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Speech-Language and Audiology Canada is the national voice and recognized resource for speech-language pathology and audiology in Canada.

MISSION

Speech-Language and Audiology Canada supports and empowers our members to maximize the communication and hearing potential of the people of Canada.

OBJET ET PORTÉE

Nous sommes Orthophonie et Audiologie Canada (OAC), une organisation axée sur la membriété qui appuie, promeut et élève les professions de nos membres. Nous sommes le seul regroupement national qui s'emploie passionnément à appuyer et à représenter les orthophonistes, les audiologistes et les aides en santé de la communication du Canada, inclusivement.

L'association a été fondée en 1964 et incorporée en vertu de la charte fédérale en 1975. 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.

DROIT D'AUTEUR

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- Elsevier Bibliographic Databases (SCOPUS)
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NOTRE VISION

Orthophonie et Audiologie Canada : porte-parole national et ressource reconnue dans les domaines de l'orthophonie et de l'audiologie.

NOTRE MISSION

Orthophonie et Audiologie Canada 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

WINTER ISSUE

We begin this issue of the journal with an article by Suleman and Hopper that provides a review and interesting discussion of the contribution of mixed methods research to speech-language pathology and audiology research. Their findings suggest that studies using mixed methods research are less prevalent in speech-language pathology and audiology than in other disciplines. In the second paper, Wickremesooriya describes a study conducted in Sri Lanka related to facilitating the inclusion of students with speech, language and communication needs in regular education programs. The study found that consultant speech-language pathologists could provide classroom teachers with specific training in teacher-student communication to help support the inclusion of these students. Zhang and Kalinowski investigated college students' perceptions of shame- and guilt-proneness of individuals who stutter. Although both Caucasian and African-American college-level participants perceived individuals who stutter to be more prone to shame, the authors reported some cultural differences in the perceptions.

In Québec City, Hotton and colleagues carried out a pilot study to investigate the utilization of a new Internet videoconference system that was implemented to improve telecommunication between signing Deaf adults and service providers in a rehabilitation centre. Using both qualitative and quantitative methods of data collection, the results suggested that although there was limited use of the service, providers considered it to be a valuable addition to their programs. In the final paper, Zaitoun and colleague reviewed and synthesized the literature related to variability in audiologists' interpretation of auditory brainstem response (ABR) tests. Six studies met the inclusion criteria and yielded mixed findings.

As we end our Association's 50th anniversary year, CJSLPA continues to thrive as an open-access journal, publishing a broad range of articles in English and French in communication disorders. As noted in our fall issue, CJSLPA has implemented a new online manuscript submission system. We now welcome your submissions at: **http://powerreview3.aptaracorp.com/journals/sac-oac/**. Please note that any manuscripts under review that were submitted through the previous online system will continue to be processed through that system, therefore please upload revised manuscripts at: **www.cjslpa.coverpage.ca**. In the coming months, CJSLPA looks forward to receiving manuscripts in English or French generated from papers presented at the Speech-Audiology Canada conference in Ottawa. We encourage you to consider CJSLPA for your publications in 2015. Also, we are interested in receiving proposals or suggestions in the coming year for a topic for a Special Issue of CJSLPA.

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Mot de la Rédactrice en Chef

NUMÉRO D'HIVER

Nous ouvrons ce numéro de la revue avec un article de Suleman et Hopper qui nous offrent un examen et une discussion intéressante de la contribution de méthodes de recherches mixtes dans la recherche en orthophonie et en audiologie. Leurs conclusions suggèrent que les études qui utilisent les méthodes de recherche mixtes ont moins cours en orthophonie et en audiologie que dans d'autres disciplines. Dans la deuxième communication, Wickremesooriya décrit une étude menée au Sri Lanka en rapport avec l'inclusion d'élèves ayant des besoins en orthophonie et en communication dans les programmes d'enseignement réguliers. L'étude a trouvé que les orthophonistes consultants pourraient fournir aux enseignants une formation spécifique en communication enseignant-élève pour les aider à soutenir l'inclusion de ces élèves dans les classes ordinaires. Zhang et Kalinowski se sont penchés sur la perception d'étudiants du niveau collégial de la propension de bègues à la honte et à la culpabilité. Bien que les participants étudiants caucasiens et afro-américains de niveau collégial percevaient les bègues comme plus enclins à la honte, les auteurs ont relevé quelques différences culturelles dans les perceptions.

À Québec, Hotton et ses collègues ont mené une étude pilote pour scruter l'utilisation d'un nouveau système de vidéoconférence mis en place en vue d'améliorer la communication entre adultes sourds utilisant la langue des signes et les intervenants offrant des services dans un centre de réadaptation. À l'aide de méthodes qualitatives et quantitatives de collecte de données, les résultats ont suggéré que, malgré l'utilisation limitée du service, les intervenants considéraient celui-ci comme un ajout valable à leurs programmes. Dans la dernière communication, Zaitoun et ses collègues ont revu et synthétisé la littérature qui se rapporte à la variabilité dans l'interprétation que font les audiologistes des ondes des potentiels évoqués auditifs du tronc cérébral (PÉATC). Six études répondaient aux critères d'inclusion et ont rapporté des conclusions mixtes.

Au moment où s'achève l'année du 50e anniversaire de notre association, la RCOA continue à se développer comme revue à accès ouvert qui publie une vaste gamme d'articles en anglais et en français sur les troubles de la communication. Comme on l'a noté dans notre numéro d'automne, la RCOA a mis en place un nouveau système de soumission de manuscrits en ligne. Nous accueillons maintenant vos soumissions à l'adresse : http://powerreview3.aptaracorp.com/journals/sac-oac/. Tous les manuscrits en voie de révision qui ont été soumis par le système en ligne précédent continueront à être traités par ce système et, par conséquent, veuillez télécharger les manuscrits révisés à l'adresse : www.cjslpa.coverpage.ca. Dans les prochains mois, la RCOA s'attend à recevoir des manuscrits en anglais et en français qui auront été générés par des communications présentées au Congrès annuel d'OAC, à Ottawa. Nous vous encourageons à considérer la RCOA pour vos publications en 2015. Au cours de la prochaine année, nous sommes aussi intéressés à recevoir des propositions ou des suggestions pour un numéro spécial de la RCOA.

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Mixed Methods Research and its Use in Speech-Language Pathology and Audiology Research

Les méthodes de recherche mixtes et leur usage dans la recherche en orthophonie et en audiologie

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Abstract

Mixed methods (MM) research involves the use of quantitative and qualitative approaches to data collection and analysis within a single study or series of studies. Much has been written about MM research; yet, the extent to which MM research is used in the fields of speech-language pathology and audiology (SLPA) is unknown. The primary objective of this study was to determine the prevalence of MM research in the SLPA literature. A review of published research papers in four journals was conducted and studies that met initial criteria were further analyzed to determine the use of MM designs. MM research is infrequently published in the journals of SLPA reviewed in this study (i.e., less than 1.2% prevalence rate). Although reasons for the low prevalence are unclear, it is anticipated that the use of MM designs will increase in the coming years.

Abrégé

Les méthodes de recherche mixtes (MRM) font appel à des approches quantitatives et qualitatives pour la collecte et l'analyse des données au sein d'une étude ou d'une série d'études. On a beaucoup écrit sur les MRM ; cependant, on ne sait pas dans quelle mesure les MRM sont utilisées dans les domaines de l'orthophonie et de l'audiologie. L'objectif de cette étude était de déterminer la prévalence des MRM dans la littérature consacrée à l'orthophonie et à l'audiologie. Un examen des rapports de recherches dans quatre revues a été effectué et les études qui répondaient aux critères initiaux furent analysées pour déterminer l'utilisation des MRM. Les MRM ne sont pas publiées souvent dans les revues d'orthophonie et d'audiologie examinées dans cette étude (c.-à-d., un taux de prévalence de moins de 1,2 %). Si les raisons de cette faible prévalence restent obscures, on s'attend à ce que l'usage de MRM dans les études augmente au cours des prochaines années.

A Review of Mixed Methods Research and its use in Speech-Language Pathology and Audiology

The formalization of the term mixed methods (MM) research first occurred in the behavioral, social, and health sciences (i.e., educational psychology, sociology, nursing) approximately 20 years ago, in response to complex research problems that could not be addressed sufficiently with quantitative (QUAN) or qualitative (QUAL) research methods alone (Creswell & Plano Clark, 2011; Morse & Nieuhaus, 2009). Although MM research is increasingly recognized as a unique research paradigm, little is known about the extent of its use in speech-language pathology and audiology (SLPA). MM research designs may be particularly relevant to SLPA because speech, language, hearing, and swallowing abilities are influenced by multiple, dynamic interactions between individuals and the physical, social, and attitudinal environments in which they live (World Health Organization; WHO, 2001). Thus, as in related disciplines, the research questions in SLPA are often complex, multi-faceted and well-suited to the use of MM research designs. The objectives of this article are to present a summary of MM research designs and report on the prevalence of MM research within SLPA literature.

MM Research Defined

In the first issue of the *Journal of Mixed Methods Research* (JMMR) in 2007, MM research was defined as, "... research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry" (Tashakkori & Creswell, 2007a, p. 4). Creswell and Plano Clark (2011) expanded on this definition, citing core characteristics of MM research that include the following:

- collection and analysis of both qualitative (QUAL) and quantitative (QUAN) data;

- mixing of QUAL and QUAN data through:
  - merging or combining the data;
  - connecting the data and having one type build on the other; or
  - embedding one type within the other;

- prioritization of one or both forms of data; and,

- framing the procedures within philosophical or theoretical lenses (i.e., an overarching methodology).

The classification of MM research is not without controversy. Nevertheless, researchers have developed a paradigm that incorporates moderate versions of QUAL and QUAN philosophical frameworks (Morgan, 2007; Tashakkori & Teddlie, 1998). This MM philosophy is rooted in finding the common ground between QUAL and QUAN research in relation to key conceptual characteristics such as, for example, the nature of logic or scientific inquiry (reasoning), and the nature of reality (ontology; see Table 1). The paradigm proposed in Table 1 forms the foundation for the distinct MM research design classifications used in the current prevalence study.

MM Research Designs

The interaction between the QUAL and QUAN components of a study is of integral importance in categorizing MM designs. QUAL and QUAN 'components' refer to the portions of the study that involve data collection and analysis in accordance with traditional QUAL or QUAN designs. As a basis for categorizing MM designs in the current study, four dimensions outlined by Creswell and Plano Clark (2007, 2011) were considered: (1) emphasis of QUAL and QUAN components, (2) timing of QUAL and QUAN components, (3) mixing strategies, and (4) timing of mixing. These dimensions form the basis for the following basic design types: *convergent, explanatory, exploratory,* and *embedded* designs (Teddlie & Tashakkori, 2009; Creswell & Plano Clark, 2011; see Table 2).

Convergent designs. If QUAL and QUAN components are collected concurrently and contribute equally in answering a single research question, a *convergent* design is most appropriate. Convergent designs are characterized by the merging of QUAL and QUAN results during analysis or interpretation to create an integrated conclusion (Creswell & Plano Clark, 2011). Merging of results typically involves comparing, contrasting, and synthesizing QUAL and QUAN components (Creswell & Plano Clark, 2011). A simple example of a *convergent* design would be a study in which researchers conduct a focus group with parents of children with autism spectrum disorder to describe their experiences with speech-language therapy (QUAL) and also ask parents to complete a rating scale of their experience (QUAN). The data would be collected, analyzed, and reported distinctly, but merged in the discussion.

Sometimes a *convergent* design may involve the transformation of QUAL data into QUAN data. Transformation of QUAL data involves the application of numerical values to non-numerical data, typically in the form of frequency counts or a priori numerical values being applied to codes or themes used in the analysis (Sandelowski, Voils & Knafl, 2009). For example, a researcher could collect QUAL data on different types

Table 1. Continuum of paradigms and paradigm positions related to foundational elements

Approach to Research	QUAN	MM	QUAL
Nature of Reasoning	Deductive	Abductive	Inductive
Nature of Reality (Ontology)	Single reality	Single & multiple realities possible	Multiple constructed realities
Nature of Knowing (Epistemology)	Objective	Intersubjective	Subjective
Impact of Values on Interpretation (Axiology)	Interpretation should be unbiased & measures should be taken to eliminate bias	Interpretation is both biased and unbiased	Interpretation is fundamentally biased
Generalization	Generalizability	Transferability	Context-dependent
Causality	Cause results in effect	Causality cannot be determined	Cause cannot be isolated from effect

Note: Information derived from Creswell & Plano Clark (2007), Morgan (2007) and Tashakkori & Teddlie (1998)

of diet texture recommendations made by clinicians for individuals with dysphagia, and then count the frequency with which each type of recommendation was made over a certain time period. Importantly, transformed data continue to be viewed as the QUAL component in MM research designs (Creswell & Plano Clark, 2011). The transformed QUAL data in the above example would be integrated with a QUAN component, such as patient scores on a dysphagia-specific quality of life scale administered after treatment, to create a complete MM study.

