reference. The study findings may improve the effectiveness of hearing screening in NICU babies.

Audiology and Speech-Language Pathology Contributed Papers

Advanced Practice in Speech-Language Pathology and Audiology: Where are We and Where are We Going?

Susan Rafaat, M.Sc., R.SLP, S-LP(C), ACSLPA, Calgary, AB; and Holly Gusnowsky, M.S., R.Aud, ACSLPA, Edmonton, AB

Introductory: Continuing with ACSLPA's project to define advanced practice (AP) in speech-language pathology and audiology, this mini-seminar includes a review of the AP literature, the application of AP by other professions and the results of ACSLSPA's member survey. The session includes an opportunity for discussion of implications for the professions.

Speech-Language Pathology Contributed Papers

Brushing Up on Oral Hygiene in Acute Care: S-LP Role

Dulcie Carter, BSc, MMedSci, RSLP, S-LP(C), Fraser Health, Vancouver, BC

Introductory: Acute care S-LPs frequently prescribe oral hygiene within swallowing recommendations. In practice, patients' oral hygiene can be overlooked in busy hospital wards. This paper describes the process of promoting and improving oral care practices in an acute neurosurgical unit, while considering the practicality of implementing changes.

Understanding Variability of Swallowing on Videofluoroscopy: Implications for Clinical Practice

Sonja Molfenter, MHSc, Toronto Rehabilitation Institute, Toronto, ON; and Catriona Steele, PhD, Toronto Rehabilitation Institute, Toronto, ON

Intermediate: Due to the radiographic nature of videofluoroscopy testing, only a limited number of swallows can be safely included in a test. Yet, the extent of swallow-to-swallow variability is unknown, calling the representativeness of assessment results into question. This paper describes swallowing variability in healthy and disordered populations and discusses implications for clinical practice.

n2k 4 S-LPs - ils upd8 (Irritable Larynx Update)

Linda Rammage, PhD, RSLP, S-LP(C), PVRCP/University of British Columbia, Vancouver, BC; and Sherri Zelazny, MA, RSLP, CCC-SLP, Surrey, BC

Intermediate: Speech-language pathologists play a vital role in the evaluation and behavioural management of symptoms of laryngeal sensitivity, which often allows patients to avoid unnecessary health crises and costly or invasive medical treatment. This study describes the assessment and treatment of ILS symptoms based on current theories and clinical data.

Implementation and Evaluation of ASHA's NOMS Across the Continuum in the West GTA Stroke Region

Holly Sloan, M.S., CCC-SLP, Reg.CASLPO, Trillium Health Centre, Mississauga, ON; West GTA Stroke Network, Toronto, ON; Lindsay Benoit, Speech-Language Pathologist, William Osler Health Services, Brampton, ON; Cynthia Boman, Speech-Language Pathologist, Saint Elizabeth, Mississauga, ON; and Pamela Rahn, Speech-Language Pathologist, Trillium Health Centre, Mississauga, ON; Roxanne Mistry, Speech-Language Pathologist, Saint Elizabeth, Mississauga, ON

Introductory: In March 2010, ASHA's National Outcome Measurement System (NOMS) was chosen as the standard outcome measurement tool for speech-language pathologists in the West GTA Stroke Network. This paper discusses the one-year pilot project coordinated by the Network to evaluate the implementation and efficacy of ASHA's NOMS across the continuum of care.

Speech-Language Pathology and Supportive Personnel Contributed Papers

Neurodevelopmental Outcomes of Premature Infants Born in Northern Ontario

Roxanne Belanger, M.Sc. S., O(C), Laurentian University, Sudbury, ON; Chantal Mayer-Crittenden, S-LP, M.Sc.S., Laurentian University, Sudbury, ON; and Michèle Minor-Corriveau, S-LP, PhD, Laurentian University, Sudbury, ON

Intermediate: This paper examines neurodevelopmental outcomes of premature Anglophone infants born in Northern Ontario and compares them to Francophone and bilingual infants, also born in this area. The discussion focuses on biologic and sociodemographic influences on development.

The Sensory, Motor and Linguistic Skills of Children with School Learning Problems

Josée Lagacé, PhD, University of Ottawa, Faculty of Health Sciences; Stéphanie Breau-Godwin, M.Sc.S., University of Ottawa, Faculty of Health Sciences; Jacinthe Savard, PhD; University of Ottawa, Faculty of Health Sciences; Carole Fleuret, PhD, University of Ottawa, Faculty of Education; and Rose Martini, PhD, University of Ottawa, Faculty of Health Sciences

Intermediate: This study examines oral and written linguistic abilities, auditory and visual information processing performance, as well as fine and gross motor skills in a group of French-speaking children experiencing learning problems at school. The study's preliminary results reveal that many participants demonstrate delay in more than one domain.

Language Fun Storytime: A Collaboration Between S-LPs and Librarians

Rhea Lazar, M. Cl. Sc., S-LP(C), RSLP, Vancouver Coastal Health, Vancouver, BC; and Kelly Clark, MLS, Vancouver Public Library, Vancouver, BC

Intermediate: Language Fun Storytime (LFST) began as a collaboration between an S-LP and a children's librarian in 2008. Now, it is a highly successful multi-site program run by several S-LPs and librarians across Vancouver in both English and Cantonese. The seminar will describe how LFST provides a series of weekly small-group therapy sessions for children with speech and language issues.

Majority Language Learners in a Minority Setting: Language Difference or PLI?

Chantal Mayer-Crittenden, S-LP, M.Sc.S., Laurentian University, Sudbury, ON; Manon Robillard, S-LP, M.Sc.S., Laurentian University, Sudbury, ON; Roxanne Belanger, M.Sc. S., O(C), Laurentian University, Sudbury, ON; and Michèle Minor-Corriveau, S-LP, PhD, Laurentian University, Sudbury, ON

Intermediate: This study examined forty 5-year-old English-dominant children learning French in a French school. The children were assessed in both languages using both linguistic and cognitive tasks. Results show that these children learn a second language at a significantly different rate than minority language learners learn a majority language.

Enhancing Metalinguistic Skills in Adolescents During Classroom Word Study Activities

Alison McInnes, M.Cl.Sc., PhD, S-LP(C), University of Alberta, Edmonton, AB; Lynn McQuarrie, PhD, University of Alberta, Edmonton, AB; and Norma Nocente, PhD, University of Alberta, Edmonton, AB

Intermediate: Developing high school teachers' knowledge base about oral language to support students with learning disabilities is challenging for school-based S-LPs. This paper presents a set of classroom application activities for content area word study developed and piloted by the Advancing Adolescent Reading Initiative in Alberta, focusing on phonological and morphological awareness.

The South Africa Placement Initiative: Social Justice Through Clinical Education

Taslim Moosa, M.Cl.Sc. S-LP(C) Reg. CASLPO, The University of Western Ontario, London, ON

Intermediate: This project profiles supervised international clinical experience opportunities for Speech-Language Pathology students, which integrate clinical education with service provision in under-serviced, multicultural, and multilingual communities in South Africa. This opportunity is offered within a social justice framework. There will be a discussion of program implementation, student learning, professional challenges, and future directions.

The Effects of Professional Development on Preschool Educators' Ability to Facilitate Vocabulary Learning During Shared Book Reading

Ashwini Namasivayam, Dept of Speech-Language Pathology, University of Toronto, Toronto, ON; Kathy Hipfner-Boucher, PhD, Dept of Speech-Language Pathology, University of Toronto, Toronto, ON; Trelani Milburn, M.Sc., Dept of Speech-Language Pathology, University of Toronto, Toronto, ON; Elaine Weitzman, M.Ed., The Hanen Centre, Toronto, ON; Janice Greenberg, D.S.P., The Hanen Centre, Toronto, ON; Janette Pelletier, PhD, Ontario Insitute for Studies in Education, University of Toronto, Toronto, ON; and Luigi Girolametto, PhD, Dept of Speech-Language Pathology, University of Toronto, Toronto, ON

Introductory: This study compares the effects of a professional development program, co-taught by two S-LPs, on educators' use of vocabulary teaching strategies. The experimental group received three workshops plus five coaching sessions while the control group received workshops alone. This paper discusses the differential outcomes of the two groups.

Developing Collaborative Practice-Ready Clinicians: Integrating Interprofessional Education into S-LP Curricula

Susan Wagner, B.Sc. (SPA), M.Sc. (CD), Reg. CASLPO, S-LP(C), University of Toronto, Toronto, ON

Introductory: Interprofessional education (IPE) and collaboration are considered best practice internationally in health care. Educational institutions, governments, professional and regulatory organizations, providers and service users are thus emphasizing the development of collaborative practice-ready clinicians. This seminar will share an innovative model that integrates IPE into S-LP curriculum.

Audiology Posters

The Auditory-Verbal Integration of Speech in a Second Language

Jean-Pierre Gagné, PhD, CASLPA and ASHA certified in audiology, Université de montréal, Montréal, QC; and Marilaina Laniel, Université de montréal, Montréal, QC

Introductory: In this project, two groups of young adults (unilingual Francophones and Anglophones who had learned French after age six) were presented with sentences in French in auditory, visual and auditory-visual modes. The findings showed a significant difference for sentences presented in visual mode only.

Diagnostic ABR in the Newborn Population: Beyond the Protocols

Anne-Marie Hurteau, Audiologist, Montreal Children's Hospital, Montréal, QC

Intermediate: In a universal newborn hearing screening program, standard protocols are used to insure that all babies receive equal quality evaluation in a restricted period of time. Going beyond these prescribed protocols can lead to the discovery of interesting and unfamiliar audiological findings. The poster will present different two cases of hearing evaluations where the results were clinically challenging.

Speech-Language Pathology Posters

Semantic Features Analysis Application for Aphasia Therapy

Angela Burda, PhD, CCC-SLP, University of Northern Iowa, Cedar Falls, IA; Stephen Hughes, PhD, University of Northern Iowa, Cedar Falls, IA; Manaswita Dutta, University of Northern Iowa, Cedar Falls, IA; Zach Foltz, University of Northern Iowa, Cedar Falls, IA; and Jessica Sexe, B.A., University of Northern Iowa, Cedar Falls, IA

Intermediate: This semantic feature analysis application was developed by a team for use in working with persons who have aphasia. Sample categories include clothing, foods and transportation items. Originally developed for use on Android tablets, the initial development of the app has been completed and its effectiveness is now being evaluated in clinical settings.

Young and Middle-Aged Adults' Performance on Executive Function Tests

Angela Burda, CCC-SLP, University of Northern Iowa, Cedar Falls, IA; Whitney Cook, B.A., University of Northern Iowa, Cedar Falls, IA; and Kyra Duhham, B.A., University of Northern Iowa, Cedar Falls, IA

Intermediate: Thirty-five young adults and thirty-five middle-aged adults completed the following executive function tests: "Behavioral Assessment of Dysexecutive Strategies (BADS)" and "Functional Assessment of Verbal Reasoning and Executive Strategies". Middle-aged adults had statistically significant higher performance on the BADS Rule Shift Card task. No other significant differences occurred for either test.

Neuronal Adaptation and Formant Transition Direction in Vowels: An MMN Study

Nathanael Crawford, Dalhousie University, Halifax, NS; Steven Aiken, PhD, Dalhousie University, Halifax, NS; Lauren Sculthorpe-Petley, PhD, National Research Council Canada, Halifax, NS; Michael Kiefte, PhD, Dalhousie University, Halifax, NS; and Aaron Newman, PhD, Dalhousie University, Halifax, NS

Introductory: This project examines whether the N1 and MMN cortical waveforms vary predictably in response to changes in the direction of pure-tone glides and second formant transitions in diphthongs. The findings will be discussed in terms of potential applications, such as clinical assessment of speech encoding in hard-to-test populations.

Best Practice for Assessing Language Skills of ESL Children

Jamie Hack, MSc, RSLP, S-LP(C), Sunny Hill Health Centre for Children, Vancouver, BC; Marilyn Noort, MSc, RSLP, S-LP(C), Sunny Hill Health Centre for Children, Vancouver, BC; Aileen Stuart, M.A., RSLP, S-LP(C), CCC-SLP, Sunny Hill Health Centre for Children, Vancouver, BC; Loretta Lee, B.A., B.Sc. (Hons), RSLP, Sunny Hill Health Centre for Children, Vancouver, BC; and Erynne Green, M.Sc., RSLP, Sunny Hill Health Centre for Children, Vancouver, BC

Intermediate: This poster summarizes current research regarding best practices for speech-language pathologists in assessing the language skills of children who are English as a Second Language (ESL) learners. The poster includes a discussion of the normative and ecological validity of standardized, observational, dynamic, and parent-informed assessments along with guidelines for S-LPs assessing ESL skills in children.

Retrospective Analysis of Speech and Language Abilities Following Cerebellar Mutism Syndrome

Caelyn Kaise, M.H.Sc., S-LP(C), Reg. CASLPO, The Hospital for Sick Children, Toronto, ON; Donald Mabbott, PhD, Neuropsychologist, The Hospital for Sick Children, Toronto, ON; Eric Bouffet, MD FRCP (C), The Hospital for Sick Children, Toronto, ON; and Sarah Bognar, M.Sc., Reg. CASLPO, Holland Bloorview Kids Rehabilitation Hospital, Toronto, ON

Introductory: Twenty-five percent of children who undergo surgery for a posterior fossa tumour will develop cerebellar mutism syndrome (CMS). These children can have persistent neurological, speech-language and cognitive impairment. We examine the relationship between the duration and degree of mutism symptoms and long-term speech and language difficulties.

Performance of Southeast Asian Indian Adults on Executive Function Tests

Veena Kallambettu, BA, University of Northern Iowa, Cedar Falls, IA; and Angela Burda, PhD, CCC-SLP, University of Northern Iowa, Cedar Falls, IA

Intermediate: In this study, twenty Caucasian and twenty Southeast Asian Indian adults completed two executive function tests: "Behavioral Assessment of Dysexecutive Syndrome" and "Functional Assessment of Verbal Reasoning and Executive Strategies". Caucasian participants had significantly higher scores on subsection 2 of the first test and on the accuracy and rationale sections of the second test.

Parents' Experiences of Cochlear Implantation for Cochlear Nerve Deficiency

Hannah Kotjan, MSc. RSLP, BC Centre for Ability, Vancouver, BC; Barbara Purves, PhD, M.Sc., S-LP(C); University of British Columbia, Vancouver, BC; and Susan Small, BSc. MSc. PhD, M.S., University of British Columbia, Vancouver, BC

Introductory: This research study investigated the experiences of two parents whose child was diagnosed with severe-to-profound hearing loss due to cochlear nerve deficiency and bilateral common cavity deformity. Using a narrative approach to qualitative interviewing, the study explores parents' experiences with their child's hearing loss.

Dynamic Assessment of Expository Listening Comprehension in Elementary School-Age Children

Alison J. McInnes, M.Cl.Sc., PhD, S-LP(C), University of Alberta, Edmonton, AB; and Andrea Perra, B.Sc., University of Alberta, Edmonton, AB

Intermediate: Standardised assessments of children's listening comprehension are usually insufficient to determine the extent of and reasons for comprehension breakdown. Dynamic assessment allows finer analysis of poor comprehension, and assesses the child's stimulability for instruction. This poster includes methodology for dynamic assessment of expository passage comprehension in school-age children.

Reducing Pneumonia through Improved Oral Hygiene in Acute Care

Trudy Robertson, RN, MSN, CNN(c), Fraser Health, Royal Columbian Hospital, New Westminster, BC; and Dulcie Carter, BSc, MMedSci, RSLP, S-LP(C), Fraser Health, Royal Columbian Hospital, Vancouver, BC

Introductory: This point-of-care research project aimed to reduce hospital acquired pneumonia (HAP) through enhanced oral care. The quasi-experimental, time series study compared retrospective and prospective data in neurologically impaired care-dependent inpatients. The success of the project was measured through reduced HAP rates in the study population, who received the standardized enhanced oral care protocol.