Finally, *convergent* designs may involve collecting answers to close-ended (QUAN) and open-ended (QUAL) questions on a survey (Creswell & Plano Clark, 2011). In this approach, the QUAL data are used to validate the QUAN findings (Creswell & Plano Clark, 2011). For example, Bedwinek, Kummer, Rice and Grames (2010) conducted a MM survey study pertaining to speech-language pathologists' knowledge of, and education in, craniofacial disorders. The survey included several questions that had a Likert scale response format (QUAN) as well as open-ended questions (QUAL), with the questions intended to provide complementary data to the Likert scale responses.

Explanatory and exploratory designs. If the purpose of the study lends itself to an unequal weighing of QUAL and QUAN components and a sequential approach to data collection,

an *explanatory* or *exploratory* design will be best suited for the study (Creswell & Plano Clark, 2011). Both *explanatory* and *exploratory* designs involve the use of some form of connecting data in which the results from the first phase inform and connect to the development of the second phase of data collection and analysis (Creswell & Plano Clark, 2011). *Explanatory* and *exploratory* designs typically involve a summary of both sets of results and a discussion of the extent to which the second phase expanded or confirmed the first phase (Creswell & Plano Clark, 2011).

An *explanatory* design is one in which the QUAN data are collected and analyzed before the QUAL data (Creswell & Plano Clark, 2007; Creswell & Plano Clark, 2011). Most often, the QUAL information is collected to explain the QUAN results. For example, in an *explanatory* study, researchers may ask persons with hearing loss to rate their conversational abilities before and after an aural rehabilitation program (QUAN) and then have the same participants take part in one-on-one clinician-led follow-up interviews to discuss reasons for specific ratings (QUAL).

An *exploratory* study is one in which QUAL data are collected and analyzed before the QUAN data (Creswell & Plano Clark, 2011). The QUAL information is used to explore phenomena by uncovering variables of interest that could inform a hypothesis to be tested or the development of a

Table 2. Introductory matrix to basic mixed method designs in Creswell & Plano Clark Typology

	Convergent Design	Explanatory Design	Exploratory Design	Embedded Design
Notation	QUAL + QUAN Parallel-database	QUAN -> qual Follow-up explanations	QUAL -> quan Theory or Instrument development	QUAL (quan) QUAN (qual) Embedded-experiment
Variations	Data transformation Data validation	Participant selection		
Emphasis				
Equal	●			
Not Equal		●	●	●
Timing				
Concurrent	●			
Sequential		●	●	
Either concurrent or sequential				●
Mixing Strategies Timing of Mixing	Merging	Connecting	Connecting	Embedding
Design				●
Data collection		●	●	
Data analysis	●			
Interpretation	●			
Research Question				
One overarching research question	●	●	●	
More than one related but distinct questions				●

Note: Information is derived from Creswell & Plano Clark (2011)

measurement instrument (Creswell & Plano Clark, 2011). The second QUAN phase either involves isolating and assessing variables to determine the validity of the QUAL hypothesis or using a QUAN measure developed from the QUAL results (Creswell & Plano Clark, 2011). For example, a researcher may conduct a focus group of special education teachers to generate discussion of perceived barriers to implementing speech and language services in the schools (QUAL). Then, using the ideas generated in the focus group, a large-scale survey might be sent to all the teachers in a district asking them to rate the impact of predetermined barriers (QUAN).

Embedded design. The final type of MM research design proposed by Creswell and Plano Clark (2011) is the *embedded* design. The primary purpose of this design is to enhance a traditional QUAN or QUAL design. An *embedded* design is appropriate if the QUAL and QUAN components have unequal weighting and the researcher determines that timing of the components could be either concurrent or sequential (Creswell & Plano Clark, 2011). The timing of the embedded data collection and analysis should be determined by the research questions (i.e., if the primary data are going to inform the extent of what is necessary for the embedded data collection and analysis, then the *embedded* information should be collected later; Creswell & Plano Clark, 2011). Creswell and Plano Clark (2011) explain two configurations of the *embedded* design; either the QUAN is emphasized and the QUAL is supplemental, or the QUAL is emphasized and QUAN is the supplemental component. The supplemental data set is designed to answer a second research question that differs from the primary research question, although it may be related (Creswell & Plano Clark, 2011). The presence of two distinct yet related research questions distinguishes the *embedded* design from the *convergent* design in which there is only a single research question. As the primary and secondary data in an *embedded* study address distinct questions, results should not be merged but rather kept separate and reported as related but distinct findings (i.e., the two components could be reported in 'sister articles') Creswell & Plano Clark, 2011). Danzak (2011a, 2011b) conducted an *embedded* study and published the QUAN and QUAL components in two papers. In Danzak (2011a), writing samples from English language learners' were analyzed for linguistic complexity to determine if a difference existed across languages (English/Spanish) and genres (expository/narrative) (i.e., the QUAN component). The QUAL component, published separately (Danzak, 2011b), consisted of a separate analysis of English language learners' journal entries to determine the impact of

literacy experiences on their identities as bilingual writers. The QUAN and QUAL components were used to answer different but related research questions.

Prevalence of MM research across disciplines

Scholars interested in methodology have begun assessing the extent or prevalence of use of MM research designs as a way to gauge awareness of MM research and its adoption across disciplines. Alise and Teddlie (2010) estimated the prevalence of MM designs in psychology, sociology, nursing, and education. They reviewed published articles in 20 journals (five per discipline) over approximately one year (2005) and randomly selected 150 articles per discipline to review for the use of MM research designs. They found an average prevalence rate (calculated as the percentage of total articles that met specified criteria to be classified as MM research) of 11% across the four disciplines (5% in sociology, 7% in psychology, 9% in nursing, and 24% in education). Using similar methods (a literature review and MM classification framework), researchers have reported variable rates in other disciplines, from 5% in library science (Fidel, 2008), to 13.7% in school psychology (Powell, Mihalas, Onwuegbuzie, Suldo & Daley, 2008), and 14% in education (Truscott et al., 2010). In assessing trends over time, Ivankova and Kawamura (2010) searched five multidisciplinary databases and found a steady increase in the publication of empirical MM studies from 2000-2008. The findings from this body of research indicate that MM research designs are being used in different disciplines, although rates of use vary based on several factors including sampling procedures and operational definitions of MM research (Alise & Teddlie, 2010).

In SLPA, little is known about the adoption and use of MM research designs. Thus, to address this knowledge gap and assess if and how MM research is being used in SLPA, the following research question was of interest in the current study: What is the prevalence of MM research designs in the published SLPA literature in the North American context?

Methods

The study was conducted in two phases. In the first phase of the study, published articles were identified and selected through a literature search. In the second phase of the study, selected articles were evaluated to determine if the authors used research designs that met objectively defined MM criteria.

Phase one – Literature search. Four discipline-specific journals published by the national organizations governing

SLPA in Canada and the United States were chosen, including the *Canadian Journal of Speech Language Pathology and Audiology* (CJSLPA), *American Journal of Speech-Language Pathology* (AJSLP), *Journal of Speech, Language and Hearing Research* (JSLHR), and *Language, Speech, Hearing Services in Schools* (LSHSS). These journals were chosen to ensure that all published papers would be relevant to SLPA and because the total number of published papers across the four journals provided a sufficient sample for review, based on previous prevalence studies in other disciplines (Alise & Teddlie, 2010; Powell et al., 2008). All articles published in these four journals over six years from 2007 – 2012, inclusive, were selected for review. The year 2007 was used as a starting point as it coincides with the release of the first issue of the *Journal of Mixed Methods Research*, an important point in the emergence of MM research as an accepted and well-defined paradigm.

The CINAHL plus database provided electronic records and full text access of AJSLP, JSLHR, and LSHSS from 2007–2012. The CINAHL database provided electronic record access to CJSLPA from 2007-2011 and full text access to CJSLPA from 2008-2011. As such, investigators manually searched the full texts of issues of CJSLPA published in 2007 and 2012 for MM studies. In consultation with two research librarians, the first author developed a complex search string for this first phase of the study. The search was restricted to research and review articles published from January 1, 2007 to February 1, 2013. Articles such as editorials, letters to the editor, tutorials, and field notes were excluded. Next, a search protocol, developed by a senior research librarian was applied. This search protocol was designed to employ a variety of terms to identify studies in the electronic record that included both QUAL and QUAN components or used any terms or combinations of terms characteristic of MM studies. Derivations of terms that would directly denote MM studies were searched (e.g., *mixed method, multimethod, multiple research methods, mixed research, 'qualitative and quantitative'*). The search included methodological terms that could be used to classify the study as having an organized approach to collection and analysis of QUAN and QUAL components (e.g., *nested, blending, concurrent, transformative, iterative, triangulation*). The search protocol further facilitated identification of studies that contained a derivation of *quantitative* research in conjunction with a variety of terms that could indicate a QUAL component existed within the study (*phenomenology, hermeneutic, content analysis, lived experience, narrative, interview, focus group, action research, etc.*). The investigators also searched for articles where derivations of key words like

qualitative and *quantitative* or *triangulation* and *design* occurred in close proximity to one another (e.g., with five or fewer words between them). Finally, the search protocol involved exploration of the full text of articles for author self-identification of MM research designs through the use of derivations of the phrases *mixed methodology, multimethod, qualitative and quantitative,* and *quantitative and qualitative.*

Phase two – MM criteria analysis. Objective criteria were developed based on the definition of MM used by the *JMMR* and guidelines provided by Creswell & Plano Clark (2007; Tashakkori & Creswell, 2007a) to further analyze the studies selected in phase one. The hierarchy included four criteria (Figure 1) that had to be met for an article to be designated as including MM.

The first criterion was the collection and analysis of both QUAL and QUAN raw data. QUAL data consisted of words, text and/or, images, which were analyzed through a process that involved reporting depth and breadth of ideas presented (Creswell & Plano Clark, 2007; Sandelowski, Voils & Knafl, 2009; Thomas, 2003). QUAN data comprised numbers and measurements, which were analyzed using descriptive and/or inferential statistical techniques (Creswell & Plano Clark, 2007; Thomas, 2003).

For the purposes of this study, quantitized or transformed QUAL data, where numerical values are derived from a text data source such as a language sample transcript, were classified as QUAN data instead of QUAL data, which is typical of transformed QUAL data. In the field of speech-language pathology, assessments of speech and language will often involve analysis of transcripts to determine the way in which a person is using speech and language conventions (Shipley & McAfee, 2009). A language sample typically consists of over 50 utterances that are analyzed to evaluate the form or nature of language being used (e.g., average number of words in each utterance or complexity of sentence or syntactic structure), the use of language (e.g., the communicative intent of the utterances), the rate of speech, and skills related to story-telling or narrative tasks, among others (Shipley & McAfee, 2009). The numbers from a language sample are not based on the content of the transcript; rather they are based on quantifiable occurrences of linguistic properties. To consider data from a language sample analysis as QUAN data is somewhat unique to speech-language pathology and is in contrast to transformation of thematic analysis into numerical form via transformation. In a true data transformation, the focus is on ideas participants share in their narratives (i.e., content), whereas in linguistic
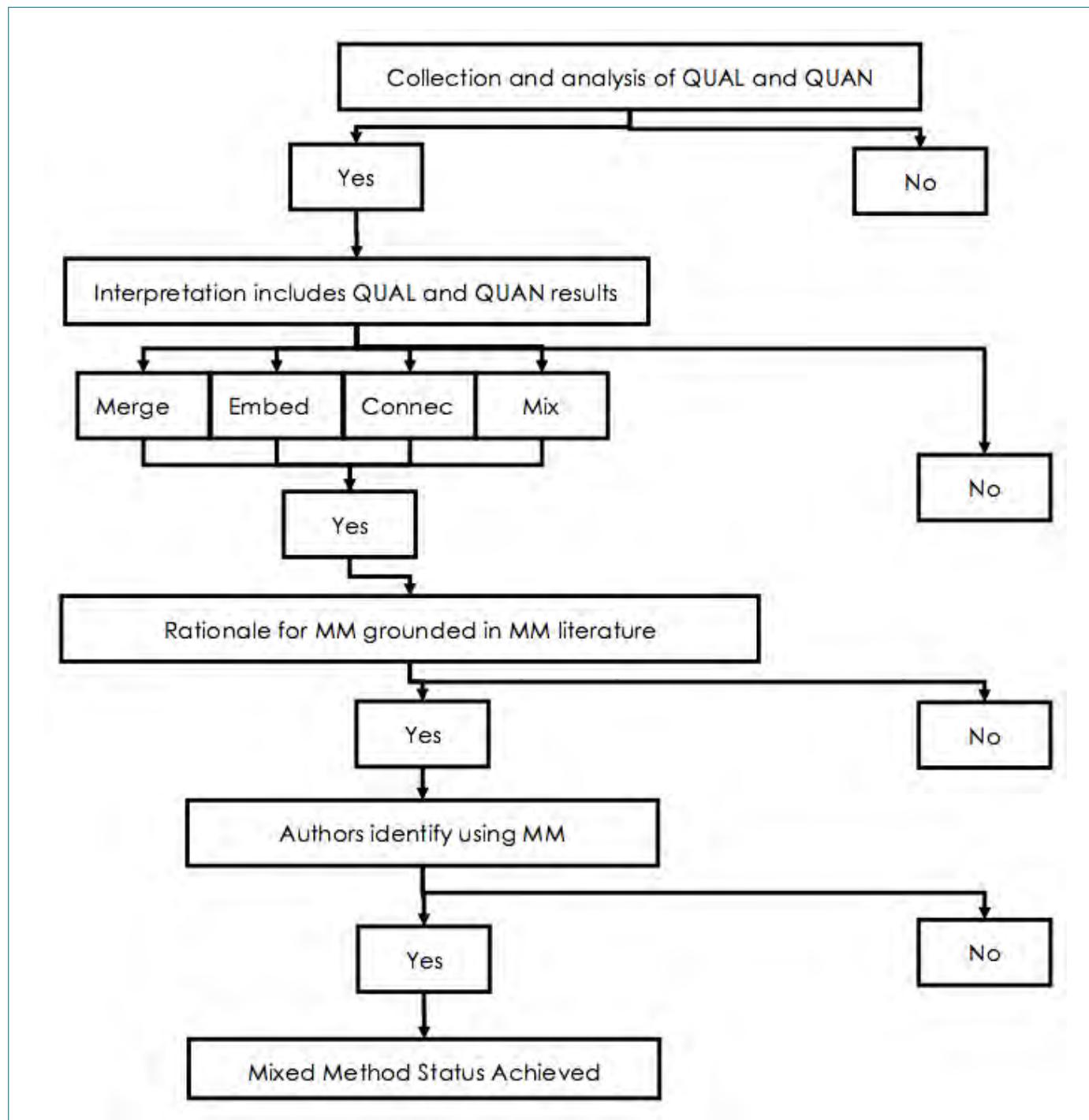
Figure 1: A priori hierarchy to determine MM status of article (Phase 2)

analysis the emphasis is on the use of linguistic features (i.e., form; Sandelowski, Voils & Knafl, 2009). We also considered phonetic transcription analysis as QUAN analysis, even though the data yield written symbols or a transcript (Shipley & McAfee, 2009). Similar to language sample analysis, phonetic transcription analysis results in numbers that are not derived from the ideas presented in

the transcript but rather a person's use of speech sounds (Shipley & McAfee, 2009).

The second criterion for the classification of a study as MM research was the demonstration of mixing of QUAL and QUAN results (Creswell & Plano Clark, 2011; Tashakkori & Creswell, 2007a). To meet this criterion, the authors had

to explicitly demonstrate that QUAL and QUAN results were merged, connected, embedded, or mixed (Creswell & Plano Clark, 2011). Merging of data was demonstrated through integration of the QUAL and QUAN data sets either during design, data collection, analysis, or in the discussion (Creswell & Plano Clark, 2011). Merged data involved equal emphasis of QUAL and QUAN as results were compared, contrasted, or synthesized (Creswell & Plano Clark, 2011). Data were considered connected in instances where a sequential design was used and one data set was collected, analyzed, and interpreted before a second set of data was collected, analyzed, and interpreted. A study that included a summary of QUAL and QUAN phases and involved description of the extent to which one data set informed the other was considered to connect the data (Creswell & Plano Clark, 2011). Embedded data was demonstrated through the use of one data set to address supplemental questions in an overall study (Creswell & Plano Clark, 2011). In an *embedded* design, components could be reported independently (Creswell & Plano Clark, 2011).

The third criterion was evidence of explicit MM design grounded in MM philosophy (Creswell & Plano Clark, 2011). The introduction, methods, and discussion sections of each article were reviewed for a stated rationale for the use of MM that included citations from MM literature (Creswell & Plano Clark, 2007). To meet this criterion, the article had to contain at least one citation and one reference that were specific to MM research.

The fourth criterion required that the study investigators identified the study as involving a MM research design (Creswell and Plano Clark, 2007; 2011). To meet this criterion, authors could explicitly state the study involved mixed methods in the title, abstract, purpose statement, methods, or analysis sections of the paper by using any derivation of the terms *mixed methods, qualitative and quantitative, integrate methods, combined methods, methodological triangulation,* or *multi-methods* to describe the study. Whereas Creswell and Plano Clark (2007; 2011) used the last two criteria as basic parameters for determination of MM status, in the current review, articles were examined for the collection, analysis, and integration of QUAL and QUAN components before investigators assessed the inclusion of specific conventions.

Phase two analyses. The two authors and a research assistant completed the analysis for the study. First, the primary author reviewed one article from each of the selected journals and developed a checklist for analysis. Next, both authors reviewed four articles, one from each journal, and refined criteria and operational definitions. After

reaching consensus related to the four articles, the primary author reviewed all the articles retrieved in phase one and analyzed them to determine MM status. Fifty-two articles (20% of the articles reviewed) were randomly selected and coded by the second author or the research assistant. Two measures of agreement were determined. First, overall agreement of MM status of an article was calculated by counting the number of agreed upon articles divided by the total number of articles. Second, criterion agreement was determined for each article by dividing number of agreed upon criteria by the total number of criteria (i.e., 4). For example, if the two coders agreed on three of four criteria for one article, inter-rater agreement for that article would be 75%.

Results

Phase one – Literature search. From 2007–2013, 1623 articles were published across the four journals; 1125 were research or review articles. Of those, 257 articles were selected using the MM search protocol: 153 articles were from JSLHR, 49 articles were from AJSLP, 46 articles were from LSHSS, and 9 articles were from CJSLPA (see Table 3).

Phase two – MM criteria analysis. Of the 257 articles that met criteria for inclusion after phase one, 249 were appropriate for phase two analysis (Table 4). Eight articles were excluded because they were systematic reviews (e.g., Cirrin & Gillam, 2008) or presented theoretical synthesis of information and recommendations (e.g., Tager-Flusberg et al., 2009). Only 5 of the 249 articles analyzed in phase two met all four criteria to be classified as MM studies (Table 4); one was published in AJSLP (Langevin, Packman & Onslow, 2009), and four were found in LSHSS (Bedwinek, Kummer, Rice & Grames, 2010; Danzak, 2011a; Danzak, 2011b; Overby, Carrell, & Bernthal, 2007). Two of the four articles in LSHSS were related to one study that used an *embedded* design; specifically, in one article the author reported on the QUAN data (Danzak, 2011a) and in another article she reported on the QUAL data (Danzak, 2011b).

The overall prevalence of MM research designs across all SLPA journals over the six year search time frame, based on articles meeting all four criteria in the hierarchy, was less than 0.5%, with slight variability across journals (i.e., from 0.0% in JSLHR and CJSLPA to 2.2% in LSHSS; see Table 4). Eighteen articles met between one and three of the criteria. Seven articles met the first two criteria related to using and mixing QUAL and QUAN components (Ball & Lewis, 2011; Brandel & Frome Loeb, 2011; Clegg, Ansorge, Stackhouse, Donlan, 2012; Irani & Richmond, 2012; Jackson, Wegner, & Turnbull, 2010; Stockman, Boult, Robinson, 2008; Washington, Thomas-Stonell, McLeod & Warr-Leeper,

Table 3. Summary of Phase One Results (Literature Search)

Journal	Bibliographic Records	Full Text Available	Total research/ review articles Jan 2007 – Feb 2013	# Articles retrieved by MM database search Jan 2007 – Feb 2013
AJSLP	1996 – present	2001 – present	167	49
CJSLPA	2007 – present	03/01/2008 – 12/31/2011	95	9
JSLHR	1996 – present	01/01/1997 – present	681	153
LSHSS	1995 – present	01/01/1995 - present	182	46
Total			**1125**	**257**

Table 4. Summary of Phase Two Results (MM Criteria Analysis)

Journal	Total Research/ Review	# Articles Retrieved by Phase One	# Articles appropriate for Phase Two Analysis	# MM studies as determined by Phase 2 Analysis	Prevalence of MM as determined by MM criteria analysis (%)
AJSLP	167	49	47	1	0.6
CJSLPA	95	9	9	0	0
JSLHR	681	153	150	0	0
LSHSS	182	46	43	4	2.20
Total	**1125**	**257**	**249**	**5**	**0.44**

2012). Ritzman and Sanger (2007) did not reference MM literature but their study met the three other criteria. In two articles, authors used QUAL and QUAN components but failed to meet the other three criteria (Carey, O'Brian, Onslow, Packman, & Menzies, 2012; Jonk & Ennes, 2009). In contrast, authors of two articles self-identified as using MM research but did not use or integrate QUAL and QUAN data as per the classification criteria used in this study (Bahr, Silliman, Berninger, & Dow, 2012; Johnston et al., 2008). In addition to self-identification, Johnston and colleagues (2008) also provided a rationale grounded in MM literature. Marshall (2010) also self-identified as using

an MM design, but there was no explicit integration of QUAL and QUAN data and no reference to the MM literature. Table 5 summarizes articles that met at least one of the MM criteria. Table 6 presents adjusted prevalence rates across journals to include all articles that included a description of research that, at minimum, met the first two criteria related to collection, analysis, and integration of QUAL and QUAN components (13 articles yielded a 1.16% prevalence rate).