Multisyllabic Words in Spanish-Speaking Children with Protracted Phonological Development

Christine Schretlen, Master of Science, University of British Columbia, Vancouver, BC; Barbara Bernhardt, University of British Columbia, Vancouver, BC; Denisse Perez, University of Granada, Spain; Carmen Ávila, University of Granada, Spain; and Joseph Stemberger, University of British Columbia, Vancouver, BC

Intermediate: In this study, fifty-eight Spanish-speaking children (typical and protracted phonological development) were tested using multisyllabic words. Children showed relative strengths in syllable preservation but other types of simplification. The findings serve as a criterion reference for North American speech-language pathologists in assessing bilingual children's Spanish and English phonology..

Patterns of Disfluency, Utterance Length and Speaking Rate in Bilingual School-Aged Children

Nerissa Taylor, University of Ottawa, Ottawa, ON; Zoe Higgins, University of Ottawa, Gatineau, QC; and Patricia Roberts, University of Ottawa, Ottawa, ON

Introductory: In this study, twenty-five French-English bilingual children aged 7-12 participated in a story-telling task. In comparison to the children's performance in their stronger language, speech was slower in their weaker language and the number of disfluencies, especially stuttering-like disfluencies, were generally higher.

Speech-Language Pathology and Supportive Personnel Posters

Teaching Commenting to a Child with Autism using an iPod Touch

Kim Brittain, M.Cl.Sc., Reg. CASLPO, Western University, London, ON; and Janis Cardy, PhD, S-LP(C), Reg. CASLPO, Western University, London, ON

Introductory: In this preliminary study, a six-year-old boy diagnosed with autism used Proloquo2Go™ on the iPod Touch in an attempt to expand his communicative functions to include commenting. Both prompted and spontaneous use of the iPod Touch for commenting were found to increase with this hybrid approach.

Parents' and S-LPs' Perceptions of a Child's Communication Skills after the Child's Use of an iOS/Android Device with a Communication Application (App)

Karen Derry, M.Sc.., RSLP, B.C. Children's Hospital/Sunny Hill, Vancouver, BC; and Kathie Marina, M.Ed., OT, Sunny Hill Health Centre for Children, Vancouver, BC

Introductory: This study examines how parents and speech-language pathologists (S-LPs) perceive changes in the communication skills of a child with complex communication when they are provided with a communication application (app) on a mobile operating (iOS or Android-based) device.

Tumbling Together: Uncovering the Theoretical Underpinnings of this Intervention Program

Claire Eamer, University of Ottawa; Pascal Lefebvre, PhD, University of Ottawa, Ottawa, ON; and Daphne Ducharme, PhD, Ottawa, ON

Intermediate: This study identifies the foundational concepts of Tumbling Together, an interprofessional intervention program, to create a theoretical model to describe the relationships between these concepts. Qualitative research methods are used to take an in-depth look at this program for preschoolers with communication and self-regulation needs.

Pre-K Clinics...Filling the Service Gap for Late Referrals

Linda Spencer, M.Cl.Sc. RSLP, Surrey Early Speech and Language Program, Surrey, BC; Alexander Lay, M.Sc. RSLP, Surrey Early Speech and Language Program, Surrey, BC; and Marianne Bullied, M.Sc. RSLP, Surrey Early Speech and Language Program, Surrey, BC

Intermediate: This poster will explain how one agency is offering consultation to families whose children are referred with less than 12 months before Kindergarten entry, who in the past may not have received any services prior to entering the school system.

Congrès 2013 de l'ACOA – Abrégés
Victoria, Colombie-Britannique
Du 24 au 27 avril 2013

Atelier pré-congrès

Favoriser le développement de la littératie tout au long du cheminement scolaire : des fondements phonologiques à l'âge préscolaire aux stratégies d'apprentissage du langage de haut niveau pour la réussite au secondaire

Geraldine P. Wallach, Ph. D., CCC-SLP

Intermédiaire : Cet atelier présentera des stratégies d'intervention en littératie axées sur l'intégration du langage parlé et écrit. Il comprendra des lignes directrices pratiques pour intégrer les connaissances de base, les habiletés sémantiques et structurales et les habiletés à produire un discours continu. Nous explorerons également comment écrire des buts et objectifs liés aux sciences humaines et à d'autres domaines du programme scolaire.

Objectifs d'apprentissage

Les participants pourront :

- *connaître des pratiques d'intervention courantes intégrant l'apprentissage de la littératie qui peuvent être utilisées aux diverses étapes du développement du langage;*
- *établir des buts et objectifs qui sont pertinents au contexte et fondés sur le programme scolaire;*
- *poser au moins trois questions essentielles pour aider les cliniciens à créer et à offrir de l'intervention stratégique;*
- *décrire certaines méconnaissances communes liées au diagnostic et au traitement des enfants et adolescents avec divers troubles du langage.*

Atelier en audiologie

La santé et le vieillissement – les répercussions d'une perte auditive

Ulrike Lemke, Ph. D.

Intermédiaire : De nombreux problèmes de santé, y compris la perte auditive, accompagnent souvent le vieillissement, c'est-à-dire que leur prévalence et leur sévérité augmentent avec l'âge. Comme la vaste population vieillissante vit de plus en plus longtemps, un nombre croissant de personnes doit vivre avec des problèmes de santé concurrents.

Cet atelier présentera un aperçu de maladies liées à l'âge et de comorbidités typiques, en portant une attention particulière aux interactions avec la perte auditive. Nous envisagerons la perte auditive en terme de ses liens avec la gestion de la santé physique, la santé mentale et la fonction cérébrale, ainsi que de ses répercussions sur celles-ci. M. Lemke examinera les interventions en audition et la façon dont elles peuvent aider le vieillissement sain en appuyant l'interaction sociale et le fonctionnement cognitif.

Ateliers en orthophonie

La dyspraxie verbale et autres troubles des sons de la parole : diagnostic différentiel, évaluation et traitement

Christina Gildersleeve-Neumann Ph. D., CCC-SLP

Intermédiaire : Ce séminaire portera sur le diagnostic, l'évaluation et le traitement de la dyspraxie verbale, ainsi que sur les similarités et les différences entre ce trouble et les autres troubles de sons de la parole. Nous présenterons des cas d'enfants avec une dyspraxie verbale et des troubles des sons de la parole, ainsi qu'un protocole de diagnostic. Nous examinerons également les interventions actuellement utilisées pour la dyspraxie verbale et la façon dont elles peuvent être appliquées aux troubles des sons de la parole, y compris les principes de l'apprentissage moteur, les indices temporaux et tactiles dynamiques et d'autres aspects articulatoires et phonologiques.

Objectifs d'apprentissage

Les participants pourront :

- *déterminer la différence entre la dyspraxie verbale et les autres troubles des sons de la parole;*
- *décrire les différentes connaissances phonologiques et la façon dont elles sont liées à tous les troubles des sons de la parole;*
- *utiliser les principes de l'apprentissage moteur pour traiter la dyspraxie verbale et autres troubles des sons de la parole;*
- *adapter des méthodes de traitement actuellement utilisées selon les besoins de chaque client.*

Le rôle de l'attention dans les troubles neurologiques de la communication

Jacqueline Hinckley, Ph. D., CCC-SLP

Intermédiaire : Ce séminaire comprendra :

1. les trois sous-systèmes de l'attention et leur neurobiologie;
2. les patrons typiques de déficits de l'attention potentiellement liés à divers diagnostics;
3. des évaluations fondées sur les données probantes pour chaque sous-système de l'attention;
4. des traitements fondés sur les données probantes qui ciblent à la fois l'attention et la communication.

Notre présentation utilisera des études de cas pour illustrer les notions principales.

Objectifs d'apprentissage

Les participants pourront :

- *nommer les déficits d'attention potentiellement liés à divers états neurologiques;*
- *décrire les caractéristiques cliniques de divers déficits d'attention;*
- *effectuer des évaluations et interventions fondées sur les données probantes et axées sur l'attention et la communication.*

La parole et la déglutition des personnes avec une maladie neurodégénérative

Jay Rosenbek, Ph. D., CCC-SLP, BC-NCD

Intermédiaire : Il est de plus en plus commun pour les orthophonistes de traiter des clients avec une maladie neurodégénérative (comme la maladie de Parkinson ou l'atrophie spinocérébelleuse); toutefois, la majorité des programme de formation laissent de côté ou minimisent les défis cliniques de traiter les millions de personnes dans le monde qui sont touchées par ces maladies, et les avantages à le faire. Cet atelier décrira la façon dont ces maladies devraient être identifiées et organisées pour le traitement. La majeure partie de la présentation portera sur des méthodes de gestion qui sont le plus susceptibles d'avoir un effet thérapeutique positif.

Objectifs d'apprentissage

Les participants pourront :

- *reconnaître et décrire les principales catégories de maladies neurodégénératives;*
- *choisir un traitement approprié pour chaque patient;*
- *décrire les étapes de plusieurs importantes méthodes de traitement.*

La thérapie de la voix fondée sur les données probantes : une méthode physiologique

Joseph Stemple, CCC-SLP, ASHA-F

Intermédiaire : Cet atelier présentera un examen critique de la recherche sur les résultats d'interventions pour les troubles fonctionnels de la voix. Nous examinerons des études portant sur des méthodes de thérapie précises, avec une orientation primaire sur la thérapie de la voix. De plus, cet atelier comprendra une exploration et une démonstration de protocoles physiologiques de thérapie de la voix, y compris les exercices de fonction vocale (*Vocal Function Exercises*) et la thérapie par résonance vocale (*Resonant Voice Therapy*).

Objectifs d'apprentissage

Les participants pourront :

- *nommer les méthodes de thérapie de la voix appuyées par la recherche sur les résultats;*
- *créer un programme de traitement appuyé par les données probantes à jour;*
- *mettre en place des programmes de thérapie de la voix fondés sur les « meilleures pratiques ».*

Applications pour la réadaptation auprès des adultes

Megan Sutton, M.S., RSLP, O(C), CCC-SLP

Introduction : Cet atelier vise les cliniciens travaillant auprès de clients avec des troubles acquis, peu importe le stade, qui veulent renforcer leur pratique à l'aide de nouveaux outils et de nouvelles technologies, plus précisément l'iPad et l'iPhone. Les participants apprendront comment utiliser des applications appropriées pour les adultes dans le cadre de l'évaluation, de la thérapie, de la communication suppléante et alternative et de l'apport de soutien personnel/clinique aux clients avec l'aphasie, l'apraxie, la dysarthrie, la dysphagie et des troubles cognitifs.

Objectifs d'apprentissage

Les participants pourront :

- *nommer des applications appropriées pour le traitement des troubles acquis de la communication et de la déglutition;*
- *évaluer les applications selon les données probantes, leur design et leur contenu;*
- *mettre en place un programme de thérapie fondé sur les applications pouvant être utilisé en clinique et à domicile.*

Ateliers d'intérêt commun – orthophonie et personnel de soutien

Communication multi-modale et stratégies d'apprentissage pour les enfants avec des difficultés importantes, y compris des déficits sévères multiples ou un trouble du spectre de l'autisme

Linda Burkhart

Cet atelier de deux jours portera sur des stratégies de communication et d'apprentissage pour les jeunes enfants et les enfants fonctionnant à un bas niveau qui ont de la difficulté à accéder à la communication, à l'interaction et à l'apprentissage. Cette population comprend les enfants avec des déficits physiques significatifs ou de multiples déficits, les enfants ayant subi un traumatisme crânien et les jeunes enfants avec un trouble du spectre de l'autisme sévère.

Objectifs d'apprentissage

Les participants pourront :

- *expliquer le développement du cerveau et en décrire les répercussions sur l'enseignement et l'apprentissage d'élèves qui se développent différemment;*
- *décrire des stratégies visant à accroître la motivation, l'engagement cognitif et la participation active lors du processus d'apprentissage;*
- *expliquer diverses façons d'adapter du matériel de façon à renforcer les habiletés de cognition et de communication des jeunes enfants;*
- *nommer les caractéristiques d'enfants avec un trouble visuel cortical en plus de multiples déficits physiques et autres, ainsi que décrire des stratégies utiles pour favoriser le développement des habiletés visuelles et communicatives;*
- *décrire des stratégies pour aider les enfants avec un trouble du spectre de l'autisme sévère à développer leurs habiletés de langage réceptif et expressif et de traitement cognitif;*
- *décrire comment utiliser ce que l'on sait sur la façon dont les enfants au développement typique apprennent le langage, puis comment appliquer ces principes pour créer un environnement d'apprentissage multi-modal de la communication pour les enfants avec des défis complexes;*
- *expliquer brièvement comment l'affichage dynamique de l'organisation pragmatique (Pragmatic Organization Dynamic Display (PODD)) pourrait servir d'outil approprié pour les enfants aux premières étapes de l'apprentissage du langage, et décrire comment employer cet outil dans des contextes naturels.*

«Cadeau, est-ce que ça commence par K?» Comment appuyer la littératie émergente chez les enfants d'âge préscolaire avec des antécédents variés

Janice Greenberg, B.Sc., D.S.P., Membre OAOO

Intermédiaire : Cet atelier fournira des stratégies permettant d'utiliser la lecture de livres et la conversation pour promouvoir le vocabulaire, la compréhension d'histoires, la reconnaissance de l'écrit et la conscience phonologique. Fondées sur *ABC and Beyond*®, le programme du Centre Hanen visant à renforcer la littéracie émergente, ces stratégies peuvent être mises en place par les orthophonistes, les parents et les éducateurs en petite enfance auprès d'enfants vivant dans un foyer multilingue.

Objectifs d'apprentissage

Les participants pourront :

- *nommer des stratégies de littératie émergente pouvant être mises en place dans des milieux cliniques, à domicile et dans des centres de la petite enfance afin d'appuyer le développement du vocabulaire, de la compréhension d'histoires, de la reconnaissance de l'écrit et de la conscience phonologique chez des enfants vivant dans un foyer unilingue et bilingue;*
- *résumer les données probantes qui sous-tendent et appuient ces stratégies;*
- *décrire des pratiques efficaces pour partager les stratégies appuyant la littératie émergente auprès de divers groupes de parents et d'éducateurs en petite enfance.*

iAppareils – Technologies d'assistance de choix

Lori Wiebe et Val Buissé, M.Sc., O(C)

Intermédiaire : De nouvelles technologies comme l'iTouch et l'iPad apportent de merveilleuses nouvelles possibilités aux enfants avec des besoins particuliers. Avec la création rapide d'applications pour l'éducation spécialisée, les iAppareils sont généralement devenus les outils d'assistance de choix.

Objectifs d'apprentissage

Les participants pourront :

Utiliser les iAppareils et nos applications "essayées et testées" dans le but de :

- promouvoir la communication;
- accroître l'indépendance;
- encourager la maîtrise de soi;
- et bien plus encore!

Comprendre la nature de l'autisme et le pouvoir des points de vue

Catherine B. Zenko, M.S., CCC-SLP

Intermédiaire : Cet atelier présentera les caractéristiques des troubles du spectre de l'autisme (TSA). Nous examinerons la façon dont ces caractéristiques affectent la communication sociale, l'apprentissage et le comportement, et nous donnerons des exemples d'interventions efficaces. Nous démontrerons également des stratégies utiles permettant d'incorporer le point de vue des personnes avec un TSA afin de créer des interventions fonctionnelles et significatives/enrichissantes.

Objectifs d'apprentissage

Les participants pourront :

- *nommer les critères diagnostics des troubles du spectre de l'autisme;*
- *comprendre comment les TSA affectent la communication sociale, l'apprentissage et le comportement;*
- *incorporer les pratiques fondées sur les données probantes examinées lors de l'atelier à leur propre pratique;*
- *comprendre le rôle de la coordination des points de vue tant pour la personne avec un TSA que pour le clinicien;*
- *créer et mettre en place des buts et stratégies d'intervention significatifs pour leurs patients/clients avec un TSA.*

Ateliers pour le personnel de soutien

Le traitement de la dyspraxie verbale

Christina Gildersleeve-Neumann, Ph. D., CCC-SLP

Introduction : Cet atelier décrira les principales difficultés de production de la parole des enfants avec une dyspraxie verbale et présentera des techniques de traitement appropriées. Les renseignements sur le traitement comprendront un survol des principes d'apprentissage moteur essentiels pour traiter la dyspraxie verbale, ainsi que les fondements des indices temporels et tactiles dynamiques, une méthode de traitement efficace pour les enfants avec une dyspraxie verbale.

Objectifs d'apprentissage

Les participants pourront :

- *définir les principales difficultés liées à la dyspraxie verbale;*
- *comprendre les principes de l'apprentissage moteur nécessaires pour traiter la dyspraxie verbale;*
- *comprendre les stratégies de base pour l'utilisation d'indices lors du traitement de la dyspraxie verbale.*

Comment aider les enfants avec un trouble du traitement auditif à domicile et à l'école

Pam Millett, Ph. D.

Introduction : Cette session à l'intention du personnel de soutien portera sur la gestion des troubles du traitement auditif chez les enfants, à domicile et à l'école. Nous examinerons les défis relatifs à l'interprétation des rapports cliniques et à la mise en place de recommandations, et nous présenterons une stratégie de gestion à multiples facettes ciblant les facteurs personnels et environnementaux à domicile et à l'école.

Objectifs d'apprentissage

Les participants pourront :

- *Décrire les défis liés à la salle de classe et à l'apprentissage pour les enfants avec un trouble du traitement auditif.*
- *Comprendre comment la Classification internationale du fonctionnement, du handicap et de la santé de l'OMS peut être appliquée pour aider les enfants à domicile et à l'école.*

Articles contribués en audiologie

Utilisation de l'écoute dichotique pour traiter les troubles du traitement auditif central

Carol Lau, MA, *Sound idEARS Hearing & Listening Clinic*, Vancouver, C.-B.

Intermédiaire : Cette étude examine les résultats pré- et post-traitement d'un groupe de 50 enfants avec un trouble du traitement auditif central qui ont effectué un programme d'écoute dichotique sur le Web. Les résultats démontrent une amélioration significative des scores au SCAN-C, au Dichotic Digits Test et au Compressed Speech Test. Ce projet comprenait également une entrevue des parents après l'entraînement auditif.

Utilisation de la classification internationale du fonctionnement, du handicap et de la santé comme cadre théorique pour les troubles du traitement auditif

Pam Millett, Ph. D.

Intermédiaire : Cette session fournira un aperçu des Lignes directrices canadiennes relatives au trouble de traitement auditif chez les enfants et les adultes. Nous envisagerons l'utilisation de la Classification internationale du fonctionnement, du handicap et de la santé (CIF) de l'OSM en tant que cadre théorique, et nous examinerons l'utilisation du modèle de gestion proposé auprès des enfants et des adultes.

Objectifs d'apprentissage

Les participants pourront :

- *Décrire le modèle de la CIF et son application au trouble du traitement auditif.*
- *Comprendre comment le modèle peut s'appliquer à la gestion des enfants et des adultes.*

Améliorer le dépistage de l'audition des nouveau-nés dans l'Unité néonatale des soins intensifs à l'aide de la tympanométrie à 1 000 Hz

Li Qi, Ph. D., M.Sc., R.Aud, A(C), Vancouver General Hospital, Vancouver, C.-B.; Brian Schmidt, M.Sc., R.Aud, A(C), Glenrose Rehabilitation Hospital, Edmonton, AB; Leonora Hendson, MB.BCh, M.Sc., FRCP(C), FAAP, Glenrose Rehabilitation Hospital & Royal Alexandra Hospital, Edmonton, AB; Kathy Packford, M.Sc., R.Aud, A(C), Glenrose Rehabilitation Hospital, Edmonton, AB; Michelle Ryan, M.Sc., R.Aud, A(C), Glenrose Rehabilitation Hospital, Edmonton, AB; Michelle Wiley; Tanis Howarth; et Melissa Polonenko; Ming Zhang, MD, Ph. D., University of Alberta & Glenrose Rehabilitation Hospital, Edmonton, AB

Introduction : Les dysfonctions de l'oreille moyenne peuvent engendrer de hauts taux de faux positifs dans l'Unité néonatale des soins intensifs (UNSI). Cette étude examine la sensibilité et la spécificité de la tympanométrie à 1 kHz auprès des nouveau-nés de l'UNSI et utilise les potentiels évoqués auditifs du tronc cérébral comme point de référence. Les résultats de l'étude pourraient améliorer l'efficacité du dépistage de l'audition chez les nouveau-nés de l'UNSI.

Articles contribués en audiologie et en orthophonie

La pratique avancée en orthophonie et en audiologie : où en sommes-nous, et vers quoi nous dirigeons-nous?

Susan Rafaat, M.Sc., R.SLP, O(C), ACSLPA, Calgary, AB; et Holly Gusnowsky, M.S., R.Aud, ACSLPA, Edmonton, AB

Introductory: Ce mini-séminaire s'inscrit dans le cadre du projet de l'ACSLPA visant à définir la pratique avancée en orthophonie et en audiologie. Il comprend un examen de la recherche publiée au sujet de la pratique avancée, l'application de la pratique avancée par d'autres professions et les résultats d'un sondage auprès des membres de l'ACSLPA. Cette présentation comprendra une discussion sur les répercussions pour les professions.

Articles contribués en orthophonie

L'hygiène buccale en soins aigus : le rôle de l'orthophoniste

Dulcie Carter, B.Sc., M.Med.Sci., RSLP, O(C), Fraser Health, Vancouver, C.-B.

Introduction : Les orthophonistes en soins aigus donnent souvent des directives relatives à l'hygiène buccale dans le cadre de leurs recommandations de déglutition. Dans la pratique, l'hygiène buccale des patients peut souvent être négligée dans les unités occupées des hôpitaux. Cet article décrit comment promouvoir et améliorer les soins de la bouche dans une unité de neurochirurgie et envisage la valeur concrète qu'apporterait la mise en place de tels changements.

Comprendre la variabilité de la déglutition lors de l'examen vidéofluoroscopique : répercussions pour la pratique clinique

Sonja Molfenter, M.H.Sc., Toronto Rehabilitation Institute, Toronto, ON; et Catriona Steele, Ph. D., Toronto Rehabilitation Institute, Toronto, ON

Intermédiaire : En raison de la nature radiographique de l'évaluation par vidéofluoroscopie, on ne peut examiner qu'un nombre limité de déglutitions pour des raisons de sécurité. Or, on ne connaît pas la mesure de la variabilité entre les déglutitions, ce qui remet en question la représentativité des résultats de l'évaluation. Cette étude décrit la variabilité de la déglutition chez des populations en santé et avec un trouble et examine les répercussions pour la pratique clinique.

Mise à jour sur le syndrome du larynx irritable

Linda Rammage, Ph. D., RSLP, O(C), PVRCP/University of British Columbia, Vancouver, C.-B.; et Sherri Zelazny, M.A., RSLP, CCC-SLP, Surrey, C.-B.

Intermédiaire : Les orthophonistes jouent un rôle essentiel dans l'évaluation et la gestion comportementale des symptômes de la sensibilité laryngée, ce qui permet souvent aux patients d'éviter des situations de crise inutiles ainsi que des traitements médicaux coûteux ou invasifs. Cette étude décrit l'évaluation et le traitement des symptômes du syndrome du larynx irritable en fonction des théories et des données cliniques courantes.

Mise en place et évaluation du *National Outcome Measurement System* d'ASHA au long du continuum des soins dans le West GTA Stroke Network

Holly Sloan, M.S., CCC-SLP, Membre OAOO, Trillium Health Centre, Mississauga, ON; West GTA Stroke Network, Toronto, ON; Lindsay Benoit, orthophoniste, William Osler Health Services, Brampton, ON; Cynthia Boman, orthophoniste, Saint Elizabeth, Mississauga, ON; Pamela Rahn, orthophoniste, Trillium Health Centre, Mississauga, ON et Roxanne Mistry, orthophoniste, Saint Elizabeth, Mississauga, Ontario

Introduction : En mars 2010, le *National Outcome Measurement System* (NOMS) d'ASHA a été choisi comme l'outil de mesure des résultats de choix dans le West GTA Stroke Network. Cet article décrit le projet pilote d'un an coordonné par le West GTA Stroke Network visant à évaluer la mise en place et l'efficacité de ce système tout au long du continuum des soins.

Articles contribués d'intérêt commun – orthophonie et personnel de soutien

Développement neurologique des nouveau-nés prématurés dans le Nord de l'Ontario

Roxanne Belanger, M.Sc. S., O(C), Laurentian University, Sudbury, ON; Chantal Mayer-Crittenden, orthophoniste, M.Sc.S., Université Laurentienne, Sudbury, ON; et Michèle Minor-Corriveau, orthophoniste, Ph. D., Université Laurentienne, Sudbury, ON

Intermédiaire : Cet article examine le développement neurologique des nouveau-nés prématurés anglophones nés dans le Nord de l'Ontario et le compare à celui de nouveau-nés francophones et bilingues nés dans la même région. La discussion porte sur l'influence des facteurs biologiques et sociodémographiques sur le développement.

Les habiletés sensorielles, motrices et linguistiques d'enfants avec des difficultés d'apprentissage scolaire

Josée Lagacé, Ph. D., Université d'Ottawa, Faculté des sciences de la santé; Stéphanie Breau-Godwin, M.Sc.S., Université d'Ottawa, Faculté des sciences de la santé, Ottawa, ON; Jacinthe Savard, Ph. D., Université d'Ottawa, Faculté des sciences de la santé, Ottawa, ON; Carole Fleuret, Ph. D., Université d'Ottawa, Faculté de l'éducation, Ottawa, ON; et Rose Martini, Ph. D., Université d'Ottawa, Faculté des sciences de la santé, Ottawa, ON

Intermédiaire : Cette étude examine les habiletés linguistiques orales et écrites, les habiletés de traitement de l'information auditive et visuelle, ainsi que les habiletés de motricité fine et globale d'un groupe d'enfants francophones vivant des difficultés d'apprentissage à l'école. Les résultats préliminaires de l'étude révèlent que les participants ont un retard dans plus d'un domaine.

Language Fun Storytime : une collaboration entre les orthophonistes et les bibliothécaires

Rhea Lazar, M. Cl. Sc., O(C), RSLP, Vancouver Coastal Health, Vancouver, C.-B.; et Kelly Clark, MLS, Vancouver Public Library, Vancouver, C.-B.

Intermédiaire : Le projet *Language Fun Storytime* (LFST) est une collaboration entre une orthophoniste et une bibliothécaire qui a débuté en 2008. Il s'agit maintenant d'un programme à emplacements multiples géré par plusieurs orthophonistes et bibliothécaires dans diverses régions de Vancouver, présenté en anglais et en cantonais. Ce séminaire décrira la façon dont LFST offre une série de sessions de thérapie hebdomadaires à de petits groupes d'enfants avec des difficultés de parole et de langage.

Apprenants locuteurs d'une langue majoritaire dans un milieu minoritaire : différence langagière ou trouble du langage?

Chantal Mayer-Crittenden, orthophoniste, M.Sc.S., Université Laurentienne, Sudbury, ON; Manon Robillard, orthophoniste, M.Sc.S., Université Laurentienne, Sudbury, ON; Roxanne Belanger, M.Sc. S., O(C), Université Laurentienne, Sudbury, ON; et Michèle Minor-Corriveau, orthophoniste, Ph. D., Université Laurentienne, Sudbury, ON

Intermédiaire : Cette étude a examiné quarante enfants de cinq ans dont l'anglais était la langue dominante et qui apprenaient le français dans une école de langue française. Les enfants ont été évalués dans les deux langues à l'aide de tâches linguistiques et cognitives. Les résultats démontrent que ces enfants apprennent une langue seconde à une vitesse significativement différente que les apprenants locuteurs d'une langue minoritaire apprennent une langue majoritaire.

Améliorer les habiletés métalinguistiques d'adolescents lors d'activités d'étude de mots dans la salle de classe

Alison McInnes, M.Cl.Sc., Ph. D., O(C), University of Alberta, Edmonton, AB; Lynn McQuarrie, Ph. D., University of Alberta, Edmonton, AB; et Norma Nocente, Ph. D., University of Alberta, Edmonton, AB

Intermédiaire : Il demeure un défi pour les orthophonistes en milieu scolaire de développer les connaissances des enseignants sur le langage oral pour aider les élèves avec un trouble d'apprentissage. Cette étude présente un ensemble d'activités pouvant être utilisées en salle de classe et utilisant l'étude de mots dans un domaine de contenu afin d'améliorer la conscience phonologique et morphologique. Ces activités ont été créées et pilotées par l'Advancing Adolescent Reading Initiative en Alberta.

Initiative de stage en Afrique du Sud : la justice sociale par l'entremise de la formation clinique

Taslim Moosa, M.Cl.Sc., O(C), Membre OAOO, University of Western Ontario, London, ON

Intermédiaire : Ce projet présente des occasions d'expérience clinique supervisées pour les étudiants en orthophonie qui intègrent la formation clinique et la prestation de services dans des communautés multilingues, multiculturelles et mal desservies d'Afrique du Sud. Les occasions s'inscrivent dans un cadre de justice sociale. Nous discuterons de la mise en place du programme, de l'apprentissage des étudiants, des défis professionnels et des orientations futures.

Les effets du perfectionnement professionnel sur la capacité des enseignants préscolaires à promouvoir l'apprentissage du vocabulaire lors d'activités de lecture partagée

Ashwini Namasivayam, Dept of Speech-Language Pathology, University of Toronto, Toronto, ON; Kathy Hipfner-Boucher, Ph. D., Dept of Speech-Language Pathology, University of Toronto, Toronto, ON; Trelani Milburn, M.Sc., Dept of Speech-Language Pathology, University of Toronto, Toronto, ON; Elaine Weitzman, M.Ed., The Hanen Centre, Toronto, ON; Janice Greenberg, D.S.P., The Hanen Centre, Toronto, ON; Janette Pelletier, Ph. D., Ontario Institute for Studies in Education, University of Toronto, Toronto, ON; et Luigi Girolametto, Ph. D., Dept of Speech-Language Pathology, University of Toronto, Toronto, ON

Introduction : Cette étude compare les effets d'un programme de perfectionnement professionnel enseigné en collaboration par deux orthophonistes sur l'utilisation de stratégies d'enseignement du vocabulaire par les enseignants. Le groupe expérimental a suivi trois ateliers et reçu cinq séances de coaching, et le groupe de contrôle a uniquement suivi les ateliers. Cet article présente les résultats différentiels des deux groupes.

Former des cliniciens prêts pour la pratique collaboratrice : intégrer la formation interprofessionnelle au programme d'enseignement en orthophonie

Susan Wagner, B.Sc. (SPA), M.Sc. (CD), Membre OAOO, O(C), University of Toronto, Toronto, ON

Introduction : La formation interprofessionnelle et la collaboration sont considérées comme les meilleures pratiques en soins de santé à l'échelle internationale. Les milieux d'enseignement, les gouvernements, les organismes professionnels et réglementaires, les prestataires de soins et les utilisateurs de services s'efforcent donc de promouvoir la formation de cliniciens prêts pour la pratique collaborative. Ce séminaire démontrera un modèle innovateur qui intègre la formation interprofessionnelle au programme d'enseignement en orthophonie.