Measures of agreement. Investigators had 100% overall agreement of MM status of an article based on independent analysis of 52 articles. The investigators had 96% criterion

Table 5. Summary of articles that met at least one MM criteria

Article	Journal	Collects and Analyzes QUAL and QUAN	Mixing of QUAL and QUAN	Provides rationale grounded in MM literature	Self Identifies as MM
Bahr, Silliman, Berninger, & Dow (2012)*	JSLHR				●
Ball & Lewis (2011)	CJSLPA	●	●		
Bedwinek, Kummer, Rice & Grames (2011)	LSHSS	●	●	●	●
Brandel & Frome Loeb (2011)	LSHSS	●	●		
Carey, O'Brian, Onslow, Packman & Menzies (2012)	LSHSS	●			
Clegg, Ansorge, Stackhouse & Donlan (2012)	LSHSS	●	●		
Danzak (2011a)*	LSHSS	●	●	●	●
Danzak (2011b)*	LSHSS	●	●	●	●
Irani & Richmond (2012)	CJSLPA	●	●		
Jackson, Wegner, Turnbull (2010)	LSHSS	●	●		
Johnston et al. (2008)	CJSLPA			●	●
Jonk & Ennes (2009)	CJSLPA	●			

Langevin, Packman & Onslow (2009)*	AJSLP	●	●	●	●
Marshall (2010)	LSHSS	●			●
Overby, Carrell, & Bernthal (2007)	LSHSS	●	●	●	●
Ritzman & Sanger (2007)	LSHSS	●	●		●
Stockman, Boult, Robinson (2008)	AJSLP	●	●		
Washington, Thomas-Stonell, McLeod, & Warr-Leeper (2012)	CJSLPA	●	●		
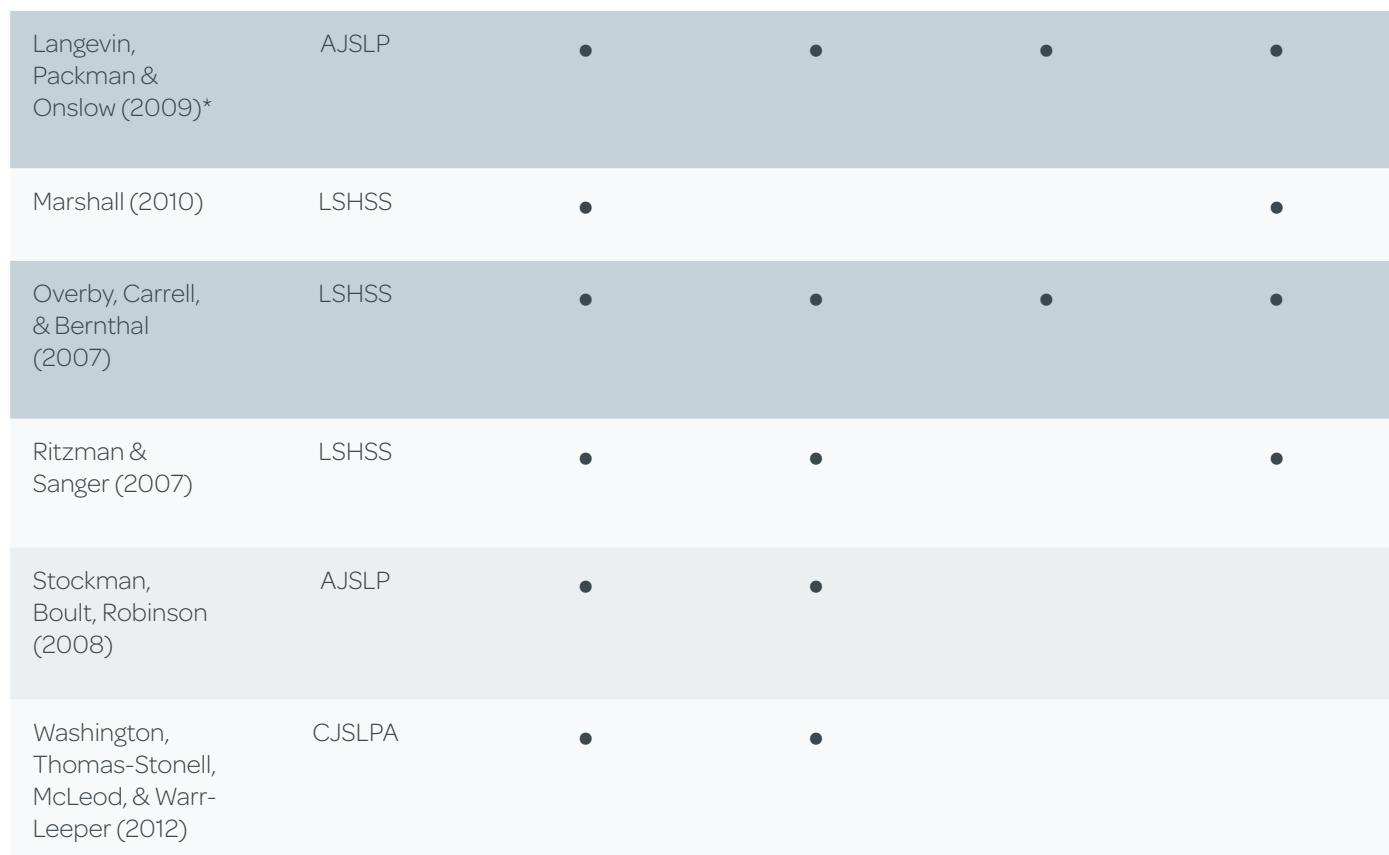
Note:
- Articles that were considered MM studies are highlighted in dark grey
- Articles that met basic MM criteria (uses and integrates QUAL and QUAN components) without using MM writing conventions (i.e., use of MM literature or self identification) are highlighted in light grey

(*) – indicates studies that used a speech-language transcript analysis as the QUAN component of the study

Table 6. Adjusted prevalence rate to include studies that included collection, analysis, and integration of QUAL and QUAN data but not a grounded rationale or author-identification as MM

Journal	Total Research/ Review	# MM studies	# studies that met basic criteria but not writing conventions	Adjusted # of MM studies	Adjusted Prevalence of MM (%)
AJSLP	167	1	1	2	1.20
CJSLPA	95	0	3	3	3.16
JSLHR	681	0	0	0	0.00
LSHSS	182	4	4	8	4.40
Total	**1125**	**5**	**8**	**13**	**1.16**

agreement. The investigators disagreed on one or two criteria in six of the 52 articles used in the reliability analysis and reached 100% agreement following discussion.

Discussion

Overall, prevalence rate estimates for MM studies in the North American SLPA literature are substantially lower than prevalence rates reported in other disciplines in which the average was 11% (Alise & Teddlie, 2010) and the lowest reported rate was 5% in both library science (Fidel, 2008) and sociology (Alise & Teddlie, 2010). If the prevalence estimates in this study are a valid reflection of the use of MM designs, then researchers in SLPA may not be aware of, or they may lack knowledge about MM designs at the philosophical and/or practical levels. Indeed, the results provide some support for this contention. Seven studies that were reviewed met designated criteria of using and integrating QUAL and QUAN components but were not identified as MM studies by the authors. In three other articles, authors identified the study as incorporating a MM design, and/or they provided a MM rationale grounded in MM literature, but then did not collect, analyze, and integrate QUAL and QUAN data. Alternatively, the low prevalence rate may reflect researcher choice rather than lack of knowledge about MM research designs. Researchers may choose not use MM designs because they ask questions that are best addressed using either QUAN or QUAL designs, but not both (Fidel, 2008). However, the current study did not involve evaluation of the appropriateness of research designs nor aspects of validity and reliability of the reviewed research articles.

Practical considerations such as page limits, may have constrained the publication of MM research studies, which tend to be longer than mono-method research manuscripts (Lopez-Fernandez & Molina-Azorin, 2010; Onwuegbuzie, 2013). However, MM research is published in single manuscripts in other disciplines, as per reported prevalence rates, and seven MM articles were found in the current study. Thus, page limits are likely not the primary reason for low prevalence rates in the four journals searched in this study.

The classification scheme used in the current study may have influenced the prevalence rate. A less rigid scheme, with fewer criteria, may have resulted in higher prevalence estimates. The current classification scheme was implemented to reduce the likelihood of over-estimation of prevalence of MM research, and it could be argued that the use of this classification resulted in an under-estimation of MM research in SLPA. However, even when a less stringent classification approach was applied in phase two, with only two criteria necessary for a study to be designated as MM, the prevalence rate was still only 1.16%.

However, the findings should be interpreted cautiously for several reasons. First, the literature search was somewhat limited in breadth. The initial search for MM research articles was limited to four of the most prominent SLPA journals published in North America. Although the search included six years and more than one thousand articles, and is consistent with the breadth of other prevalence studies (Alise & Teddlie, 2010; Fidel, 2008; Ivankova & Kawamura, 2010), sampling bias may have contributed to the low prevalence rates. For example, non-discipline specific journals were not considered, nor were audiology-specific and internationally published journals. Thus, results cannot be generalized comprehensively across the disciplines of SLPA.

Despite the limitations, the study findings are important to research and clinical practice in SLPA. First, the use of MM reduces the impact of biases inherent in either a QUAN or QUAL approach alone. As such, results are more likely to converge in closer proximity to the real phenomena under study (Salsali, 2009). Second, by utilizing both the subjective and objective points of view, MM embraces subjective reality within the context of the search for generalizable findings (Tashakkori & Teddlie, 1998). Thus, the use of a different and second approach to confirm the findings of the initial study, may contribute to increased reliability of findings and confidence in results (Denzin, 1988; Salsali, 2009). MM provides a framework for research in clinical fields to mix and integrate QUAL and QUAN information to reach more thoroughly informed conclusions (Creswell & Plano Clark, 2007), which can help to support evidence-based practice.

As recently as 2011, Scheffner-Hammer wrote that, compared to quantitative methods, "as a field we have largely overlooked the value of the qualitative research methods, which can be employed to answer a different but complementary set of research questions" (p. 161). The results of this study show that MM research designs also may be overlooked in the field of SLPA. However, more research is needed to support these conclusions.

Future Directions

Future research should include examination of a larger, more diverse sample of journals to increase the external validity of the findings from this foundational work. In addition, prevalence could be estimated over time and by journal, including prevalence rates of QUAN and QUAL research alone as well as MM research in SLPA. A potential

next step in this line of research could include conducting a MM research study in which QUAN prevalence data are collected in conjunction with QUAL data from interviews with researchers and SLPA students as to their awareness of MM designs and barriers and facilitators of their use in research.

For individuals who want to learn more about MM research, there are many excellent sources of information, including textbooks and articles that provide details on the design, implementation and dissemination of MM research (see Leech, Onwuegbuzie & Combs, 2011). As speech-language pathologists and audiologists, it is important to be aware of methodological developments within and between research communities to address complex research questions that characterize the field of SLPA.

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Training Primary Grade Teachers to Organize Teacher-Student Communication to Support Students With Speech, Language and/or Communication Needs

Former les enseignants à l'élémentaire à organiser la communication enseignant-élève de façon à soutenir les élèves ayant des besoins en orthophonie et en communication

Shalini F. Wickremesooriya

Abstract

This paper focuses on inclusion of students with Speech, Language and Communication Needs (SLCN) in regular classrooms through altered teacher-student communication using an action research approach. The paper discusses two action cycles with four phases: critical reflection, planning, action, and evaluation.

Six primary grade teachers in a private school for boys in Sri Lanka participated in the research. Teacher participants under the guidance of a consultant Speech-Language Pathologist (S-LP) elected to practice specific inclusive communication strategies whilst refraining from engaging in pre-identified exclusionary communication strategies. They also chose to follow a knowledge and skill enhancement programme during this period.

At the conclusion of the action cycles it was evident that consultant S-LPs can help schools, specifically teachers to adjust to the demands that arise from inclusion of students with SLCN.

Results highlight that the popular inclusionary teacher-student communication practices are giving single directions, praising student attempts to communicate, maintaining eye contact whilst addressing the student, assigning a 'communication buddy', rephrasing instructions, and giving specific feedback.

Abrégé

Cette communication porte sur l'inclusion d'élèves ayant des besoins en orthophonie et en communication dans les classes ordinaires par le truchement d'une communication enseignant-élève modifiée à l'aide d'une approche de recherche-action. L'article discute de deux cycles d'action divisés en quatre étapes : la réflexion critique, la planification, l'action et l'évaluation.

Six enseignants à l'élémentaire d'une école privée pour garçon du Sir Lanka ont participé à la recherche. Sous la direction d'un orthophoniste consultant, les enseignants ont choisi de pratiquer des stratégies de communication inclusives spécifiques tout en s'interdisant de s'engager dans des stratégies de communication d'exclusion pré-identifiées. Ils ont également choisi de suivre un programme de perfectionnement des connaissances et des techniques pendant cette période.

À la conclusion des cycles d'action, il fut évident que des orthophonistes consultants peuvent aider les écoles, et particulièrement les enseignants, à s'ajuster aux demandes qui découlent de l'inclusion d'élèves ayant des besoins en orthophonie et en communication.

Les résultats font ressortir que les pratiques d'inclusion les plus populaires dans la communication enseignant-élève sont de donner des consignes uniques, de renforcer les tentatives de communication des élèves, de maintenir un contact visuel en s'adressant à l'élève, d'assigner un « copain de communication », de reformuler les consignes et de donner des commentaires spécifiques.

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INTRODUCTION

With the advent of inclusive education the number of students with Speech, Language and Communication Needs (SLCN), has increased in regular classrooms the world over (Wellington & Wellington, 2002). School based speech and language services are designed to support students with SLCN to become effective communicators in their classrooms (Wegner, Grosche & Edmister, 2003). Communication however, lies in the hands of both partners. Therefore, teachers are also expected to engage in communication practices that aid inclusion of students with SLCN (McCartney & Ellis, 2010).

INCLUSIVE EDUCATION

Just as political beliefs and governments have changed throughout history, so has the concept of disability and education of disabled children (Singh, 2006). Literature reveals that education for disabled children has moved through several stages some of which were denial that these children require adaptation, combining segregation and integration throughout the school day, and the present day concept of inclusion.