Affiches en audiologie

Intégration auditivo-visuelle de la parole dans une langue seconde

Jean-Pierre Gagné, Ph. D., certifié par l'ACOA et ASHA en audiologie, Université de Montréal, Montréal, QC; et Marilaina Laniel, Université de Montréal, Montréal, QC

Introduction : Des phrases de langue française furent présentées en modalité auditive, visuelle et auditivo-visuelle à deux groupes de jeunes adultes : des unilingues francophones et des anglophones ayant appris le français après l'âge de 6 ans. Les résultats ont démontré une différence significative pour les phrases présentées en modalité visuelle seulement.

PÉATC diagnostiques chez les nouveau-nés : au-delà des protocoles

Anne-Marie Hurteau, audiologiste, Hôpital de Montréal pour enfants, Montréal, QC

Intermédiaire : Dans un programme de dépistage universel de l'audition chez les nouveau-nés, des protocoles standard sont utilisés pour faire en sorte que tous les bébés reçoivent une évaluation de qualité égale dans une période de temps restreinte. Or, on peut découvrir des résultats audiologiques intéressants et non familiers en allant au-delà de ces protocoles prescrits. Cette affiche présentera deux cas d'évaluations de l'audition où les résultats présentaient des défis cliniques.

Affiches en orthophonie

Application pour une thérapie en aphasie utilisant l'analyse des traits sémantiques

Angela Burda, Ph. D., CCC-SLP, University of Northern Iowa, Cedar Falls, IA; Stephen Hughes, Ph. D., University of Northern Iowa, Cedar Falls, IA; Manaswita Dutta, University of Northern Iowa, Cedar Falls, IA; Zach Foltz, University of Northern Iowa, Cedar Falls, IA; et Jessica Sexe, B.A., University of Northern Iowa, Cedar Falls, IA

Intermédiaire : Cette application utilisant l'analyse des traits sémantiques a été créée par une équipe dans le but de travailler avec les personnes qui ont une aphasie. Les catégories ciblées comprennent les vêtements, la nourriture et les moyens de transport. Cette application, initialement conçue pour les tablettes Android, a maintenant passé l'étape du développement initial et est en cours d'évaluation dans des milieux cliniques.

Performance d'adultes jeunes et d'âge moyen lors de tests des fonctions exécutives

Angela Burda, CCC-SLP, University of Northern Iowa, Cedar Falls, IA; Whitney Cook, B.A., University of Northern Iowa, Cedar Falls, IA; et Kyra Duhham, B.A., University of Northern Iowa, Cedar Falls, IA

Intermédiaire : Trente-cinq jeunes adultes et trente-cinq adultes d'âge moyen ont subi les tests de fonctions exécutives *Behavioral Assessment of Dysexecutive Strategies* (BADS) et *Functional Assessment of Verbal Reasoning and Executive Strategies.* Les adultes d'âge moyen avaient une performance significativement meilleure à la tâche *Rule Shift Card* du BADS. Aucune autre différence significative n'a été notée aux deux tests.

Adaptation neuronale et direction de la transition des formats lors de la production de voyelles : une étude de la négativité de discordance (MMN)

Nathanael Crawford, Dalhousie University, Halifax, N.-É.; Steven Aiken, Ph. D., Dalhousie University, Halifax, N.-É.; Lauren Sculthorpe-Petley, Ph. D., Conseil national de recherches du Canada, Halifax, N.-É.; Michael Kiefte, Ph. D., Dalhousie University, Halifax, N.-É.; et Aaron Newman, Ph. D., Dalhousie University, Halifax, N.-É.

Introduction : Ce projet examine si les ondes corticales N1 et MMN varient de façon prévisible en réponse à un changement de direction d'un glissement de tons purs et à la transition du deuxième formant lors de la production de diphtongues. Nous présenterons les résultats en envisageant leurs applications potentielles, par exemple l'évaluation clinique de l'encodage de la parole chez les populations difficiles à tester.

Meilleures pratiques pour évaluer les habiletés langagières d'enfants apprenant l'anglais comme langue seconde

Jamie Hack, M.Sc., RSLP, O(C), Sunny Hill Health Centre for Children, Vancouver, C.-B.; Marilyn Noort, M.Sc., RSLP, O(C), Sunny Hill Health Centre for Children, Vancouver, C.-B.; Aileen Stuart, M.A., RSLP, O(C), CCC-SLP, Sunny Hill Health Centre for Children, Vancouver, C.-B.; Loretta Lee, B.A., B.Sc. (Hons), RSLP, Sunny Hill Health Centre for Children, Vancouver, C.-B.; et Erynne Green, M.Sc., RSLP, Sunny Hill Health Centre for Children, Vancouver, C.-B.

Intermédiaire : Cette affiche résume la recherche courante sur les meilleures pratiques à recommander aux orthophonistes pour évaluer les habiletés langagières d'enfants apprenant l'anglais comme langue seconde. L'affiche comprend un examen de la validité normative et écologique d'évaluations standardisées, observationnelles, dynamiques et informées par les parents, ainsi que des lignes directrices pour les orthophonistes évaluant les habiletés d'enfants apprenant l'anglais comme langue seconde.

Analyse rétrospective des habiletés de parole et de langage suite au syndrome de mutisme cérébelleux

Caelyn Kaise, M.H.Sc., O(C), Membre OAOO, The Hospital for Sick Children, Toronto, ON; Donald Mabbott, Ph. D., neuropsychologue, The Hospital for Sick Children, Toronto, ON; Eric Bouffet, MD, FRCP (C), The Hospital for Sick Children, Toronto, ON; et Sarah Bognar, M.Sc., Membre OAOO, Holland Bloorview Kids Rehabilitation Hospital, Toronto, ON

Introduction : Vingt-cinq pour cent des enfants subissant une chirurgie pour une tumeur de la fosse postérieure développent le syndrome de mutisme cérébelleux. Ces enfants peuvent avoir des troubles neurologiques, cognitifs, de parole et de langage persistants. Nous examinons la relation entre la durée et la sévérité des symptômes de mutisme et les difficultés de parole et de langage à long terme.

Performance d'adultes d'origine indienne asiatique du Sud-Est à des tests des fonctions exécutives

Veena Kallambettu, B.A., University of Northern Iowa, Cedar Falls, IA; et Angela Burda, Ph. D., CCC-SLP, University of Northern Iowa, Cedar Falls, IA

Intermédiaire : Dans cette étude, vingt adultes caucasiens et vingt adultes indiens asiatiques du Sud-Est ont effectué deux tests des fonctions exécutives : le *Behavioral Assessment of Dysexecutive Syndrome* et le *Functional Assessment of Verbal Reasoning and Executive Strategies.* Les participants caucasiens ont obtenu des scores significativement plus élevés à la sous-section 2 du premier test et aux sections sur la précision et la justification du deuxième test.

Expériences des parents après la pose d'un implant cochléaire pour une déficience du nerf cochléaire

Hannah Kotjan, MSc. RSLP, BC Centre for Ability, Vancouver, BC; Barbara Purves, Ph. D., M.Sc., S-LP(C); University of British Columbia, Vancouver, BC; and Susan Small, BSc. MSc. Ph. D., M.S., University of British Columbia, Vancouver, BC

Introduction : Cette étude a examiné l'expérience de deux parents dont l'enfant a reçu un diagnostic de perte auditive sévère à profonde en raison d'une déficience du nerf cochléaire et d'une malformation bilatérale de la cavité commune. À l'aide d'une méthode narrative d'entrevue qualitative, l'étude explore l'expérience des parents par rapport à la perte auditive de leur enfant.

Évaluation dynamique de la compréhension auditive expositive chez les enfants d'âge scolaire au niveau élémentaire

Alison J. McInnes, M.Cl.Sc., Ph. D., O(C), University of Alberta, Edmonton, AB; et Andrea Perra, B.Sc., University of Alberta, Edmonton, AB

Intermédiaire : Les évaluations standardisées de la compréhension auditive des enfants sont généralement insuffisantes pour déterminer l'étendue et les raisons des bris de compréhension. L'évaluation dynamique permet d'analyser plus précisément la faible compréhension et de déterminer la stimulabilité de l'enfant. Cette affiche comprend la méthodologie utilisée pour l'évaluation dynamique de la compréhension d'un passage expositif par des enfants d'âge scolaire.

Réduire les taux de pneumonie grâce à l'amélioration de l'hygiène buccale en soins aigus

Trudy Robertson, IA, MSN, CNN(C), Fraser Health, Royal Columbian Hospital, New Westminster, C.-B.; et Dulcie Carter, B.Sc., M.Med.Sci., RSLP, O(C), Fraser Health, Royal Columbian Hospital, Vancouver, C.-B.

Introduction : Ce projet de recherche hors laboratoire visait à réduire les taux de pneumonies nosocomiales grâce à l'amélioration des soins buccaux. L'étude de séries temporelles quasi-expérimentale a comparé des données rétrospectives et prospectives de patients internes avec un dommage neurologique nécessitant des soins. La réussite du projet a été déterminée par une diminution des taux de pneumonie nosocomiale dans la population à l'étude, qui a reçu un protocole standardisé d'hygiène buccale accrue.

Mots multisyllabiques chez des enfants hispanophones avec un retard du développement phonologique

Christine Schretlen, M.Sc., University of British Columbia, Vancouver, C.-B.; Barbara Bernhardt, University of British Columbia, Vancouver, C.-B.; Denisse Perez, University of Granada, Espagne; Carmen Ávila, University of Granada, Espagne; et Joseph Stemberger, University of British Columbia, Vancouver, C.-B.

Intermédiaire : Dans cette étude, cinquante-huit enfants hispanophones (développement typique et retard du développement phonologique) ont été évalués à l'aide de mots multisyllabiques. Les enfants ont démontré des forces relatives en termes de préservation des syllabes, mais également d'autres types de simplification. Les résultats servent de critères pour permettre aux orthophonistes nord-américains d'évaluer la phonologie des enfants bilingues parlant l'espagnol et l'anglais.

Patrons de disfluidité, longueur d'énoncé et débit de parole chez des enfants bilingues d'âge scolaire

Nerissa Taylor, Université d'Ottawa, Ottawa, ON; Zoe Higgins, Université d'Ottawa, Gatineau, QC; et Patricia Roberts, Université d'Ottawa, Ottawa, ON

Introduction : Dans cette étude, vingt-cinq enfants bilingues français-anglais âgés de 7 à 12 ans ont participé à une tâche de narration. Comparativement à leur performance dans leur langue dominante, leur débit de parole était plus lent dans la langue moins forte, et le nombre de disfluidités, particulièrement de disfluidités de type bégayées, était généralement plus élevé.

Affiches d'intérêt commun – orthophonie et personnel de soutien

Enseigner à un enfant avec l'autisme à faire des commentaires à l'aide d'un iPod Touch

Kim Brittain, M.Cl.Sc., Membre OAOO, Western University, London, ON; et Janis Cardy, Ph. D., O(C), Membre OAOO, Western University, London, ON

Introduction : Dans cette étude préliminaire, un garçon de six ans avec l'autisme a utilisé l'application Proloquo2Go™ sur l'iPod Touch dans le but d'élargir ses fonctions de communication et de faire des commentaires. L'utilisation incitée et l'utilisation spontanée de l'iPod Touch pour faire des commentaires ont toutes deux augmenté grâce à cette approche hybride.

Perception des habiletés de communication d'un enfant par les parents et par l'orthophoniste après l'utilisation d'une application de communication sur un appareil iOS/Android

Karen Derry, M.Sc., RSLP, B.C. Children's Hospital/Sunny Hill, Vancouver, C.-B.; et Kathie Marina, M.Ed., ergothérapeute, Sunny Hill Health Centre for Children, Vancouver, C.-B.

Introduction : Cette étude examine la façon dont les parents et les orthophonistes perçoivent les changements dans les habiletés de communication d'enfants avec une communication complexe quand ils utilisent une application de communication sur un appareil (iOS ou Android).

Tumbling Together : à la découverte des piliers théoriques de ce programme d'intervention

Clair Eamer, B.N.Sc., IA, Ottawa, ON; Pascal Lefebvre, Ph. D., Université d'Ottawa, Ottawa, ON; et Daphne Ducharme, Ph. D., Ottawa, ON

Intermédiaire : Cette étude identifie les concepts fondamentaux de *Tumbling Together*, un programme d'intervention interprofessionnel, afin d'établir un modèle théorique décrivant la relation entre ces concepts. Nous avons utilisé des méthodes de recherche qualitative pour examiner en profondeur ce programme à l'intention d'enfants d'âge préscolaire avec des besoins de communication et de maîtrise de soi.

Cliniques en pré-maternelle… Combler l'écart dans les services pour les consultations tardives

Linda Spencer, M.Cl.Sc., RSLP, Surrey Early Speech and Language Program, Surrey, C.-B.; Alexander Lay, M.Sc., RSLP, Surrey Early Speech and Language Program, Surrey, C.-B.; et Marianne Bullied, M.Sc., RSLP, Surrey Early Speech and Language Program, Surrey, C.-B.

Intermédiaire : Cette affiche expliquera comment un organisme offre des services de consultation à des familles dont l'enfant est référé à moins de 12 mois avant l'entrée en maternelle et qui, dans le passé, n'auraient potentiellement pas reçu de services avant l'entrée dans le système scolaire.

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Mini-seminars: These sessions are designed to provide opportunity for interactive discussion of clinical practice and professional issues (90 minutes in duration).

Posters: Posters should stand alone in conveying information. Each display should contain title and author(s), statement of purpose, methodology, results and conclusions. Posters must be in landscape format, no larger than 2.4m x 1.2m. Authors are required to be present at designated times to respond to questions and engage in discussion.

Scientific Exhibits: These sessions will be incorporated with the poster presentations. Exhibitors are required to be present at designated times to describe and discuss the exhibit. A table of approximately 1.8 m x .75 m and a poster board of approximately 2.4 m x1.2 m will be available. Exhibitors are responsible for providing all equipment that will be required.

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TYPES DE SESSION

Articles contribués : Un article contribué devrait être fondé sur un projet de recherche en cours, une expérience clinique ou une étude de cas, être récent et ne pas avoir été publié (durée de 45 minutes).

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Affiches : Les affi ches doivent, à elles seules, fournir toute l'information nécessaire. Chacune doit comprendre le titre et le nom du ou des auteurs, les objectifs du projet, la méthodologie, les résultats et conclusions. Les affiches doivent être en orientation horizontale (paysage) et ne pas dépasser 2,4 m par 1,2 m. Lors de périodes établies à l'avance, les auteurs devront être présents pour répondre aux questions et participer aux échanges (discussions).

Expositions scientifiques : Ces activités seront incorporées aux affi ches. Lors de périodes établies à l'avance, les exposants devront être présents pour décrire leur exposition et en discuter avec les participants. Les exposants auront accès à une table mesurant environ 1,8 m par 0,75 m et à une affiche de 2,4 m x 1,2 m. Les exposants sont responsables d'apporter tout autre équipement nécessaire.

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Le formulaire pour soumettre les propositions de communications, les conditions et les instructions peuvent être téléchargés à partir du site Web de l'ACOA au www.caslpaconference.ca/appel-de-communications

Canadian Association of Speech-Language Pathologists and Audiologists

CASLPA Position Paper on

Early Identification of Speech & Language Disorders

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A position paper represents the direction CASLPA has taken on a particular topic or provides guidelines for particular areas of practice. These positions are time-bound, representing the thinking at a particular point in time.

Position

The Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) supports a national, formalized and standardized strategy for the early identification of speech and language problems.

Such a strategy is essential to child development services and will benefit all the people of Canada. The early identification of speech and language problems is integral to prevention of associated problems in communication, literacy and cognition and is fundamental for lifelong learning and well-being. This paper demonstrates the necessity of a nationally established and supported plan for early identification of speech and language problems and offers specific recommendations for implementation.

Rationale

Early intervention in speech-language pathology refers to services for infants and toddlers, birth to 3 years of age (Paul & Roth, 2011). There is variation amongst Canadian provinces and territories regarding the definition of 'early' speech and language development, resulting in inconsistent and variable practices for early identification of, and interventions for, disorders. An accepted definition of 'early' is necessary to inform a national strategy.

There is compelling scientific evidence supporting the importance and effectiveness of an integrated, multi-disciplinary and intersectoral program for early interventions (McCain & Mustard, 1999; McCain, Mustard & Shanker, 2007). Early intervention includes and depends on the earliest possible effective identification of speech and language disorders. Results of four decades of applied research in neurosciences, speech-language pathology and early childhood special education show that strategic early intervention programs improve lifetime outcomes for vulnerable and at-risk children and generate a range of benefits to society (Shonkoff & Phillips, 2001).

The first three years of life are a time of rapid brain organization and growth that affects not only linguistic development but also cognitive, emotional, social and motor development. Optimal brain development during the first three years is therefore vitally important to long-term outcomes, impacted by interactions between early physical, social, emotional and experiential learning (Hertzman, 2000; Shonkoff & Meisels, 2000). Typically there is explosive phonological, vocabulary, syntax and semantic growth, as well as the emergence of sense of self in relation to others for the social use of speech and language. Child-specific biological vulnerabilities, as well as environmental factors that affect vulnerabilities, need to be identified during this time. Without early identification programs, followed by integral early intervention programs, children with speech and language problems could have poorer adult outcomes, resulting in familial and societal stress (Hertzman, 2000). Fortunately, difficulties in speech and language learning in the early years can be ameliorated, or in some cases prevented, if they are efficiently identified (Hertzman, 2000; Hertzman, 2010).

Recommendations

CASLPA advocates for a national, formalized and standardized strategy for the early identification of speech-language problems that enhances:

a) reliable prevention, identification and elimination of causal factors of speech and language disorders, and

b) promotion of wellness; that is, a decreased prevalence of developmental speech-language disorders and increased communication functioning from infancy on.

This strategy includes:

1. Enhancement of the expertise of Canadian speech-language pathologists focusing on: precursors to speech and language development; early speech and language development, risks and disorders; current best available evidence in the early identification of speech and language risks, delays and disorders; early social, environmental and biological risks for speech and language development problems.
2. Development and application of prevention strategies for speech and language delays and disorders.
3. Accessible and reliable early identification practices for all children in Canada.
4. Public education to promote
   a) understanding of factors that place infants and toddlers at risk for speech and language problems;
   b) understanding of conditions which ensure optimum development of speech and language abilities; and
   c) appropriate referrals to speech-language pathologists.
5. Research in Canada to inform early identification practice for speech-language pathologists (i.e., predictors of speech and language development and early childhood factors that affect the healthy development and maintenance of speech-language abilities).
6. Lobbying/informing government officials, stakeholders, associates and colleagues relative to early identification strategies to decrease the prevalence of late childhood and school-age speech-language and communication disorders.

Background

Early intervention can alter maladaptive trajectories resulting from inherent speech-language and communication vulnerabilities and ameliorate more severe outcomes. Coping abilities, competencies, health and well-being are strongly influenced by the integrity of neural circuitry that is established as a result of intricate interactions of genes, early environments and experiences (Shonkoff, Harvard National Forum on Early Childhood, 2000).

Early speech and language development has a decisive influence on later academic accomplishments, health, well-being and quality of life (Guralnick, 2011; National Research Council & Institute of Medicine, 2000). Higher level language skills are founded on the quality of development in the first three years. Early language skill development allows for cultural learning, problem solving, complex social behaviour and literacy competence. Children who don't experience optimum early language learning are not prepared, nor equipped, for compulsory formal education by age 5 (Hart & Risely, 1995). They're unable to use language to assist their learning in math and science domains: language that includes complex verbal instructions; negotiation of complex relationships and feelings with peers and adults; and solving problems associated with their ever-expanding community base (Otto, 2002). Using and understanding complex grammar, understanding others' points of view, developing conscience, negotiation skills, conflict resolution and cultural sensitivity, all depend on the language foundations laid in the first three years (Otto). Children with inherent language disabilities, who do not receive early intervention, begin to experience increasing difficulties in life because of the growing visibility of their differences and their increasing learning incompetency. Early problems with speech and language development can result in later life high risk behaviours, depression, poor resiliency and isolation in society, while language competence predicts cascading competencies in a broad range of life domains (Blair, Peters & Lawrence, 2003; Calandrella & Wilcox, 2000; Moffatt, 1993). Moreover, disparities that occur from speech and language developmental difficulties in the first three years of life are often not overcome without later concerted remedial effort and significant investment.

Early experiences have a powerful influence on the integrity of the development of neural pathways that underlie humans' capacity to use language, become literate and understand the complexities of their environments. Brain plasticity is greatest in the prenatal period and during very early childhood. Skills for language depend on the optimal stimulation of the brain's neural pathways during these times (McCain, Mustard & Shanker, 2007). Appropriate interactions and stimulation are extremely important to ensure optimum development. Often, early development must be enhanced by the expertise and guidance of knowledgeable, trained, professionals who can ensure that a child's early circumstances benefit, rather than risk, his/her future well-being. Many children and families in Canada currently miss the opportunity to receive appropriate early intervention because of a lack of reliable early identification methods (Mentore, 2000; Talay-Ongan, 2001).

Speech and language delays are the most reported problem in children as a primary concern or with associated developmental disabilities and they are often the first concerns expressed by parents when talking to professionals about their children's development (Wetherby and Prizant, 1996). Estimates of the prevalence of language difficulties by preschool age are between 2% and 19%, while specific language impairment (SLI) is one of the most common childhood disorders, affecting 7% of children (ASHA, 2005). Other speech disorders, which also impact a person's life functioning (e.g., phonology, stuttering), have reported prevalence estimates of 1-14% (Campbell et al. 2003; Craig et al. 2002; Craig & Tran, 2005). Furthermore, whole families are impacted by speech and language impairments; there is a 20-40% incidence of problems in families with a history of SLI (Choudhury & Benasich, 2003).

Since speech-language disorders have far-reaching effects on so many children's abilities to communicate, learn and function in life, and are likely to lead to other adult functional difficulties, the early identification of problems, through appropriate screening and assessment, is extremely important. CASLPA is committed to improving the lives of all persons with speech and language disabilities from infancy through adulthood and believes that if a significant investment is made now in Canada to address a science-based plan for the early identification of speech and language problems, or risks of problems, the early life foundations for our children's success will improve. CASLPA encourages the establishment of standards of practice and integral knowledge creation through research for the early identification of speech and language problems. An investment in effective early identification and follow-up intervention services, for young children with speech and language delays and disorders, is critical to produce optimum benefit for them and for future generations of Canadians. As leaders in the field of early childhood speech and language development, assessment of delays and disorders, and appropriate interventions, the more than 6000 CASLPA members actively support this position statement.

References

American Speech and Hearing Association (ASHA, 2008). Incidence and Prevalence of Communication Disorders and Hearing Loss in Children.

Blair C, Peters R, Lawrence F. (2003) Family dynamics and child outcomes in early intervention: The role of developmental theory in the specification of effects. *Early Childhood Research Quarterly* 2003; 18(4):446-67.

Calandrella, MJ & Wilcox AM. (2000). Predicting language outcomes for young prelinguistic children with developmental delay. *Journal of Speech Language & Hearing Research* 43(5):1061-71.

Campbell, T. F., Dollaghan, C. A., Rockette, H. E., Paradise, J. L., Feldman, H. M., Shriberg, L. D. et al. (2003). Risk factors for speech delay of unknown origin in 3-year-old children. *Child Development, 74,* 346-357.

Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA, 2007). Improving Children's Lives and Government's Bottom Line: The Value of Early Identification of Communication and Hearing Disorders in Children.

Canadian Task Force on Preventive Health Care (2003). New grades for recommendations from the Canadian Task Force on Preventive Health Care. *CMAJ, 169,* 207-208.

Choudhury & Benasich, (2003). *A family aggregation study. The influence of family history and other risk factors on language development.* Journal of Speech Language and Hearing Research 46, 261-272.

Cossette L, Duclos E. A. (2001). Profile of Disability in Canada, 2001., Ottawa, Ontario: Statistics Canada; 2002 Dec. Report No.: 89-577-XIE.

Craig, A., Hancock, K., Tran, Y., Craig, M., & Peters, K. (2002). Epidemiology of stuttering in the community across the entire lifespan. *Journal of Speech, Language, and Hearing Research, 45,* 1097-1105.

Craig, A., & Tran, Y. (2005). The epidemiology of stuttering: The need for reliable estimates of prevalence and anxiety levels across the lifespan. *Advances in Speech-Language Pathology, 7*(1), 41-46.

Guralnick, M.J., (2011). Why early intervention works: A systems perspective. *Infants & Young Children, 24*(1), 6-28.

Hart, B. & Risley, T. (1995). *Meaningful Differences in the Everyday Experience of Young American Children*, Baltimore, MD: Paul H. Brookes Publishing Co.

Hertzman C. (2000). The Case for an Early Childhood Development Strategy. *Canadian Journal of Policy Research, 1,* 11-18.

Hertzman, C. (2010). Social geography of developmental health in the early years. Health Quarterly (14).

McCain, M. & Mustard, F. (1999). Reversing the Real Brain Drain: Early Years Study Final Report. Ontario Children's Secretariat, Publications.

McCain, M., Mustard, F., & Shanker, S. (2007). *Early Years Study 2: Putting Science into Action* Council for Early Child Development.

Mentore JL. The effectiveness of early intervention with young children "at risk": A decade in review 2000.

Moffat, T.E. (1993). The neuropsychology of conduct disorder. Development and psychopathology 1993; 5(1-2): 135-151. As reported in Cohen, N.J. (2005) The Impact of Language Development on the Psychosocial and Emotional Development of Young Children. Encyclopaedia on Early Childhood Development, Centre of Excellence on Early Childhood Development.

Otto, B. (2002) Language Development in Early Childhood. Pearson Education, Inc. NJ.

Paul, D. & Roth, F. P. (2011). Guiding Principles and Clinical Applications for Speech-Language Pathology Practice in Early Intervention. *Language, Speech, and Hearing Services in Schools, 42*, 320-330.

Shonkoff , J.P., Meisels, S.J. (2000). *Handbook of early childhood intervention (2nd ed.)* New York, NY, US: Cambridge University Press.

Shonkoff J.P. and Phillips D.A. (2001). *From Neurons to Neighborhoods: The Science of Early Childhood Development*; Committee on Integrating the Science of Early Childhood Development, Board on Children, Youth, and Families Supplementary Resources Report. http://www.halton.ca/common/pages/UserFile.aspx?fileId=16362.

Talay-Ongan A. Early intervention: Critical roles of early childhood service providers. *International Journal of Early Years Education* 2001 October; 9(3):221-8.

Wetherby, A. & Prizant, B. (1996). Toward earlier identification of communication and language problems in infants and young children. In S. Meilels & E. Fennichel (Eds.), New Visions for Developmental Assessment (pp. 289-3121). Arlington, VA: NCCIP.

Association canadienne des orthophonistes et audiologistes

CASLPA | ACOA

Exposé de position

l'identification précoce des troubles de la parole et du langage

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Octobre 2012

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† Décédée le 18 mars 2012.

Un exposé de position représente l'orientation que l'ACOA a prise sur un sujet ou propose des lignes directrices pour des domaines particuliers de la pratique. Ces positions ont une dimension temporelle et représentent la pensée de l'Association à un moment particulier.

Principes

L'Association canadienne des orthophonistes et audiologistes (ACOA) appuie une stratégie nationale, officialisée et normalisée en vue de l'identification précoce des problèmes de la parole et du langage.

Pareille stratégie est essentielle aux services d'éducation de l'enfance et profitera à l'ensemble de la population canadienne. Le diagnostic précoce des problèmes de la parole et du langage fait partie intégrale des efforts de prévention des problèmes connexes de la communication, de l'alphabétisation et de la cognition et constitue un aspect fondamental de l'apprentissage et du mieux-être tout au long de la vie. Le présent document montre la nécessité d'un plan établi et soutenu à l'échelle nationale pour l'identification précoce des problèmes de la parole et du langage et offre des recommandations spécifiques touchant sa mise en œuvre.

Justification

Par intervention précoce en orthophonie, on entend les services aux nourrissons et aux bambins, de la naissance à l'âge de trois ans (Paul & Roth, 2011). La définition de développement « précoce » de la parole et du langage varie selon les provinces et les territoires, ce qui mène à des pratiques incohérentes et variables en ce qui concerne l'identification et le traitement précoces des troubles du langage et de la parole. Une définition admise du terme « précoce » est nécessaire pour éclairer une stratégie nationale.

Il existe des preuves scientifiques convaincantes de l'importance et de l'efficacité d'un programme intégré, multidisciplinaire et intersectoriel d'interventions précoces (McCain & Mustard, 1999; McCain, Mustard & Shanker, 2007). L'intervention précoce comprend l'identification efficace et précoce des troubles de la parole et du langage et en dépend. Les résultats de quatre décennies de recherche appliquée en neurosciences, en orthophonie et en éducation spécialisée de la jeune enfance montrent que les programmes stratégiques d'intervention précoce améliorent les retombées permanentes chez les enfants vulnérables et à risque et génèrent divers avantages pour la société (Shonkoff & Phillips, 2001).

Les trois premières années de vie sont une période developpement et de croissance rapides du cerveau qui a un effet non seulement sur le développement linguistique mais également sur le développement cognitif, émotionnel, social et moteur. Le développement optimal du cerveau durant ces trois premières années est par conséquent déterminant pour les résultats à long terme et tributaire des interactions entre les apprentissages physiques, sociaux, émotionnels et expérientiels (Hertzman, 2000; Shonkoff & Meisels, 2000). D'ordinaire, il y a une croissance explosive sur les plans de la phonologie, du vocabulaire, de la syntaxe et de la sémantique, ainsi que l'émergence de la conscience de soi par rapport aux autres quant à l'utilisation sociale de la parole et du langage. C'est au cours de cette période qu'il faut identifier les vulnérabilités biologiques propres à l'enfance, ainsi que les facteurs environnementaux qui déterminent ces vulnérabilités. Sans des programmes d'identification précoce suivis de programmes intégraux d'intervention précoce, les enfants ayant des problèmes de la parole et du langage pourraient éprouver des difficultés à l'âge adulte, menant à un stress familial et sociétal (Hertzman, 2000). Heureusement, les difficultés en matière d'apprentissage de la parole et du langage en bas âge pourraient être surmontées, ou dans certains cas évitées, grâce à l'identification efficace (Hertzman, 2000; Hertzman, 2010).

Recommandations

L'ACOA préconise une stratégie nationale, officialisée et normalisée, d'identification précoce des problèmes de la parole et du langage visant :

a) la prévention, l'identification et l'élimination fiables des facteurs étiologiques des troubles de la parole et du langage;

b) la promotion du bien-être, c'est-à-dire une réduction de la prévalence des troubles développementaux de la parole et du langage et un fonctionnement amélioré de la communication depuis l'enfance.