Inclusive education requires that all children regardless of disability to be educated alongside their peers (Schwartz, 2005). Exclusion due to 'learning, language, cultural, racial, class, religious, or behavioural differences' is discouraged (O'Hanlon, 2003, p.13). Inclusive education therefore challenges the medical or deficit perspective and introduces the social model of thinking (Slee, 2011; Tregaskis, 2004). The social model advocates that communities and establishments create and maintain practices that enable individuals with disabilities to play an active role in society (Mittler, 2000). Inclusive education, which promotes the social model of thinking, is expected to develop inclusive societies (Slee, 2011).

Currently a varied number of students with disabilities including those diagnosed with SLCN are enrolled in inclusive schools the world over.

STUDENTS WITH SLCN IN INCLUSIVE CLASSROOMS

Children are considered to have SLCN, when there is a mismatch between age appropriate developmental expectations and development of their ability to communicate (Beitchman & Brownlie, 2010). Different modes of speech and language therapy services along different parameters are pursued in school settings. These include pull out and classroom based models (McGinty & Justice, 2006).

The pullout model involves organising individual or small group intervention sessions outside the classroom in a designated space. It is based on the traditional model of service delivery practiced by Speech and Language Pathologists (SLPs) in clinical settings (Cirrin & Gillam, 2008). The classroom-based model involves intervention within classroom settings using either the direct or indirect models (McGinty & Justice, 2006). Within the direct model S-LPs collaborate with teachers and engage in team teaching or teach certain lessons such as language, to the class as a whole (McGinty & Justice, 2006).

The consultancy model, which was developed in response to the global drive to achieve inclusive education, is considered as indirect intervention (Mercow, Beckwith & Klee, 2010). S-LPs, who are employed as consultants, guide teachers with their expert knowledge on adapting goals and strategies to meet the needs of students with SLCN. In the UK, the Royal College of Speech & Language Therapists produced a policy statement concerning S-LPs working in consultant role. According to this statement a consultant is "an expert in a specific area of clinical practice with responsibility to lead and develop staff and services through active involvement in research and contribution to and use of the evidence base for the S-LP profession" (Royal College of Speech & Language Therapists 2010, p.5). Other studies suggest that school based consultant S-LPs ought to engage in teacher training programmes to educate teachers on topics including speech and language development (Sadler, 2005), the link between speech, language and communication difficulties and learning (Martin & Miller, 2003), and common speech and language disorders (Gascoigne, 2006). The consultancy model is encouraged due to the view that the pull out model, which highlights student deficits, does not provide acceptable outcomes for children with SLCN (Lindsay, Dockrell, Desforgest, Law, & Peacey, 2010). This model is also favoured when S-LPs cannot meet the demands of a large community (Wegner, et al., 2003).

CLASSROOM COMMUNICATION

Classrooms are dynamic entities where communication takes place continuously (Wood, 2008). Adult communication within classrooms is goal oriented (Farrell, 2006) and focused at meeting pedagogic goals (Walsh, 2006) or directed at classroom management (Nayak, 2004). Good teaching involves teacher-student communication; verbal and non-verbal, which is clearly understood by all learners (Clifton, 2004). Maintaining a classroom environment, which encourages

communication, is ideal to motivate and engage students with SLCN (McCartney & Ellis, 2010).

The standards of a culture or subculture often determine teacher-student communication routines within classrooms (Newman & Newman, 2009). The cultural roots of teachers influence the manner in which they interact with their students (Kogut & Silver, 2009). In Asian cultures where the value of education is drawn from the Confucian heritage (Abboud & Kim, 2005), students listen with respect to the authoritative voices of their teachers and refrain from asking questions or presenting opposing views (Xiao-yan, 2006; Zhang, 2008) because they revere and worship their teachers as experts (Nystrand, 2006). Students in Sri Lanka also display their respect for teachers by refraining from interrupting the teacher's explanation and from challenging teacher views (Alwis, 2005). This is in contrast to classrooms in Western and Western influenced cultures where students are encouraged to use talk, to learn, and understand (Walsh, 2006). Further, teacher choice of discourse is also dependent on institutional and personal preference, age of students, the experience teachers possess, the subjects they teach, and the purpose of lessons (Clifton, 2006).

ACTION RESEARCH

Action research embraces dual processes: research conducted in varied contexts to understand and improve knowledge and action directed at changing situations (Dick, 2002). The action researcher is therefore the practitioner and the practitioner is the researcher who applies theory to influence practice and practice to become theory (McNiff & Whitehead, 2002). The research process is intended to empower and liberate people by blending the academic world of research and actual practice through a democratic approach to transformation (Armstrong & Moore, 2004) thus, effectively diminishing the distance between those who decide and those who execute plans (Dick, 2002).

Action research is conducted as a cyclical process. Several models describing the cyclical process have been advocated since it was introduced by John Collier and Kurt Lewin in 1946 (Ferrence, 2000). Five basic processes - identifying a problem, collecting and organizing data, interpreting data, formulating a plan, and reflecting on the outcomes - are considered useful within each cycle (Winter & Munn-Giddings, 2001).

BACKGROUND TO THE RESEARCH

The research was conducted in Sri Lanka, an island

located in the South Asian region. Statistics reveal that eight percent of Sri Lanka's population of 22 million is disabled and almost half of the disabled population is children (Asian Development Bank (ADB), 2002). Sri Lanka is committed to the global move towards inclusive education (World Bank Report, 2005). This is reflected in the National policy on disability (2003), which endorses inclusion as the basis for education (Rieser, 2008).

Although statistics pertaining to the prevalence of individuals with SLCN is unavailable in Sri Lanka, similar to other South Asian and African countries, it is estimated that at least 10% of the population display SLCN. Speech and language pathology services introduced in 1998 is also a relatively new profession with approximately 100 S-LPs working predominantly in clinical settings, in the capital and major towns (Gomesz, 2010). Amongst the general public, SLCN is not widely known or very well understood. Teacher training programs focusing on inclusion of students with SLCN is also limited (Wickremesooriya, 2012).

RESEARCH QUESTION

A set of questions often used in action research "*What is my concern? Why am I concerned? What do I think I can do about it? What will I do about it?*" (McNiff & Whitehead, 2002) was considered to articulate the research question. The broad question that emerged from the reflexive process reads as: "What guidance must a consultant S-LP provide teachers to ensure inclusion of students with SLCN?"

This paper considers the sub-question: "How can consultant S-LPs support teachers to alter teacher-student communication practices to include students with SLCN?"

The research question is answered by following two action cycles (AC1 and AC2). Each cycle consists of four phases; critical reflection, planning, action, and evaluation (Figure 1).

PREPARING FOR ACTION RESEARCH

The preparation stage included selecting a research location, gaining ethical approval, choosing research participants, organizing a validation group, determining a writing style, and identifying data collection and analysis methods.

Selecting a research location

The focal school is a private school for boys, located in the suburbs of the commercial capital, Colombo. Until 2004 the school sought to improve the quality of
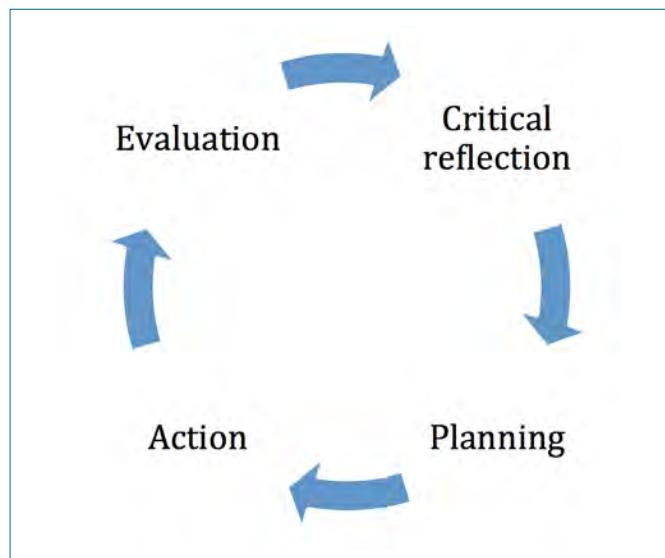
Figure 1: Action research model

experiences for its disabled student population through physical and social integration. In 2004, a collaborative team approach was adopted to facilitate inclusion of a wider range of students. The support team comprised of the school's sub-warden, student counselor, psychologist, social worker, special education teachers, and a senior teacher. The author joined the team as a S-LP consultant, in 2005.

Gaining ethical approval

This paper is extracted from a research project conducted towards the award of a doctorate. Ethical clearance was obtained from the faculty of medicine of the University of Sheffield, UK.

Choosing research participants

The students were selected from amongst those who currently receive student support. The potential recruits were identified as primary grade students aged between 6-12 years. Their degree of difficulty was judged through a rating scale developed for this purpose. The scale comprised of four levels (0-3) with skill level descriptions of; never [0], sometimes [1], often [2], always [3]. The skills assessed are an expanded and simplified description of the specific skills indicated in the Bercow Report UK (Bercow, 2008) definition. These include [i] speaks fluently (without stammering), [ii] speaks clearly without articulation errors, [iii] describes stories and events sequentially, [iv] uses age appropriate grammar and vocabulary, [v] expresses needs clearly, [vi] follows whole class instructions perfectly, [vii] answers questions accurately, [viii] interacts with peers, [ix] participates in classroom activities such as group recitation, and [x] works in groups. The need for SLCN to be the only or primary impairment was ruled out.

The special education teachers were educated regarding the skill description and the manner in which the rating ought to be recorded. Six students of different ages with the lowest total scores, which indicated those with greater needs and their classroom teachers, were selected. Students' names were changed to maintain anonymity (Table 1). Teachers are referred to by their

Table 1. Student and Teacher profiles

Student Name (Pseudonym)	Age	Score	Deficit skills – scores 0 &/or 1	Teacher's age	Years of teaching experience
Shanuth	6	12	iii, iv, v, vi, vii, viii, ix, x	32	6
Josh	7	12	iii, iv, v, vi, vii, viii, ix, x	35	7
Yadesh	8	14	iii, v, vi, vii, ix, x	37	10
Amal	9	13	iii, vi, vii, ix, x	34	8
Heshan	9	14	iii, vi, vii, ix, x	28	4
Yovaan	10	16	iii, vi, vii, x	55	30

student's pseudonyms (e.g. the teacher who teaches Shanuth is referred to as Shanuth's teacher).

Organizing a validation group

A validation group was organised to ensure reliability when analysing data. The three special education teachers on the school support team were selected and trained for this purpose.

Determining the writing style

As a post-modern action researcher, I challenge the traditional view regarding 'silent authorship' (Charmaz and Mitchell, 1997 in Quicke, 2008) and use a first person narration (Macintyre, 2000; Oliver, 2004). The first person narrative is advocated within action research because the researcher is an active participant in the dual processes of research and action (McNiff & Whitehead, 2002).

Identifying methods of data collection and analysis

Data was collected via classroom observations and semi-structured interviews. Classroom observations were selected because it is an effective method to study classroom talk (Ary, Jacobs, Razavieh & Sorensen, 2009). Teacher and student participants were interviewed via semi-structured interviews. This interview method involves a predetermined set of questions that can be amended according to the type of responses given by the interviewees (Kember 2000).

A mixed methods approach was adopted for data analysis. This process involves the combining of qualitative and quantitative analysis. A combination method was chosen because it provides different and useful perspectives that enrich decisions made during the research process (Axinn & Pearce, 2006), the school administrators' request for quantitative data and my personal belief that subtle qualitative changes in teacher-student communication will be missed in the absence of qualitative data.

ACTION RESEARCH METHODS AND RESULTS

The following sections report on the methods and results of the pre-action stage, action cycle one and action cycle two. Since each cycle depends on the results of the previous cycle, it is important to present both the methodology and the results before describing the next step of the research process.

PRE-ACTION METHODS AND RESULTS

This stage was introduced to evaluate the current status, consider the results, and prepare for action cycle one. Data was collected via teacher and student interviews and classroom observations. The results assisted in determining the action required, prior to embarking on action cycle one.

METHODS

Interviewing teachers

The interviews followed a semi-structured interview format. The teachers were interviewed individually. Each teacher was given the freedom to choose a convenient time and location. Five teachers agreed to audio recording while one opted for manual recording. All teachers chose the library as the interview location.