Cette stratégie comprend :

1. Le développement de l'expertise des orthophonistes canadiens dans les aspects suivants : les précurseurs du développement de la parole et du langage; le développement de la parole et du langage, les risques et les troubles; les meilleures données disponibles en ce moment sur l'identification précoce des risques, des retards et des troubles de la parole et du langage; les risques sociaux, environnementaux et biologiques précoces de problèmes de développement de la parole et du langage;
2. L'élaboration et l'application de stratégies de prévention des retards et des troubles de la parole et du langage;
3. Des pratiques d'identification précoce accessibles et fiables pour tous les enfants au Canada;
4. La sensibilisation du public visant à promouvoir :
   a) la compréhension des facteurs de risque en ce qui concerne les problèmes de la parole et du langage chez les nourrissons et les bambins;
   b) la compréhension des conditions qui assurent le développement optimal des compétences de la parole et du langage;
   c) l'orientation opportune vers un orthophoniste;
5. La recherche au Canada à l'appui de l'identification précoce à l'intention des orthophonistes (c.-à-d. les prédicteurs du développement de la parole et du langage et les facteurs propres à la petite enfance qui influencent le développement sain et la conservation des compétences de la parole et du langage);
6. Les activités d'information et de lobbying auprès des fonctionnaires, des intervenants, des associés et des collègues concernant les stratégies de diagnostic précoce pour diminuer la prévalence des troubles de la communication vers la fin de l'enfance et pendant l'âge scolaire.

Contexte

Une intervention précoce peut corriger des problèmes d'adaptation découlant de vulnérabilités inhérentes sur le plan du langage et de la communication et atténuer les résultats les plus graves. La capacité d'adaptation, les compétences, la santé et le bien-être- dépendent en grande mesure de l'intégrité des circuits neuronaux qui sont établis à la suite d'interactions subtiles entre les gènes, les environnements précoces et l'expérience (Shonkoff, Harvard National Forum on Early Childhood, 2000).

Le développement précoce de la parole et du langage exerce une influence décisive sur les réalisations scolaires, la santé, le bien-être et la qualité de vie ultérieurs (Guralnick, 2011; National Research Council & Institute of Medicine, 2000). Les compétences linguistiques de niveau supérieur sont ancrées sur la qualité du développement au cours des trois premières années de vie. Le développement précoce des compétences linguistiques permet l'apprentissage culturel, la résolution de problèmes, un comportement social complexe et une compétence en alphabétisation. Les enfants qui ne bénéficient pas d'un apprentissage linguistique précoce optimal ne seront pas préparés, ni outillés pour l'éducation formelle obligatoire à compter de l'âge de cinq ans (Hart & Risely, 1995). Ils seront incapables d'utiliser le langage pour faciliter leur apprentissage des mathématiques et des sciences : un langage qui comprend des consignes verbales complexes, une négociation de liens et de sentiments complexes avec les pairs et avec les adultes; et la résolution des problèmes liés à un milieu social qui s'élargit sans cesse (Otto, 2002). L'utilisation et la compréhension d'une grammaire complexe, la compréhension des points de vue des autres, le développement de la conscience, les compétences en négociation, la résolution des conflits et la sensibilité aux réalités culturelles dépendent tous des fondements langagiers établis au cours des trois premières années (Otto). Les enfants avec des handicaps linguistiques intrinsèques qui ne bénéficient pas d'une intervention précoce commencent à éprouver des difficultés de plus en plus marquées dans la vie en raison de la visibilité croissante de leurs différences et de leur incompétence de plus en plus présente sur le plan de l'apprentissage. Les problèmes précoces touchant le développement de la parole et du langage peuvent mener plus tard dans la vie à des comportements à risque élevé, à la dépression, à une piètre résilience et à un isolement par rapport à la société, tandis que la compétence linguistique prédit des compétences en cascade dans tout un éventail d'aspects du quotidien (Blair, Peters & Lawrence, 2003; Calandrella & Wilcox, 2000; Moffatt, 1993). En outre, les disparités qui découlent des difficultés sur le plan du développement de la parole et du langage au cours des trois premières années de vie ne sont souvent pas surmontées sans un attirail de correctifs concertés ultérieurement et un investissement important.

Les expériences précoces exercent une profonde influence sur l'intégrité du développement des circuits neuronaux qui sous-tendent la capacité des humains d'utiliser le langage, d'apprendre à lire et à écrire et de comprendre la complexité de leurs environnements. La plasticité cérébrale est à son paroxysme durant la période prénatale et la tendre enfance. Les compétences langagières dépendent de la stimulation optimale des circuits neuronaux du cerveau durant ces périodes (McCain, Mustard & Shanker, 2007). Des interactions et une stimulation adéquates sont extrêmement importantes pour assurer un développement

optimal. Souvent, le développement précoce doit être renforcé par l'expertise et les conseils de professionnels renseignés et dûment formés qui peuvent faire en sorte que les premières circonstances qui entourent la vie de l'enfant concurrent plutôt que n'entravent, à son bien-être futur. Au Canada, un grand nombre de familles et d'enfants ratent actuellement l'occasion de bénéficier d'une intervention précoce appropriée en raison du manque de méthodes fiables d'identification précoce (Mentore, 2000; Talay-Ongan, 2001).

Les retards de la parole et du langage sont le problème le plus souvent signalé chez les enfants à titre de préoccupation première ou de handicaps du développement connexes et ils constituent souvent les premières inquiétudes exprimées par les parents lorsque ceux-ci s'adressent à des professionnels à propos du développement de leurs enfants (Wetherby & Prizant, 1996). Selon les estimations, la prévalence des difficultés langagières dès l'âge préscolaire se situe souvent entre 2 % et 19 %, tandis que la dysphasie est un des problèmes les plus courants durant l'enfance, puisqu'il touche 7 %des enfants (ASHA, 2005). La prévalence estimée des autres troubles de la parole, qui nuisent également au bon fonctionnement au quotidien d'une personne (p. ex., les problèmes sur le plan de la phonologie et le bégaiement), se situerait entre 1 % et 14 % (Campbell et coll. 2003; Craig et coll. 2002; Craig & Tran, 2005). De plus, des familles entières souffrent de troubles de la parole et du langage; on note une incidence de 20 % à 40 % de problèmes chez les familles ayant des antécédents ire de dysphasie (Choudhury & Benasich, 2003).

Étant donné que les troubles de la parole et du langage ont des répercussions profondes sur les capacités d'un si grand nombre d'enfants de communiquer, d'apprendre et de fonctionner au quotidien, et qu'ils mèneront vraisemblablement à d'autres difficultés fonctionnelles à l'âge adulte, l'identification précoce des problèmes, par un dépistage et une évaluation adéquats, est extrêmement importante. L'ACOA est résolue à améliorer la vie de toutes les personnes ayant des troubles de la parole et du langage, de l'enfance à l'âge adulte. L'ACOA est convaincue que si on réalise un investissement considérable en ce moment au Canada dans un plan scientifique d'identification précoce des problèmes de la parole et du langage, ou des risques de tels problèmes, on jettera les fondements de la réussite future de nos enfants. L'ACOA encourage l'instauration de normes de pratique et de mesures de création de connaissances intégrales par la recherche sur l'identification précoce des problèmes de la parole et du langage. Un investissement dans des services efficaces d'identification précoce et d'intervention de suivi, chez les jeunes enfants ayant des retards et des troubles de la parole et du langage, est crucial à la production de retombées optimales sur leur vie et sur la vie des futures générations de Canadiennes et de Canadiens. En tant que chefs de file dans le domaine du développement de la parole et du langage chez la petite enfance, de l'évaluation des retards et des troubles, ainsi que des interventions adéquates, les quelque 6 000 membres de l'ACOA appuient activement le présent énoncé de position.

Bibliographie

American Speech and Hearing Association. *Incidence and Prevalence of Communication Disorders and Hearing Loss in Children, 2008.*

Blair C, Peters R, Lawrence F.. *Family dynamics and child outcomes in early intervention: The role of developmental theory in the specification of effects. Early Childhood Research Quarterly* 2003; 18(4):446-67, 2003.

Calandrella, MJ & Wilcox AM. *Predicting language outcomes for young prelinguistic children with developmental delay. Journal of Speech Language & Hearing Research* 43(5):1061-71, 2000.

Campbell, T. F., Dollaghan, C. A., Rockette, H. E., Paradise, J. L., Feldman, H. M., Shriberg, L. D. et al.. *Risk factors for speech delay of unknown origin in 3-year-old children. Child Development*, 74, 346-357, 2003.

Canadian Association of Speech-Language Pathologists and Audiologists. *Improving Children's Lives and Government's Bottom Line: The Value of Early Identification of Communication and Hearing Disorders in Children,* 2007.

Canadian Task Force on Preventive Health Care. *New grades for recommendations from the Canadian Task Force on Preventive Health Care. CMAJ,* 169, 207-208, 2003.

Choudhury & Benasich. *A family aggregation study. The influence of family history and other risk factors on language development. Journal of Speech Language and Hearing Research* 46 261-272, 2003.

Cossette L, Duclos E. A.. *Profile of Disability in Canada, 2001.*, Ottawa, Ontario: Statistics Canada; 2002 Dec. Report No.:89-577-XIE, 2001.

Craig, A., Hancock, K., Tran, Y., Craig, M., & Peters, K.. *Epidemiology of stuttering in the community across the entire lifespan.* Journal of Speech, Language, and Hearing Research, 45, 1097-1105, 2002.

Craig, A., & Tran, Y. (2005). *The epidemiology of stuttering: The need for reliable estimates of prevalence and anxiety levels across the lifespan. Advances in Speech-Language Pathology,* 7(1), 41-46, 2005.

Guralnick, M.J.,. *Why early intervention works: A systems perspective.* Infants & Young Children, 24(1), 6-28, 2011.

Hart, B. & Risley, T.. *Meaningful Differences in the Everyday Experience of Young American Children,* Baltimore, MD: Paul H. Brookes Publishing Co., 1995.

Hertzman C.. *The Case for an Early Childhood Development Strategy.* Canadian Journal of Policy Research, 1, 11-18, 2000.

Hertzman, C.. *Social geography of developmental health in the early years.* Health Quarterly (14), 2010.

McCain, M. & Mustard, F.. *Reversing the Real Brain Drain: Early Years Study Final Report*. Ontario Children's Secretariat, Publications, 1999.

McCain, M., Mustard, F., & Shanker, S.. *Early Years Study 2: Putting Science into Action Council for Early Child Development,* 2007.

Mentore JL. *The effectiveness of early intervention with young children "at risk": A decade in review*, 2000.

Moffat, T.E.. The neuropsychology of conduct disorder. Development and psychopathology 1993; 5(1-2): 135-151. As reported in Cohen, N.J. (2005) The Impact of Language Development on the Psychosocial and Emotional Development of Young Children. Encyclopaedia on Early Childhood Development, Centre of Excellence on Early Childhood Development, 1993.

Otto, B.. Language Development in Early Childhood. Pearson Education, Inc. NJ, 2002.

Paul, D. & Roth, F. P.. Guiding Principles and Clinical Applications for Speech-Language Pathology Practice in Early Intervention. Language, Speech, and Hearing Services in Schools, 42, 320-330, 2011.

Shonkoff , J.P., Meisels, S.J.. Handbook of early childhood intervention (2nd ed.) New York, NY, US: Cambridge University Press, 2000.

Shonkoff J.P. and Phillips D.A.. From Neurons to Neighborhoods: The Science of Early Childhood Development; Committee on Integrating the Science of Early Childhood Development, Board on Children, Youth, and Families Supplementary Resources Report. http://www.halton.ca/common/pages/UserFile.aspx?fileId=16362.

Talay-Ongan A. Early intervention: Critical roles of early childhood service providers. International Journal of Early Years Education 2001 October 9(3):221-8, 2001.

Wetherby, A. & Prizant, B.. Toward earlier identification of communication and language problems in infants and young children. In S. Meilels & E. Fennichel (Eds.), New Visions for Developmental Assessment (pp. 289-3121). Arlington, VA: NCCIP, 1996.

Canadian Association of
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CASLPA Position Paper on

Differences Between Audiologists and Hearing Instrument Practitioners in Hearing Health Care

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A position paper represents the direction CASLPA has taken on a particular topic or provides guidelines for particular areas of practice. These positions are time-bound, representing the thinking at a particular point in time.

Position

It is the position of the Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) that audiologists are experts and leaders in hearing health and auditory disorders. CASLPA acknowledges that there are predominantly two health- care professions that provide services to conduct hearing tests for the purposes of selecting, fitting and dispensing hearing aids and other assistive listening devices. These two groups, audiologists and hearing instrument practitioners who are not also audiologists (also known as hearing instrument specialists, hearing aid dispensers, hearing aid practitioners and hearing aid dealers), have different scopes of practice, which are defined by their education and training and by regulatory distinctions. CASLPA believes that the two professions must provide hearing health care within their scopes of practice for the populations they serve and that the public must be made aware of the significant differences between the two professions when seeking hearing health-care services.

Rationale

In some work environments across Canada, audiologists and hearing instrument practitioners work collaboratively in group practices. However, there has been a long history of confusion and controversy regarding the titles and scopes of practice of audiologists and hearing instrument practitioners. It is not surprising that some of this confusion persists given the many changes that have occurred in the training of hearing health-care professionals and the quality and amount of information available to the public on the Internet.

As a national professional association, CASLPA aims to raise awareness of and to promote the profession of audiology to assist the people of Canada in making informed choices regarding their hearing health-care needs. With this document, CASLPA aims to clarify the differences between the two professions and make recommendations that we believe are in the best interest of the people who both audiologists and hearing instrument practitioners serve.

Background

CASLPA conducted a review of both groups in all jurisdictions across Canada, focusing on levels of educational and clinical training as well as scopes of practice including regulatory distinctions. The results indicate considerable variability within the educational and clinical training for hearing instrument practitioners across Canada. For audiologists, there is minimal variability as the entry-to-practice requirement is a minimum of a master's degree or equivalent. There is minimal variation in the scope of practice within each of the two professions across Canada; however, there are significant differences in the scopes of practice between audiologists and hearing instrument practitioners in all provinces/territories. The regulatory environment also varies between provinces/territories for both professions. It should be noted, however, that regulatory changes are underway in parts of Canada for both professions.

Education

The academic and clinical training of audiologists and hearing instrument practitioners differs significantly. For audiologists, the minimum educational requirement in Canada is a master's degree or equivalent; which typically consists of 2-3 years of education after achieving a baccalaureate degree. Depending on the type of bachelor's degree earned, an applicant to a master's program in audiology may be required to do additional university coursework prior to admission. In addition to coursework, master's students in Canadian audiology programs must also complete a minimum of 350 hours of supervised clinical practicum. This typical 5-7 years of baccalaureate and graduate degree university education prepares audiologists to exercise their profession using a high-level of independent clinical judgment and critical thinking based on evidence-informed practice when assessing and managing patients with audiological disorders.

For hearing instrument practitioners, there is no standardized minimum educational requirement to practice across Canada and the credentials for hearing instrument practitioners vary significantly between provinces/territories. There is also no agreed-upon standard across Canada in the areas of regulation/registration; requirements for post-secondary education related to hearing health and hearing-aid dispensing; on-the-job training or demonstration of competence prior to licensing. Depending on the province/territory, an individual considering a career as a hearing instrument practitioner may or may not be required to pursue formal education and may complete a self-study program (which can be achieved in a few months) or a college or university diploma or certificate program. Some programs require a high school diploma for admission, while others evaluate applicants on a case-by-case basis. The college or university diploma or certificate programs are typically 2-3 years in length and focus on hearing testing and hearing-aid technology.

Scopes of Practice

Both audiologists and hearing instrument practitioners conduct hearing tests for the purposes of dispensing hearing aids and other assistive listening devices. Despite sharing this similarity, the hearing instrument practitioner's scope of practice is narrower than the audiologist's. Hearing instrument practitioners test peripheral hearing for the purpose of selecting, fitting and dispensing hearing aids and other assistive listening devices. Hearing instrument practitioners are typically not permitted to provide services to children (age-range defined differently in various provinces/territories) as their scope is generally limited to adults and is reflected as such in regulation, where it exists.

Audiologists are uniquely qualified to assess, identify, diagnose (restricted in some provinces) and manage individuals with peripheral or central hearing loss, hyperacusis, tinnitus and balance disorders; and to select, prescribe, fit and dispense hearing aids and other assistive listening devices. Audiologists also receive extensive training in counseling and (re) habilitation, which extends their practice beyond the selection and fitting of amplification. Audiologists are trained to perform these services for all ages – from newborns to adults.