Interviewing students

Group interviews were organised for students because children feel more comfortable and supported when peers are present (Gwynn, 2004; Wellington, 2000). Group 'A' consisted of Shanuth, Josh, and Yadesh. Amal, Heshan, and Yovaan were allocated to group 'B'. The interviews were held at the Student Support Unit (SSU), a place familiar to the students. The students sat in a semi-circle while I sat in close proximity, directly opposite them to capture student attention, encourage active participation, and reduce opportunities of students losing focus during the interview. Being interviewed was a new experience for all the students. Therefore, I began by explaining the process, encouraging them to engage in a sample voice test, and listening to a replay.

Observing classrooms

Observations took place in the six classrooms that the student participants belonged to, to ascertain communication practices their teachers engage in when addressing all pupils including student participants. Although the research focused on encouraging teachers to change communication directed at student participants, data pertaining to whole classrooms were gathered because teachers and student participants communicate within the broader context of their classrooms. A data collection grid was designed to document the interactional dimension that enables quantitative and qualitative analysis. The grid comprised of Time, Turn, Speaker Direction, Dialogue, and Commentary (Table 2).

Every select classroom was observed on two separate occasions, during a lesson; which lasted for half an hour. I chose an unobtrusive seating location to avoid disturbing the classroom activities whilst having a clear

Table 2. Data collection grid for classroom observations

Time	Turn	Speaker Direction	Dialogue	Commentary
Interactions were recorded as they occurred, free from a rigid time pattern	A record of each turn, to count total number of turns during a lesson	With the sign ">". Speakers were allocated abbreviations; Teacher (T), Student with SLCN (S), Whole Class (C) and other student (P). If the teacher addressed the whole class it was recorded as T>C	Exact words as spoken	Information that gives life to the classroom and helps to hear distinct voices

view of student participants. Interactions that teachers directed at participants and participants contributions to classroom talk were recorded by hand. Manual recordings were used, as requested by the administrators, to capture as many of the interactions as possible.

The manually recorded data was word processed and scrutinized to identify communication practices that the teacher participants engage in. The validation group independently scrutinized the written version of the recorded data to identify the same. When results were compared both groups had identified a similar number of communication practices. The manner in which two practices were phrased differed. By revisiting the data we were able agree on the suitable phrases.

The eleven strategies identified on day one [D1] and two [D2] were then categorized as inclusionary [I] and exclusionary [Ex]. The inclusionary communication strategies identified included asking questions to engage the student [I_1], providing reminders to keep the student on task [I_2], engaging the student in 'whole class' lessons [I_3], conveying modified expectations to the student [I_4], stating expectations firmly [I_5], articulating positive evaluative remarks [I_6], and answering student questions and giving explanations briefly and clearly [I_7]. The exclusionary communication strategies that emerged include providing negative evaluative remarks [Ex_1], using threats to move students to act [Ex_2], ignoring student-initiated conversations [Ex_3] and rushing through explanations with several steps in a single turn [Ex_4].

RESULTS

Teacher and Student interviews

Data from both sets of interviews were scrutinized for themes. The results were then tabulated (Table 3). Teacher interviews highlighted that teachers lacked knowledge regarding including students with SLCN and engagement with research. However it was evident that teachers were using existing knowledge and skills to include students with SLCN. The most popular strategy was organising peer support. Individual teachers also sought help from the assistant teacher, used picture cues and seated the student in close proximity. Popular reinforcers teachers use to encourage students with SLCN communicate more effectively from the most popular to the least include stickers, verbal praise, and requesting peer acknowledgement. The students identified two ways in which their teachers helped them understand. These include assigning a peer buddy and informing individually. The students also expressed concern about certain communication practices that they believed prevented them from communicating. The practices that occurred most often to the least include speaking very loudly, using 'big' words or complex speech that is beyond the student's comprehension level, threatening students with punishment for non-completion of tasks during allocated time, and speaking fast.

Classroom observations

When considering the number of instances each identified communication strategy was observed (Table 4), the inclusionary strategies used more often than others

Table 3. Teacher and student interviews combined results

PARTICIPANT	THEMES	RESPONSES	NUMBER
TEACHER	Prior engagement with research	None	6
	Attendance at workshops or seminars focused on including students with SLCN	Attended a single workshop	2
		Did not attend a workshop or seminar	4
	Coping strategies teachers engage in when students with SLCN are present	Intervention by assistant teacher	1
		Using visual cues (e.g. picture)	1
		Organising peer support	3
		Seating student in close proximity	1
	Popular reinforcers teachers use to encourage students with SLCN communicate more effectively	Star stickers	6
		Verbal praise	2
		Asking peers to acknowledge student success	1
STUDENT	Ways in which teachers help students understand teacher talk	Assigning a peer buddy to help students follow instructions	4
		Informing students individually	3
	Features of teacher talk that students with SLCN consider prevents them from communicating	Speaking very loudly	5
		Using 'Big' words or complex speech that is beyond the student's comprehension level	4
		Speaking at a very fast pace	1
		Threatening students with punishment for non-completion of tasks during allocated time	2

Table 4. Real-time results of classroom observations

Teacher	DAYS	INCLUSIONARY STRATEGIES							EXCLUSIONARY STRATEGIES			
		I_1	I_2	I_3	I_4	I_5	I_6	I_7	Ex_1	Ex_2	Ex_3	Ex_4
Shanuth's teacher	D1	1	3			2			1			1
	D2	3	5			6		2	1	1		
Josh's teacher	D1		6	1		3		1	4	1		1
	D2		2			1		1				
Yadesh's teacher	D1	1	5			4			1		1	
	D2		2			2		2			1	
Amal's teacher	D1		9	1		1						1
	D2	1	4			7		2				1
Heshan's teacher	D1		4	1	2	3					1	
	D2		3		1						1	
Yovaan's teacher	D1					1		1	4			
	D2		3	1		2		3	2			
Total		6	46	4	3	32	0	12	13	2	4	4

were providing reminders to keep students on task (I_2), stating expectations firmly (I_5), answering student questions and giving explanations briefly and clearly (I_7), and asking questions to engage the students (I_1). A single exclusionary strategy, providing negative evaluation (Ex_1) was noted most frequently.

PREPARING TEACHER PARTICIPANTS

Since teachers are participants to the action research process it was important that they be equipped with the knowledge and skills required. By considering the results from teacher interviews it was decided that teachers would be educated through workshops on two themes, action research and inclusion of students with SLCN. Hence, two hour workshops were conducted along these themes, bi-weekly, during after school hours, for three consecutive weeks.

The first action cycle commenced thereafter.

ACTION CYCLE 1 (AC1) METHODS AND RESULTS

AC1 was comprised of the four phases in the action research cycle, critical reflection, planning, acting, and evaluating outcomes (Figure1). A discussion on each phase in the cyclical process follows.

METHODS

Critical Reflection

This stage was twofold: self-reflection and collaborative critical reflection. The participant teachers engaged in self reflection by considering dialog recorded during classroom observations and findings that emerged through the interview process. Critical reflection as a collaborative team activity followed. The participant teachers concluded that some communication strategies practiced by them are barriers to including students with SLCN.

Planning

The research focus is to alter teacher-student communication by reducing exclusionary strategies and practicing new inclusionary strategies. The participant teachers therefore selected new inclusionary communication strategies that they would incorporate into their practice, by considering insights gained at the workshops. The newly introduced inclusionary strategies were coded as an extension of the existing inclusionary strategies (Table 5: $I_8 - I_{14}$). The teachers also elected to avoid the currently practiced exclusionary communication strategies (Table 4: Ex_1-Ex_4).

Table 5. Inclusionary and Exclusionary communication strategies selected by teachers

Teacher	Inclusionary Strategies to follow	Code	Exclusionary Strategies to avoid	Code
Shanuth's teacher	Giving single directions	I_8	Providing negative	Ex_1
	Maintaining eye contact	I_9	evaluative remarks	
	Assigning a 'communication buddy'	I_{10}	Using threats	Ex_2
	Praising student attempts to communicate	I_{11}	Rushing through explanations	Ex_4
	Encouraging communication via picture cards / single word answers	I_{12}		
Josh's teacher	Giving single directions	I_8	Providing negative evaluative remarks	Ex_1
			Using threats	Ex_2
			Rushing through explanations	Ex_4
Yadesh's teacher	Giving single directions	I_8	Rushing through explanations	Ex_4
	Maintaining eye contact	I_9		
Amal's teacher	Giving single directions	I_8	Providing negative evaluative remarks	Ex_1
	Rephrasing instructions in simple language	I_{13}	Ignoring student initiated conversation	Ex_3
Heshan's teacher	Giving single directions	$I8$	Ignoring student initiated conversation	Ex_3
	Assigning a 'communication buddy'	$I10$		
	Praising student attempts to communicate	$I11$		

| Yovaan's teacher | Praising student attempts to communicate | I_{11} | | Providing negative evaluative remarks | Ex_1 |
| | Giving specific feedback | I_{14} | | | |

Action

Plans were implemented by the participant teachers for two months. I supported the teachers through weekly meetings and other modes of communication such as telephone and e-mail.

Evaluation

Data was collected from the six participant teachers via classroom observations. The observations were conducted in the pre-action stage. Data was analysed by counting the number of turns teachers practiced the inclusionary strategies and the number of turns teachers did not avoid the identified exclusionary strategies as they addressed the student participants. The total for each category was calculated as a percentage of the total number of communication turns that occurred between the teacher and student participant on both occasions. The percentile values were rounded off for ease of analysis. Strategies not applicable to the participant teachers are indicated with the colour grey (Table 6).

RESULTS

Analysis pertaining to success at implementing inclusionary strategies indicated that success rates ranged from 0% to 100% (Table 6). The inclusionary strategies teachers practiced most often to the least often are maintaining eye contact [I_9], giving single directions [I_8], praising student attempts to communicate [I_{11}], and assigning a communication buddy [I_{10}].

Analysis of engagement in exclusionary strategies revealed that failure rates ranged from 0% to 100%. The exclusionary strategies that occurred most often to the least are ignoring student-initiated conversation [Ex_3], providing negative evaluative remarks [Ex_1], and using threats [Ex_2].

With the conclusion of AC1 the cyclical process of action research, required embarking on AC2.

ACTION CYCLE 2 (AC2) METHODS AND RESULTS

AC2 consisted of critical reflection, planning, acting, and evaluating the outcomes, similar to AC1. The manner in which these phases unfolded is discussed below.

METHODS

Critical Reflection

The teachers were provided with a detailed summary of data collected and analysed in the evaluation phase of AC1 for self-reflection. Collaborative critical reflection as a group activity followed. The teachers concluded that they often forgot their commitment to change within the busy school day and resorted to the authoritarian voice. They agreed that whilst their understanding of inclusion of students with SLCN improved during AC1, they require a longer period of time to practice newly learned communication strategies.

Planning

The teachers decided to continue with strategies selected in AC1. Further, they requested for a professional development programme directed at enhancing knowledge regarding inclusion and skills required for inclusion of students with SLCN.

Action

This phase lasted for two months. The teachers practiced the same inclusionary communication strategies they chose in AC1. They also chose to refrain from engaging in the exclusionary communication strategies identified in AC1.

Teachers also engaged in an in-house professional development programme. The programme was a collaborative team effort between the consultant teacher trainer of this school and me. The sessions were held after school, every other Friday for two hours. It was designed to be light on theory but heavy on delivering opportunities to

Table 6. AC1 results of real-time observations

Teacher	Total turns	Day	INCLUSIONARY							%	EXCLUSIONARY				%
			I_8	I_9	I_{10}	I_{11}	I_{12}	I_{13}	I_{14}		Ex_1	Ex_2	Ex_3	Ex_4	
Shanuth's teacher	12	1	1	2	1	1	0			75	0	1		0	25
		2	1	1	1	1	0				1	1		0	
Josh's teacher	7	1		3						100	0	0		0	0
		2		4							0	0		0	
Yadesh's teacher	9	1	2	2						100				0	0
		2	2	3										0	
Amal's teacher	4	1	0					0		0	1		1		100
		2	0					0			0		2		
Heshan's teacher	6	1	2		0	0				50			2		50
		2	1		0	0							1		
Yovaan's teacher	6	1				1			0	50	2				50
		2				2			0		1				
Total			9	15	2	5	0	0	0		5	2	6	0	

acquire practical skills and learn new techniques. Methods such as role-play, discussions, pair work, independent practice, active dialogue, and honest sharing of views were included to engage the teacher-learners.