Recommendations and/or Guidelines

CASLPA recommends the following to relevant stakeholders:

- Promotion to the public about the differences between audiologists and hearing instrument practitioners, presenting information in a fair and clear manner.
- Standardization of minimum educational and clinical training requirements for hearing instrument practitioners across Canada.
- In provinces/territories where it has not yet been enacted, continued support from CASLPA for regulation of the profession of audiology in Canada.

Conclusion

In summary, there are significant differences in the scopes of practice and educational training levels between audiologists and hearing instrument practitioners. Audiologists bring a broad range of clinical skills and services to a patient's hearing health care and hearing instrument practitioners have a narrower scope of practice. Though differences exist, there are work environments where audiologists and hearing instrument practitioners work collaboratively, both contributing positively to the hearing health care of patients. The public, including stakeholders such as other health-care professionals and policy makers, must be well informed when making decisions about hearing health care. CASLPA promotes and supports audiologists as experts and leaders in hearing health and auditory disorders.

References

American Speech-Language-Hearing Association. (1996, Spring). *Scope of practice in audiology.* ASHA, 38(Suppl. 16), 12-15.

Canadian Association of Speech-Language Pathologists and Audiologists. (2004). *Assessing and Certifying Clinical Competency: Foundations of Clinical Practice for Audiology and Speech-Language Pathology.* Retrieved from http://www.caslpa.ca/english/resources/foundations.asp

Canadian Association of Speech-Language Pathologists and Audiologists. (n.d.). Retrieved from http://www.caslpa.ca/english/profession/audiology.asp

Canadian Association of Speech-Language Pathologists and Audiologists. (n.d.). Retrieved from http://www.speechandhearing.ca/en/consumer-info/links/associations

Conestega College. (n.d.). Retrived from http://www.conestogac.on.ca/fulltime/1176.jsp

Grant, R. W. (2005). *Audiologists and Hearing Instrument Dispensers/Practitioners: A Comparison of Credentials.* Unpublished manuscript.

Grant MacEwan University.(n.d.). Retrieved from http://www.macewan.ca/wcm/SchoolsFaculties/HCS/Programs/HearingAidPractitioner/index.htm

Venema, T. (2007). *What's the difference between an audiologist and a hearing instrument specialist?* Retrieved from http://www.provincialhearingaid.com/pdf/The-Difference-HIS-&-Audiologist.pdf

Other relevant links

Canadian provincial/territorial licensing/regulatory/registration bodies

Canadian university programs in audiology

Association canadienne des orthophonistes et audiologistes

CASLPA | ACOA

Exposé de position

Différences entre les audiologistes et les audioprothésistes en matière de soins de santé auditive

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Un exposé de position représente l'orientation que l'ACOA a prise sur un sujet ou propose des lignes directrices pour des domaines particuliers de la pratique. Ces positions ont une dimension temporelle et représentent la pensée de l'Association à un moment particulier.

Position

L'Association canadienne des orthophonistes et audiologistes (ACOA) a pour position que les audiologistes sont experts et chefs de file en matière de santé auditive et de troubles auditifs. L'ACOA reconnaît qu'il existe principalement deux professions de soins de santé qui évaluent l'audition dans le but de recommander, d'ajuster et de distribuer des appareils auditifs et autres appareils d'aides de suppléance à l'audition. Ces deux groupes, les audiologistes et les audioprothésistes qui ne sont pas aussi audiologistes (aussi appelés spécialistes d'appareils auditifs, vendeurs d'appareils auditifs), ont des champs de pratique différents qui sont définis par leur formation, et par des distinctions au niveau de la réglementation. L'ACOA croit que ces deux professions doivent dispenser des services de soins de santé auditive dans le cadre de leurs champs de pratique pour la population qu'ils desservent et que le public doit être informé des différences significatives entre les deux professions lorsqu'il est à la recherche de services de soins de santé auditive.

Justification

Dans certains milieux de travail au Canada, les audiologistes et les audioprothésistes travaillent en collaboration dans des pratiques de groupes. Il existe toutefois une longue histoire de confusion et de controverses concernant les titres et les champs de pratique des audiologistes et des audioprothésistes. Considérant les nombreux changements qui se sont produits dans la formation de ces professionnels et dans la qualité et la quantité d'information qui est à la disposition du public sur Internet, il n'est pas surprenant qu'une partie de cette confusion persiste encore aujourd'hui.

En tant qu'association professionnelle nationale, l'ACOA a pour objectif de sensibiliser le public à la profession de l'audiologie en promouvant celle-ci afin d'aider la population canadienne à faire des choix éclairés concernant ses besoins en matière de soins de santé auditive. Avec ce document, l'ACOA vise à clarifier les différences qui existent entre les deux professions et à suggérer des recommandations que nous croyons être dans le meilleur intérêt des personnes que desservent autant les audiologistes que les audioprothésistes.

Mise en contexte

L'ACOA a fait une étude de ces deux groupes dans toutes les juridictions à travers le Canada en mettant l'accent sur les niveaux de formation académique et clinique, ainsi que sur les champs de pratique dont, notamment, les distinctions dans les réglementations. Les résultats indiquent une variabilité considérable dans la formation académique et clinique au sein du groupe d'audioprothésiste à travers le Canada. Pour les audiologistes, il y a une variabilité minimale puisque le critère d'entrée en pratique est au minimum une maîtrise ou l'équivalent. Il y a une variation minimale dans le champ de pratique au sein de chacune des deux professions à travers le Canada, mais on trouve des différences significatives dans les champs de pratique entre ceux des audiologistes et ceux des praticiens d'appareils auditifs dans toutes les provinces/territoires. L'environnement de réglementation varie également entre les provinces/territoires pour les deux professions. Il est cependant important de noter que des changements de réglementation sont en cours à travers le Canada pour les deux professions.

Formation

La formation académique et clinique des audiologistes et celle des audioprothésistes diffèrent significativement. Pour les audiologistes, l'exigence minimum de scolarité au Canada est la maîtrise ou l'équivalent, ce qui consiste typiquement en deux à trois années d'études après l'obtention du baccalauréat. Selon le type de baccalauréat, un individu désirant poursuivre des études de maitrise en audiologie peut devoir réaliser des cours universitaires préalables avant d'être admis. En plus des travaux académiques, les étudiants en maîtrise dans les programmes canadiens d'audiologie doivent également compléter 350 heures de pratique clinique supervisée. Ces cinq à sept années typiques de baccalauréat et d'études supérieures combinés préparent les audiologistes à exercer leur profession en utilisant un niveau élevé de jugement clinique indépendant et une pensée critique de haut niveau. Lorsqu'ils ou elles font l'évaluation et la gestion de patients atteints de troubles audiologiques, leur pratique est donc fondée sur les données probantes.

Pour les audioprothésistes, il n'y a aucune exigence académique minimum standardisée pour pratiquer à travers le Canada et les titres de compétence varient largement entre les provinces/territoires. Il n'existe pour les audioprothésistes aucune norme canadienne acceptée dans les domaines de la réglementation, des exigences minimales d'inscription incluant les exigences de scolarité postsecondaire (en lien avec la santé auditive et la distribution des prothèses auditives), de nombre d'heures minimales de pratique supervisée, et de démonstration de compétence avant l'obtention d'un permis de pratique. Selon la province ou le territoire, un individu qui envisage une carrière comme audioprothésiste peut être tenu, ou non, de poursuivre une formation et peut compléter un programme de cours autodidacte (qui peut se faire en quelques mois) ou s'inscrire à un programme de diplôme ou de certificat de niveau collégial ou universitaire. Certains programmes exigent un diplôme de niveau secondaire, et d'autres évaluent les candidatures au cas par cas. Les programmes d'études de niveau collégial ou universitaire sont typiquement d'une durée de deux à trois ans et portent principalement sur les tests auditifs et la technologie des prothèses auditives.

Les champs de pratique

Les deux professions, audiologistes et audioprothésistes peuvent évaluer l'audition en vue d'appareillage auditif ou d'aide de suppléance à l'audition. Malgré le partage de cette similitude, le champ de pratique de l'audioprothésiste est plus étroit que celui de l'audiologiste. Les audioprothésistes évaluent l'audition périphérique à des fins de sélection, d'ajustement et de distribution des appareils auditifs et autres appareils d'aide de suppléance à l'audition. Les audioprothésistes ne sont pas typiquement permit d'offrir des services aux enfants (la gamme d'âge a une définition qui varie selon la province ou le territoire), leur champ de pratique étant généralement limité aux adultes, ceci étant consigné dans la réglementation là où elle existe. Les audiologistes sont les seuls qualifiés pour évaluer, identifier, diagnostiquer (de façon restreinte dans certaines provinces) et gérer des personnes atteintes de perte auditive périphérique ou centrale, d'hyperacousie, d'acouphènes et de troubles d'équilibre et pour

pratiquer la sélection, l'ordonnance, l'ajustement et la distribution de prothèse auditives et autres appareils d'aide de suppléance à l'audition. Les audiologistes reçoivent également une formation approfondie en counseling et en réadaptation, qui étend leur pratique au-delà de la sélection et de l'ajustement de l'amplification. Les audiologistes sont formés pour dispenser ces services aux personnes de tous les âges – des nouveau-nés aux adultes.

Recommandations

L'ACOA recommande ce qui suit aux partis intéressés en la matière :

- Une promotion à l'intention du public concernant les différences entre audiologistes et audioprothésistes, qui présente l'information d'une façon juste et claire.
- La standardisation des exigences minimum de formation académique et clinique des audioprothésistes à travers le Canada.
- Dans les provinces ou territoires où une réglementation n'a pas encore été mise en vigueur, la poursuite de l'appui accordé par l'ACOA à la réglementation de la profession de l'audiologie au Canada.

Conclusion

En résumé, il y a des différences significatives dans les champs de pratique et les niveaux de formation entre les audiologistes et les audioprothésistes. Les audiologistes apportent une large gamme de compétences et de services cliniques aux soins de santé auditive d'un patient, alors que les audioprothésistes ont un champ de pratique plus étroit. Malgré ces différences, le travail de collaboration entre audiologistes et audioprothésistes qui existent dans plusieurs milieux de travail, contribuent positivement à la santé auditive des patients. Le public, ainsi que les intéressés tels que d'autres professionnels de la santé ou décideurs politiques, doivent être bien informés lorsque des décisions en matière de soins de santé auditive doivent être prise. L'ACOA est l'organisme national en charge de la promotion et de l'appui des audiologistes comme experts et chefs de file en matière de santé auditive et des troubles de l'audition.

Références

American Speech-Language-Hearing Association. (1996, Spring). *Scope of practice in audiology.* ASHA, 38(Suppl. 16), 12-15.

L'Association canadienne des orthophonistes et audiologistes. (2004). *Assessing and Certifying Clinical Competency: Foundations of Clinical Practice for Audiology and Speech-Language Pathology.* Tiré de http://www.caslpa.ca/english/resources/foundations.asp

L'Association canadienne des orthophonistes et audiologistes. (n.d.). Tiré de http://www.caslpa.ca/francais/profession/audiology.asp

L'Association canadienne des orthophonistes et audiologistes. (n.d.). Tiré de http://www.speechandhearing.ca/en/consumer-info/links/associations

Conestega College. (n.d.). Tiré de http://www.conestogac.on.ca/fulltime/1176.jsp

Grant, R. W. (2005). *Audiologists and Hearing Instrument Dispensers/Practitioners: A Comparison of Credentials.* Manuscrit non publié.

Grant MacEwan University.(n.d.). Tiré de http://www.macewan.ca/wcm/SchoolsFaculties/HCS/Programs/HearingAidPractitioner/index.htm

Venema, T. (2007). *What's the difference between an audiologist and a hearing instrument specialist?* Tiré de http://www.provincialhearingaid.com/pdf/The-Difference-HIS-&-Audiologist.pdf

Autres liens pertinents

Organismes d'octroi de permis/de réglementation/d'enregistrement provinciaux/territoriaux canadiens

Programmes universitaires en audiologie

Information for Contributors

The Canadian Journal of Speech-Language Pathology and Audiology (CJSLPA) welcomes submissions of scholarly manuscripts related to human communication and its disorders broadly defined. This includes submissions relating to normal and disordered processes of speech, language, and hearing. Manuscripts that have not been published previously are invited in English and French. Manuscripts may be tutorial, theoretical, integrative, practical, pedagogic, or empirical. All manuscripts will be evaluated on the basis of the timeliness, importance, and applicability of the submission to the interests of speech–language pathology and audiology as professions, and to communication sciences and disorders as a discipline. Consequently, all manuscripts are assessed in relation to the potential impact of the work on improving our understanding of human communication and its disorders. All categories of manuscripts submitted will undergo peer-review to determine the suitability of the submission for publication in CJSLPA. The Journal has established multiple categories of manuscript submission that will permit the broadest opportunity for dissemination of information related to human communication and its disorders. The categories for manuscript submission include:

Tutorials: Review articles, treatises, or position papers that address a specific topic within either a theoretical or clinical framework.

Articles: Traditional manuscripts addressing applied or basic experimental research on issues related to speech, language, and/or hearing with human participants or animals.

Clinical Reports: Reports of new clinical procedures, protocols, or methods with specific focus on direct application to identification, assessment and/or treatment concerns in speech, language, and/or hearing.

Brief Reports: Similar to research notes, brief communications concerning preliminary findings, either clinical or experimental (applied or basic), that may lead to additional and more comprehensive study in the future. These reports are typically based on small "n" or pilot studies and must address disordered participant populations.

Research Notes: Brief communications that focus on experimental work conducted in laboratory settings. These reports will typically address methodological concerns and/or modifications of existing tools or instruments with either normal or disordered populations.

Field Reports: Reports that outline the provision of services that are conducted in unique, atypical, or nonstandard settings; manuscripts in this category may include screening, assessment, and/or treatment reports.

Letters to the Editor: A forum for presentation of scholarly/clinical differences of opinion concerning work previously published in the Journal. Letters to the Editor may influence our thinking about design considerations, methodological confounds, data analysis, and/or data interpretation, etc. As with other categories of submissions, this communication forum is contingent upon peer-review. However, in contrast to other categories of submission, rebuttal from the author(s) will be solicited upon acceptance of a letter to the editor.

Submission of Manuscripts

Contributors should use the electronic CJSLPA manuscript submission system at http://cjslpa.coverpage.ca to submit articles. If you are unable to use the electronic system, please send a file containing the manuscript, including all tables, figures or illustrations, and references in Word via e-mail to the editor at elizabeth.fitzpatrick@uottawa.ca.

Along with copies of the manuscript, a cover letter indicating that the manuscript is being submitted for publication consideration should be included. The cover letter must explicitly state that the manuscript is original work, that it has not been published previously, and that it is not currently under review elsewhere. Manuscripts are received and peer-reviewed contingent upon this understanding.

The author(s) must also provide appropriate confirmation that work conducted with humans or animals has received ethical review and approval. Failure to provide information on ethical approval will delay the review process. Finally, the cover letter should also indicate the category of submission (i.e., tutorial, clinical report, etc.). If the editorial staff determines that the manuscript should be considered within another category, the contact author will be notified.

All submissions should conform to the publication guidelines of the Publication Manual of the American Psychological Association (APA), 6th Edition. A confirmation of receipt for all manuscripts will be provided to the contact author prior to distribution for peer review. CJSLPA seeks to conduct the review process and respond to authors regarding the outcome of the review within 90 days of receipt. If a manuscript is judged as suitable for publication in CJSLPA, authors will have 30 days to make necessary revisions prior to a secondary review.

The author is responsible for all statements made in his or her manuscript, including changes made by the editorial and/or production staff. Upon final acceptance of a manuscript and immediately prior to publication, the contact author will be permitted to review galley proofs and verify its content to the publication office within 72 hours of receipt of galley proofs.

Organization of the Manuscript

All copies should be typed, double-spaced, with a standard typeface (12 point, non-compressed font) on 8 ½ x 11 paper size. All margins should be at least one (1) inch. An electronic copy of the manuscript should be submitted directly to the editor. Author identification for the review process is optional; if blind-review is desired, the documents should be prepared accordingly (cover page and acknowledgments blinded). Responsibility for removing all potential identifying information rests solely with the author(s). All submissions should conform to the publication guidelines of the most current edition of the Publication Manual of the American Psychological Association (APA. The APA manual is available from most university and commercial bookstores. Generally, the following sections should be submitted in the order specified.

Title Page: This page should include the full title of the manuscript, the full names of the author(s) with academic degrees, each author's affiliation, and a complete mailing address for the contact author. An electronic mail address also is recommended.

Abstract: On a separate sheet of paper, a brief yet informative abstract that does not exceed one page is required. The abstract should include the purpose of the work along with pertinent information relative to the specific manuscript category for which it was submitted.

Key Words: Following the abstract and on the same page, the author(s) should supply a list of key words for indexing purposes.

Tables: Each table included in the manuscript must typedwritten double-spaced and placed at the end of the document. Tables should be numbered consecutively beginning with Table 1. Each table must have a descriptive caption. Tables should serve to expand the information provided in the text of the manuscript, not to duplicate information.

Illustrations: All illustrations to be included as part of the manuscript must also be submitted in their original file format separate from the manuscript. High resolution (at least 300 dpi) files in any of the following formats must be submitted for each graphic and image: JPEG, TIFF, AI, PSD, GIF, EPS or PDF. For other types of computerized illustrations, it is recommended that CJSLPA production staff be consulted prior to preparation and submission of the manuscript and associated figures/illustrations.

Legends for Illustrations: Legends for all figures and illustrations should be typewritten (double-spaced) on a separate page with numbers corresponding to the order in which figures/illustrations appear in the manuscript.

Page Numbering and Running Head: The text of the manuscript should be prepared with each page numbered, including tables, figures/illustrations, references, and appendices. A short (30 characters or less) descriptive running title should appear at the top right hand margin of each page of the manuscript.

Acknowledgments: Acknowledgments should be typewritten (double-spaced) on a separate page. Appropriate acknowledgment for any type of sponsorship, donations, grants, technical assistance, and to professional colleagues who contributed to the work, but are not listed as authors, should be noted.

References: References are to be listed consecutively in alphabetical order, then chronologically for each author. Authors should consult the most current edition of the APA publication manual for methods of citing varied sources of information. Journal names and appropriate volume number should be spelled out and italicized. All literature, tests and assessment tools, and standards (ANSI and ISO) must be listed in the references. All references should be double-spaced.

Potential Conflicts of Interest and Dual Commitment

As part of the submission process, the author(s) must explicitly identify if any potential conflict of interest or dual commitment exists relative to the manuscript and its author(s). Such disclosure is requested so as to inform CJSLPA that the author or authors have the potential to benefit from publication of the manuscript. Such benefits may be either direct or indirect and may involve financial and/or other nonfinancial benefit(s) to the author(s). Disclosure of potential conflicts of interest or dual commitment may be provided to editorial consultants if it is believed that such a conflict of interest or dual commitment may have had the potential to influence the information provided in the submission or compromise the design, conduct, data collection or analysis, and/or interpretation of the data obtained and reported in the manuscript submitted for review. If the manuscript is accepted for publication, editorial acknowledgement of such potential conflict of interest or dual commitment may occur within the publication.

Participants in Research Humans and Animals

Each manuscript submitted to CJSLPA for peer-review that is based on work conducted with humans or animals must acknowledge appropriate ethical approval. In instances where humans or animals have been used for research, a statement indicating that the research was approved by an institutional review board or other appropriate ethical evaluation body or agency must clearly appear along with the name and affiliation of the research ethics and the ethical approval number. The review process will not begin until this information is formally provided to the Editor.

Similar to research involving human participants, CJSLPA requires that work conducted with animals state that such work has met with ethical evaluation and approval. This includes identification of the name and affiliation of the research ethics evaluation body or agency and the ethical approval number. A statement that all research animals were used and cared for in an established and ethically approved manner is also required. The review process will not begin until this information is formally provided to the Editor.

Renseignements à l'intention des collaborateurs

La Revue canadienne d'orthophonie et d'audiologie (RCOA) est heureuse de se voir soumettre des manuscrits de recherche portant sur la communication humaine et sur les troubles qui s'y rapportent, dans leur sens large. Cela comprend les manuscrits portant sur les processus normaux et désordonnés de la parole, du langage et de l'audition. Nous recherchons des manuscrits qui n'ont jamais été publiés, en français ou en anglais. Les manuscrits peuvent être tutoriels, théoriques, synthétiques, pratiques, pédagogiques ou empiriques. Tous les manuscrits seront évalués en fonction de leur signification, de leur opportunité et de leur applicabilité aux intérêts de l'orthophonie et de l'audiologie comme professions, et aux sciences et aux troubles de la communication en tant que disciplines. Par conséquent, tous les manuscrits sont évalués en fonction de leur incidence possible sur l'amélioration de notre compréhension de la communication humaine et des troubles qui s'y rapportent. Peu importe la catégorie, tous les manuscrits présentés seront soumis à une révision par des collègues afin de déterminer s'ils peuvent être publiés dans la RCOA. La Revue a établi plusieurs catégories de manuscrits afin de permettre la meilleure diffusion possible de l'information portant sur la communication humaine et les troubles s'y rapportant. Les catégories de manuscrits comprennent :

Tutoriels : Rapports de synthèse, traités ou exposés de position portant sur un sujet particulier dans un cadre théorique ou clinique.

Articles : Manuscrits conventionnels traitant de recherche appliquée ou expérimentale de base sur les questions se rapportant à la parole, au langage ou à l'audition et faisant intervenir des participants humains ou animaux.

Comptes rendus cliniques : Comptes rendus de nouvelles procédures ou méthodes ou de nouveaux protocoles cliniques portant particulièrement sur une application directe par rapport aux questions d'identification, d'évaluation et de traitement relativement à la parole, au langage et à l'audition.

Comptes rendus sommaires : Semblables aux notes de recherche, brèves communications portant sur des conclusions préliminaires, soit cliniques soit expérimentales (appliquées ou fondamentales), pouvant mener à une étude plus poussée dans l'avenir. Ces comptes rendus se fondent typiquement sur des études à petit « n » ou pilotes et doivent traiter de populations désordonnées.

Notes de recherche : Brèves communications traitant spécifiquement de travaux expérimentaux menés en laboratoire. Ces comptes rendus portent typiquement sur des questions de méthodologie ou des modifications apportées à des outils existants utilisés auprès de populations normales ou désordonnées.

Comptes rendus d'expérience : Comptes rendus décrivant sommairement la prestation de services offerts en situations uniques, atypiques ou particulières; les manuscrits de cette catégorie peuvent comprendre des comptes rendus de dépistage, d'évaluation ou de traitement.

Courrier des lecteurs : Forum de présentation de divergences de vues scientifiques ou cliniques concernant des ouvrages déjà publiés dans la Revue. Le courrier des lecteurs peut avoir un effet sur notre façon de penser par rapport aux facteurs de conception, aux confusions méthodologiques, à l'analyse ou l'interprétation des données, etc. Comme c'est le cas pour d'autres catégories de présentation, ce forum de communication est soumis à une révision par des collègues. Cependant, contrairement aux autres catégories, on recherchera la réaction des auteurs sur acceptation d'une lettre.

Présentation de manuscrits

Pour soumettre un article, les auteurs doivent utiliser le système de soumission électronique de l'ACOA à l'adresse http://cjslpa.coverpage.ca. Si vous ne pouvez pas utiliser le système électronique, veuillez envoyer par courriel un fichier Word contenant le manuscrit, y compris tous les tableaux, les figures ou illustrations et la bibliographie. Adressez le courriel au rédacteur en chef à l'adresse elizabeth.fitzpatrick@uottawa.ca.

On doit joindre aux exemplaires du manuscrit une lettre d'envoi qui indiquera que le manuscrit est présenté en vue de sa publication. La lettre d'envoi doit préciser que le manuscrit est une œuvre originale, qu'il n'a pas déjà été publié et qu'il ne fait pas actuellement l'objet d'un autre examen en vue d'être publié. Les manuscrits sont reçus et examinés sur acceptation de ces conditions. L'auteur (les auteurs) doit (doivent) aussi fournir une attestation en bonne et due forme que toute recherche impliquant des êtres humains ou des animaux a fait l'objet de l'agrément d'un comité de révision déontologique. L'absence d'un tel agrément retardera le processus de révision. Enfin, la lettre d'envoi doit également préciser la catégorie de la présentation (i.e. tutoriel, rapport clinique, etc.). Si l'équipe d'examen juge que le manuscrit devrait passer sous une autre catégorie, l'auteur-contact en sera avisé.

Toutes les présentations doivent se conformer aux lignes de conduite présentées dans le publication Manual of the American Psychological Association (APA), 6e Édition. Un accusé de réception de chaque manuscrit sera envoyé à l'auteur-contact avant la distribution des exemplaires en vue de la révision. La RCOA cherche à effectuer cette révision et à informer les auteurs des résultats de cette révision dans les 90 jours de la réception. Lorsqu'on juge que le manuscrit convient à la RCOA, on donnera 30 jours aux auteurs pour effectuer les changements nécessaires avant l'examen secondaire.

L'auteur est responsable de toutes les affirmations formulées dans son manuscrit, y compris toutes les modifications effectuées par les rédacteurs et réviseurs. Sur acceptation définitive du manuscrit et immédiatement avant sa publication, on donnera l'occasion à l'auteur-contact de revoir les épreuves et il devra signifier la vérification du contenu dans les 72 heures suivant réception de ces épreuves.

Organisation du manuscrit

Tous les textes doivent être écrits à double interligne, en caractère standard (police de caractères 12 points, non comprimée) et sur papier 8 ½" X 11" de qualité. Toutes les marges doivent être d'au moins un (1) pouce. Un fichier électonique du manuscrit doit être présenté directement au rédacteur en chef. L'identification de l'auteur est facultative pour le processus d'examen : si l'auteur souhaite ne pas être identifié à ce stade, il devra préparer un fichier électronique dont la page couverture et les remerciements seront voilés. Seuls les auteurs sont responsables de retirer toute information identificatrice éventuelle. Tous les manuscrits doivent être rédigés en conformité aux lignes de conduite les plus récentes de l'APA. Ce manuel est disponible dans la plupart des librairies universitaires et commerciaux. En général, les sections qui suivent doivent être présentées dans l'ordre chronologique précisé.

Page titre : Cette page doit contenir le titre complet du manuscrit, les noms complets des auteurs, y compris les diplômes et affiliations, l'adresse complète de l'auteur-contact et l'adresse de courriel de l'auteur contact.

Abrégé : Sur une page distincte, produire un abrégé bref mais informateur ne dépassant pas une page. L'abrégé doit indiquer l'objet du travail ainsi que toute information pertinente portant sur la catégorie du manuscrit.

Mots clés : Immédiatement suivant l'abrégé et sur la même page, les auteurs doivent présenter une liste de mots clés aux fins de constitution d'un index.

Tableaux : Tous les tableaux compris dans un même manuscrit doivent être écrits à double interligne sur une page distincte. Les tableaux doivent être numérotés consécutivement, en commençant par le Tableau 1. Chaque tableau doit être accompagné d'une légende et doit servir à compléter les renseignements fournis dans le texte du manuscrit plutôt qu'à reprendre l'information contenue dans le texte ou dans les tableaux.

Illustrations : Toutes les illustrations faisant partie du manuscrit doivent être annexer avec chaque exemplaire du manuscrit. Chaque manuscrit doit être accompagné d'un fichier électronique pour chaque image et graphique en format JPEG, TIFF, AI, PSD, GIF, EPS ou PDF, compression minimale 300 ppp. Pour les autres types d'illustrations informatisées, il est recommandé de consulter le personnel de production de la RCOA avant la préparation et la présentation du manuscrit et des figures et illustrations s'y rattachant.

Légendes des illustrations : Les légendes accompagnant chaque figure et illustration doivent être écrits à double interligne sur une page distincte et identifiées à l'aide d'un numéro qui correspond à la séquence de parution des figures et illustrations dans le manuscrit.

Numérotation des pages et titre courant : Chaque page du manuscrit doit être numérotée, y compris les tableaux, figures, illustrations, références et, le cas échéant, les annexes. Un bref (30 caractères ou moins) titre courant descriptif doit apparaître dans la marge supérieure droite de chaque page du manuscrit.

Remerciements : Les remerciements doivent être écrits à double interligne sur une page distincte. L'auteur doit reconnaître toute forme de parrainage, don, bourse ou d'aide technique, ainsi que tout collègue professionnel qui ont contribué à l'ouvrage mais qui n'est pas cité à titre d'auteur.

Références : Les références sont énumérées les unes après les autres, en ordre alphabétique, suivi de l'ordre chronologique sous le nom de chaque auteur. Les auteurs doivent consulter le manuel de l'APA le plus récent pour obtenir la façon exacte de rédiger une citation. Les noms de revues scientifiques et autres doivent être rédigés au long et imprimés en italiques. Tous les ouvrages, outils d'essais et d'évaluation ainsi que les normes (ANSI et ISO) doivent figurer dans la liste de références. Les références doivent être écrits à double interligne.

Conflits d'intérêts possibles et engagement double

Dans le processus de présentation, les auteurs doivent déclarer clairement l'existence de tout conflit d'intérêts possibles ou engagement double relativement au manuscrit et de ses auteurs. Cette déclaration est nécessaire afin d'informer la RCOA que l'auteur ou les auteurs peuvent tirer avantage de la publication du manuscrit. Ces avantages pour les auteurs, directs ou indirects, peuvent être de nature financière ou non financière. La déclaration de conflit d'intérêts possibles ou d'engagement double peut être transmise à des conseillers en matière de publication lorsqu'on estime qu'un tel conflit d'intérêts ou engagement double aurait pu influencer l'information fournie dans la présentation ou compromettre la conception, la conduite, la collecte ou l'analyse des données, ou l'interprétation des données recueillies et présentées dans le manuscrit soumis à l'examen. Si le manuscrit est accepté en vue de sa publication, la rédaction se réserve le droit de reconnaître l'existence possible d'un tel conflit d'intérêts ou engagement double.

Participants à la recherche – êtres humains et animaux

Chaque manuscrit présenté à la RCOA en vue d'un examen par des pairs et qui se fonde sur une recherche effectuée avec la participation d'être humains ou d'animaux doit faire état d'un agrément déontologique approprié. Dans les cas où des êtres humains ou des animaux ont servi à des fins de recherche, on doit joindre une attestation indiquant que la recherche a été approuvée par un comité d'examen reconnu ou par tout autre organisme d'évaluation déontologique, comportant le nom et l'affiliation de l'éthique de recherche ainsi que le numéro de l'approbation. Le processus d'examen ne sera pas amorcé avant que cette information ne soit formellement fournie au rédacteur en chef.

Tout comme pour la recherche effectuée avec la participation d'êtres humains, la RCOA exige que toute recherche effectuée avec des animaux soit accompagnée d'une attestation à l'effet que cette recherche a été évaluée et approuvée par les autorités déontologiques compétentes. Cela comporte le nom et l'affiliation de l'organisme d'évaluation de l'éthique en recherche ainsi que le numéro de l'approbation correspondante. On exige également une attestation à l'effet que tous les animaux de recherche ont été utilisés et soignés d'une manière reconnue et éthique. Le processus d'examen ne sera pas amorcé avant que cette information ne soit formellement fournie au rédacteur en chef.

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