Evaluation

Data was gathered from the six classrooms via observations. It was thereafter organised using a table format (Table 7) similar to AC1.

RESULTS

Analysis of classroom data (Table 7) indicated that success rates at implementation of inclusionary strategies varied from 80% to 0%. Inclusionary strategies teachers engaged in from the most popular to the least are praising student attempts to communicate [I_{11}], giving single directions [I_8], maintaining eye contact [I_9], rephrasing instructions in simple language [I_{13}], assigning a communication buddy [I_{10}], and giving specific feedback [I_{14}].

Failure rates at avoiding exclusionary strategies ranged from 20% to 100%. The exclusionary strategies that occurred most often to the least are providing negative evaluative remarks [Ex_1], ignoring student-initiated conversation [Ex_3], using threats [Ex_2], and rushing through explanations [Ex_4].

When results from AC1 and AC2 are compared (Figure 2) it is evident that Shanuth and Amal's teachers increased the practice of inclusionary strategies as they moved through the two action cycles whilst decreasing the practice of exclusionary strategies. Shanuth's teacher was the most consistent in practicing inclusionary strategies on both days in AC1 and AC2. She recorded a five percent increase in AC2. Amal's teacher who did not practice any inclusionary strategies in AC1 recorded 50% success in AC2 thereby reducing exclusionary practices by 50% in AC2. Other teachers recorded losses in AC2. Josh's teacher recorded a 100% failure following her decision not to implement the single inclusionary strategy. Yadesh's teacher implemented a new inclusionary strategy, praising student's attempts to communicate, and recorded overall success 50% of the time. Heshan and Yovaan's teachers recorded a 10% drop in implementing inclusionary practices in AC2.

Discussions during the evaluation stage revealed two factors that influenced the quantitative measures. Firstly, although teachers were committed to change and were supported to transform their practice in teacher–student communication all other factors within the school remained the same. Teachers had to deal with day-to-day schedules, manage classrooms of thirty five students', meet the expectations of extensive curriculums, and
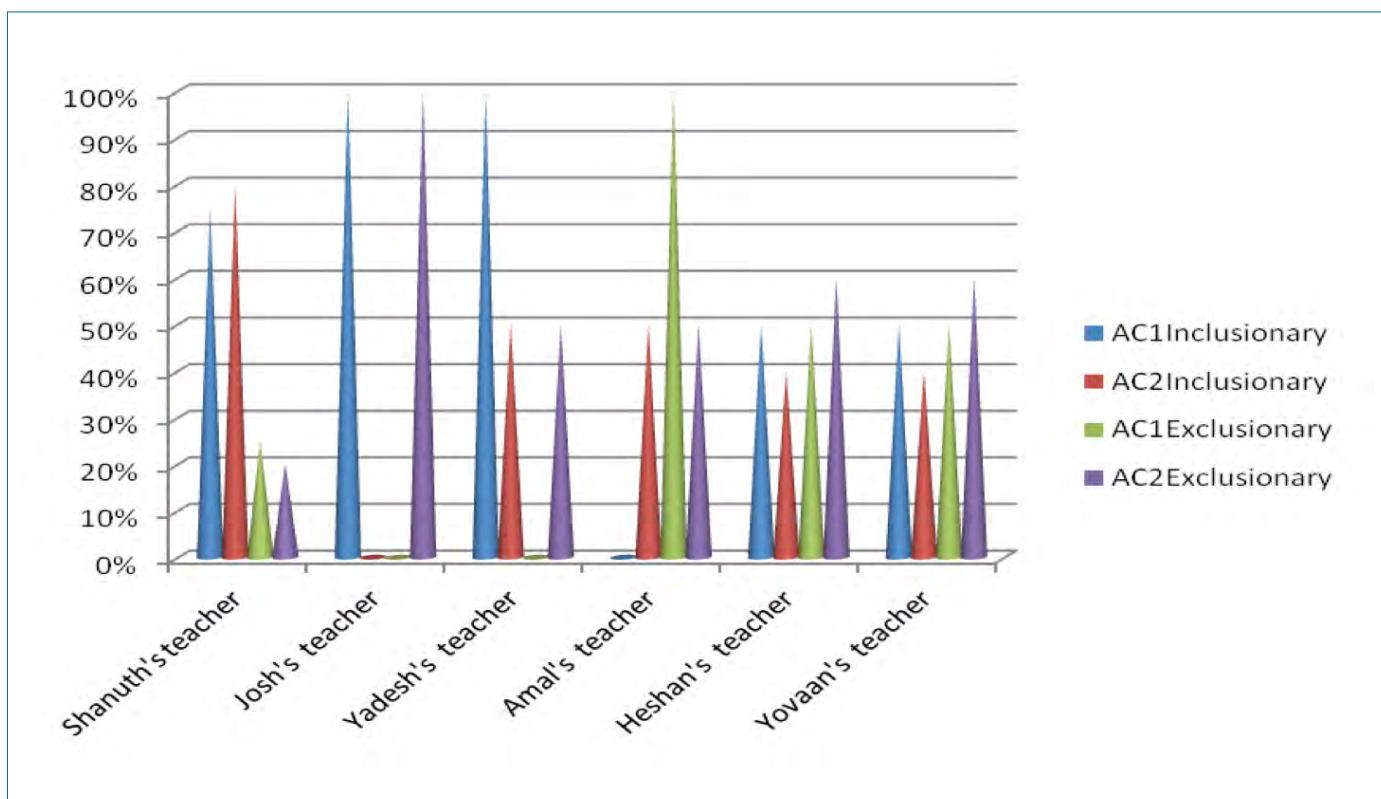
Figure 2: Teacher use of Inclusionary & Exclusionary strategies: A comparison of AC1 & AC2model

Table 7. AC2 Results of real-time observations

Teacher	Turns	Day	INCLUSIONARY							%	EXCLUSIONARY				%
			I_8	I_9	I_{10}	I_{11}	I_{12}	I_{13}	I_{14}		Ex_1	Ex_2	Ex_3	Ex_4	
Shanuth's teacher	10	1	1	1	1	1	0			80	0	1		0	20
		2	2	1	0	1	0				1	0		0	
Josh's teacher	3	1		0						0	1	0		0	100
		2		0							0	2		0	
Yadesh's teacher	8	1	1	1		1				50	1		1	1	50
		2	0	0		1								1	
Amal's teacher	6	1	0					2		50	1		0		50
		2	1					0			1		1		
Heshan's teacher	5	1	0		0	1				40			1		60
		2	0		0	0	1						2		
Yovaan's teacher	5	1				1			0	40	2				60
		2				0		1			1				
Total			5	3	1	6	0	3	1		8	3	5	2	

prepare students for examinations which are held every four months or end of school term. Hence, the success level of practicing new teacher-student communication strategies and avoiding exclusionary strategies varied from day-to-day for each teacher. Secondly, changing established practices in communication requires much practice over a long period of time. Even though teachers willingly chose inclusionary strategies and identified strategies they needed to avoid they often resorted to familiar practices.

However, teachers reported that they acquired a heightened awareness regarding teacher-student communication as they moved through the action cycles. Teachers collectively voiced that although implementation of chosen communication strategies did not take place all the time they would regret a statement once it was said in the old familiar way. Hence, they were keen on continuing the journey of change after the research concluded.

With the conclusion of the evaluation phase in AC2 the dual cyclical process of this action research project, ceased.

DISCUSSION

The study was conducted in a country that lacks the number of S-LPs required to serve all schools in Sri Lanka. It also focused on a school that is at the beginning phase of embracing the philosophy of inclusive education. The teacher participants who had no prior experience as researchers, willingly engaged in the action research process. The teachers experienced personal, professional, and social change as they engaged in the systematic study of teacher-student communication and its impact on their students. The research process empowered the teachers as they gained further knowledge, learned new skills and implemented new strategies. It also liberated the teachers as they began to realise in their own ability to positively influence the lives of students with SLCN. Further, the atmosphere in the classrooms was transformed as teachers' attitude towards students who were labelled as 'disabled' changed. Finally, the democratic approach to transformation diminished the distance between the decision makers, administration and consultants, and those who execute plans, the teachers.

This research project also demonstrated that action research is a useful tool to bring about change within school settings. The results are evidence that knowledge enhancement and provision of guidance on a regular basis can facilitate teachers to alter teacher-student communication practices. It is therefore concluded that

the action research process supplied answers to the research question: "How can consultant S-LPs support teachers to alter teacher-student communication practices to include students with SLCN?"

Limitations and future directions for further research

This research demonstrates several limitations. The first limitation concerns the research setting and the ability to generalise evidence to the wider education system in Sri Lanka. The research was set in a private fee levying school, a setting different from the public schools that dominate the education system in Sri Lanka. Student to teacher ratio is lower in private schools, the percentage of trained teachers are lower than reported in public schools and majority of students are from a higher economic stratum in society.

The research was also conducted at a time of war and uncertainty. The psychological trauma and tensions experienced by the research participants who represented the multi ethnic community, influenced the outcomes of the research. The disruptions that hampered the smooth flow of research activities periodically caused a loss of momentum. Should a similar research be conducted at a time of peace the outcomes may be different.

The research was also influenced by the changes in school administration. Decisions for each action cycle were endorsed by different individuals as Principals changed in quick succession. Should the same Principal have remained throughout the research process the direction of the research would have been different.

When considering possibilities for future research one aspect that was not taken into account in this research; the non-verbal element in adult-child communication needs to be explored because non-verbal communication is as or more important than verbal communication. There is also a need for future research pertaining to inclusion of students with SLCN to be carried out in public school settings with a larger sample of teachers. Considering the multicultural nature of the Sri Lankan society it will also be beneficial to focus research on the manner in which teachers from different ethnic groups engage in adult-child communication when teaching students with SLCN.

Implications for consultant S-LPs working with teachers

Findings indicate that Consultant S-LPs play an important role within inclusive school settings.

Firstly they are in a key position to advise school administrators on the need to attend to collective factors to ensure inclusion of students with SLCN. Since S-LPs provide services to children with a wide range disorders they can influence school administrators to opt for a holistic approach when organising services for these students. For instance, instead of appointing a support assistant to assist all students with identified needs within a classroom, the administrators can be convinced to encourage the classroom teachers to consider options such as differentiation of curriculum, team teaching, and alternative communication.

Secondly consultant S-LPs can make significant contributions to develop and guide school staff in the implementation of inclusionary practices. S-LPs can organise continuous teacher training programmes by understanding the culture of a school and by spending time with small groups of teachers. They can organise small scale action research projects to encourage teachers to take ownership to change by reflecting on practice and planning for change.

These findings are not limited to the research context. It can be extended to any school environment where a consultant S-LP desires to promote the concept of inclusive education.

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Perceived Shame-and Guilt-Proneness of People Who Stutter by Caucasian and African-American College Students

Perception d'une propension à la honte et à la culpabilité des bègues par des étudiants caucasiens et afro-américains de niveau collégial

Jianliang Zhang
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Abstract

Shame and guilt are two powerful negative social emotions with deep influences on the development and treatment of stuttering. However, their uses have been ambiguous and their relative roles associated with stuttering are unclear. This current study examined listeners' perceptions of shame- and guilt-proneness of persons who stutter (PWS) as compared to normally fluent individuals. Sixty-two African-American and 60 Caucasian college students completed the Test of Self-Conscious Affect – 3, a scenario-based questionnaire survey, either from their own perspectives as normally fluent individuals or assuming the identity of PWS after watching video segments depicting stuttered speech. Two-way ANOVAs revealed that both groups perceived PWS as being more prone to shame than guilt. Caucasian participants scored higher than African-American participants on both shame- and guilt-proneness from both perspectives. No significant interaction effect was observed.The results suggest that listeners tend to perceive stuttering as more related to shame than to guilt, implying that stuttering is seen as capable to damage one's core self. In addition, the results suggest that in different cultures PWS are subject to different levels of social pressure. These findings may shed light on the development of stuttering, and have implication for the treatment and public education of stuttering.

Abrégé

La honte et la culpabilité sont deux émotions sociales négatives ayant des influences profondes sur le développement et le traitement du bégaiement. Cependant, l'utilisation de celles-ci est ambiguë et leurs rôles associés au bégaiement restent obscurs. La présente étude a examiné les perceptions qu'ont les auditeurs de la propension à la honte et à la culpabilité de bègues par comparaison à des individus qui ont un débit normal. Soixante-deux étudiants afro-américains et 60 caucasiens de niveau collégial ont complété le *Test of Self-Conscious Affect – 3*, un questionnaire d'enquête basé sur un scénario, soit de leurs propres points de vue comme individus ayant un débit normal, soit en assumant l'identité de bègues après avoir regardé des segments de vidéos qui décrivaient le bégaiement. Une analyse de variance à deux facteurs a révélé que les deux groupes percevaient les bègues comme étant plus enclins à la honte qu'à la culpabilité. Les caucasiens ont accordé des scores plus élevés que les afro-américains pour les deux émotions. Il n'y a pas eu d'interaction significative entre les deux facteurs. Les résultats suggèrent que les auditeurs perçoivent le bégaiement comme pouvant affecter l'identité profonde d'une personne. De plus, les résultats suggèrent que, dans différentes cultures, les bègues sont soumis à divers niveaux de pression sociale. Ces constatations peuvent aider à comprendre le développement du bégaiement et avoir une implication sur le traitement du bégaiement et sur la sensibilisation du public à cette condition.

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INTRODUCTION

Social emotions are emotions that link the self to the others and include shame, guilt, pride, and embarrassment, etc. (Lewis, 1995; Tangney & Dearing, 2002). Many of the social emotions are intimately involved in the development of stuttering, especially during the adolescent and adult years (Bloodstein & Bernstein-Ratner, 2008; Van Riper, 1982). Joseph Sheehan, in his famous iceberg analogy of stuttering, suggested that stuttering is comprised of 20% overt manifestations (e.g., perceivable stuttering behaviors), and 80% covert manifestations, which include shame, guilt, fear, embarrassment, anxiety, hopelessness, isolation, and denial, etc. (Sheehan, 1958). Corcoran and Stewart (1998) interviewed eight adult people who stutter (PWS) and concluded that PWS' negative emotional responses to stuttering consist of feelings of helplessness, shame, fear, and avoidance. An interesting questionnaire survey study (Ginsberg, 2000) correlated shame and social anxiety in PWS with stuttering dimensions such as struggle in speaking, expectancy of speech difficulty, and avoidance of speaking, as measured by the Perception of Stuttering Inventory (PSI; Woolf, 1967). The author suggested that social emotions could be a valid predictor of whether a PWS would use more compensatory strategies of struggle, expectancy and avoidance to deal with anticipated speaking difficulty. In another study, with the help of a mathematical model, the authors suggested that PSI results could indicate a PWS' development of responses to stuttering with each stage containing more shame-related avoiding behaviors and fewer guilt-related struggling behaviors (Kalinowski, Kalinowski, Stuart, & Rastatter, 1998).

Social emotions are often an integral part of stuttering treatment. One of the most influential stuttering treatment programs, Van Riper's stuttering modification and its derivations, put emphasis on reducing shame, low self-esteem, fear, and anxiety, etc., in PWS (Blomgren, Roy, Callister, & Merrill, 2005; Leahy, 2008; Van Riper, 1982). Negative social emotions, especially shame and guilt, are hypothesized to play a role in regulating the patient's or her/his caregiver's decision-making of seeking professional help (Daniels, Hagstrom, & Gabel, 2006; Plexico, Manning, & Dilollo, 2005; Plexico, Manning, & Levitt, 2009a; 2009b).

However, there is a lack of empirical research that focuses on stuttering and social emotions, especially shame and guilt. Both shame and guilt are negative, powerful, and self-conscious emotions, and they are frequently related to stuttering experience by PWS,

researchers, or clinicians (see above discussion). Shame seems to appear more frequently than guilt in the narratives of PWS (Corcoran & Stewart, 1998). However, the two terms have been used in an ambiguous, usually interchangeable manner, by both lay persons and researchers. For example, Merriam-Webster's 11th Collegiate Dictionary defines shame as "a painful emotion caused by consciousness of guilt, shortcoming, or impropriety." In some recent reports, shame and guilt were not clearly defined or differentiated (Daniels et al., 2006; Plexico et al., 2005; Plexico et al., 2009a; 2009b).

Recent empirical research in social-personality has provided a relatively clear demarcation of the two emotions: Shame is more about the core self, whereas guilt is more about specific acts (Lewis, 1995; Rusch et al., 2007; Tangney & Dearing, 2002; Tangney, Stuewig, & Mashek, 2007; Tracy & Robins, 2006). With the focus on self, shame is considered the more painful emotion, making one to feel powerless and worthless, defend one's core self by hiding, and reducing motivation. Guilt is considered less painful, leading one to remorse and regret, making one to struggle, and strengthening motivation to make reparative efforts (Tangney & Dearing, 2002). In the field of stuttering, some workers had suggested that stuttering is capable of altering one's self-image and identity (Van Riper, 1982), which is probably the consequence of shame rather than guilt, although empirical evidence is needed for this notion.

By definition, social emotions are cultural. Naturally, one may wonder what the interaction of stuttering, social emotion, and culture looks like. There is a paucity of research in the social-personality literature about the cultural difference in social emotions; in the stuttering literature, the relevant reports were limited and inconsistent. In an interesting report, Leith and Mims (1975) reported that African-American PWS possess more covert stuttering behaviors compared to Caucasian PWS, and posited that the difference is caused by the higher level of social pressure to African-American PWS. This difference in stuttering behaviors between Caucasian and African-American PWS was not observed by others (Olsen, Steelman, Buffalo, & Montague, 1999). However, the oral tradition and the high influences from church and community in the African-American society might suggest a high social pressure on PWS (Battle, 2002), which may provide ground for the argument that there is a high level of shame- and guilt-proneness related to stuttering in the African-American society.

To study shame and guilt as related to stuttering, one of the first questions to ask is "Are PWS more prone to feel

ashamed, or guilty?" The degree to which an individual is prone to feel ashamed or guilty is determined by a complicated interaction of self and the others (Tangney et al., 2007). The attitudes, behaviors, and verbal expressions of the others, or the listeners as opposed to PWS, have a strong impact on one's social emotions. Another important question to ask is the role of culture. Are PWS living in a specific culture more prone to shame and/or guilt? Will these differences in shame and guilt cause different patterns in the development of stuttering? Questions like these are inevitable when investigating stuttering in the cultural context, since culture has significant impacts on an individual's value system, attitudes, and behaviors (Chiu & Hong, 2006).

As a preliminary study of shame, guilt, and stuttering, the current study set out to investigate PWS' shame- and guilt-proneness in the eyes of the others, the normally fluent listeners, from Caucasian American and African-American groups. The two groups are among the majority and the biggest minority populations in North America, and data from these groups might provide a general depiction of the listeners that a PWS encounters in daily basis. Specific research questions included: 1) Do normally fluent listeners perceive PWS have stronger shame- and guilt-proneness than themselves? 2) Do African-American and Caucasian groups differ in their perception of PWS' shame- and guilt-proneness? And 3) Is there an interaction of fluency and race for the perceived shame- and guilt-proneness? It was predicted that PWS were perceived as being more prone to shame, but not guilt, than listeners, as implied by previous analysis of PWS' narratives (Corcoran & Stewart, 1998; Daniels et al., 2006). For questions two and three, previous research was inadequate, and results were inconsistent (see previous discussion); hence, a null hypothesis was used.

Results from this study may have important clinical and social implications. The involvement of shame and guilt may offer, at least partially, explanations for PWS' stuttering dimensions (e.g., struggling and avoidance), their motivations to seek therapy, and their effort to maintain fluency techniques. Results could shed light on the pervasively negative social consequences to PWS. In other words, whether listeners see stuttering as something that a PWS sometimes does or something that is innate to a PWS, whether listeners believe that a PWS should feel guilty or ashamed for his/her stuttering, could affect listeners' attitude and perceptions toward PWS, and consequently change the way listeners treat PWS. Furthermore, information garnered from this study could be used by stuttering help groups for better public education, especially regarding the emotional aspect of stuttering as involved in its development and treatment.

Method

The current study used the Test of Self-Conscious Affect-Version 3 (TOSCA-3; Tangney, Dearing et al. 2000), a scenario-based self-report questionnaire that measures six social emotions, including shame, guilt, externalization, detachment/unconcern, alpha pride ("pride in self"), and beta pride ("pride in behavior"; Tangney, Dearing et al. 2000). It has 16 questions, and for each scenario question, there are four to five possible responses that reflect different social emotions. Shame and guilt are included in each scenario, but not the other emotions. Participants are requested to rate all of these responses on a 5-point scale (1=not likely and 5=very likely) indicating their likeness to react in that way. For example, one question says "You break something at work and then hide it." An indication of guilt is measured by the choice "You would think: 'This is making me anxious. I need to either fix it or get someone else to.'" Another choice "You would think about quitting" measures guilt.

TOSCA-3 has been frequently used in social-personality studies and its validity and reliability are well documented (Tangney & Dearing, 2002). For the purpose of this paper, although descriptive results of all emotions are displayed, only shame and guilt are discussed. Recent reports suggested that the internal consistency of the shame and guilt scales might be an issue, especially for guilt (Rusch et al., 2007).

Participants were 62 African-American and 60 Caucasian college students in a Southeast city of USA. They were recruited either in their class or by word of mouth (i.e., snowballing procedures). No incentives, for example, monetary reward or extra credit, were given for their participation. To be included, participants needed to self-report that they 1) were of either Caucasian/White race, or African-American/Black race; 2) were at least 18 years of age; 3) were born in the United States; 4) had never received treatment from speech language pathologists or audiologists; or 5) had never been diagnosed or labeled with a cognitive/communicative disorder or impair. The research protocol was approved by the University IRB. Informed consent was obtained before the administration of the questionnaire.

Each racial group was divided into two subgroups: FLU (those who took their own identity as normally fluent individuals) and STU (those who took a PWS' identity). The African-American FLU group had 22 females and 9

males (age mean = 20.97, range = 18-34, SD = 3.71), and the African-American STU group had 19 females and 12 males (age mean = 21.06, range = 18-45, SD = 4.78). The Caucasian FLU group had 20 females and 10 males ((age mean = 29.23, range = 18-49, SD = 8.20), and the Caucasian STU group had 26 females and 4 males (age mean = 26.53, range = 18-50, SD = 10.32).

Upon being briefed about the study, participants were requested to complete the TOSCA-3 assuming either their own identity, or the identity of a PWS. Those who assumed the PWS identity watched three video segments of stuttering speech before completing the questionnaire. Detailed descriptions of the video segments were reported elsewhere (Zhang & Kalinowski, 2012). In short, each video segment was 30 s in length, and contained the head-to-shoulder profile of a Caucasian adult male, who demonstrated moderate-to-severe stuttering behaviors, including primary behaviors such as syllable repetitions, sound prolongations, and silent blocks, along with ancillary behaviors such as lip protrusion, eyes blinking, and facial grimaces, while reading aloud scripted text. The videos were presented to the participants either on a television set, or a 13 inch MacBook screen with a pair of ear buds for individual student. The volume was set at comfort level.

Results

In accordance with scoring instructions of the TOSCA-3 (Tangney et al. 2000), scale responses for each emotion were summed. Because of the purpose of this study, only shame- and guilt-related questions were included for analysis. The means and standard errors of the mean (SEMs) of the responses are displayed in Figure 1. Unlike standard deviation, which measures the variability of a sample, SEMs provide an estimation of the sample mean.

Two-way ANOVA was conducted using IBM SPSS (version 19) with race (Caucasian and African-American) and fluency status (FLU and STU) as factors for each emotion. Significance level was set at p = .05. Fluency exerted significant influence on shame, $F(1, 118)$ = 17.44, $p < .001$, η^2 = .129, and ϕ = .985, but not guilt. The race effect was observed in both shame and guilt [for shame, $F(1, 118)$ = 15.81, $p < .001$, η^2 = .118, and ϕ = .976; for guilt, $F(1, 118)$ = 25.51, $p < .001$, η^2 = .178, and ϕ = .999]. No significant effect was observed for the interaction of group and fluency. Here, the effect size was estimated by the partial η^2, which measures the proportion of the total variance attributable to a particular factor. The benchmarks to define small, medium, and large effect sizes are values of partial η^2 of .0099, .0588, and .1379, respectively (Richardson, 2011).
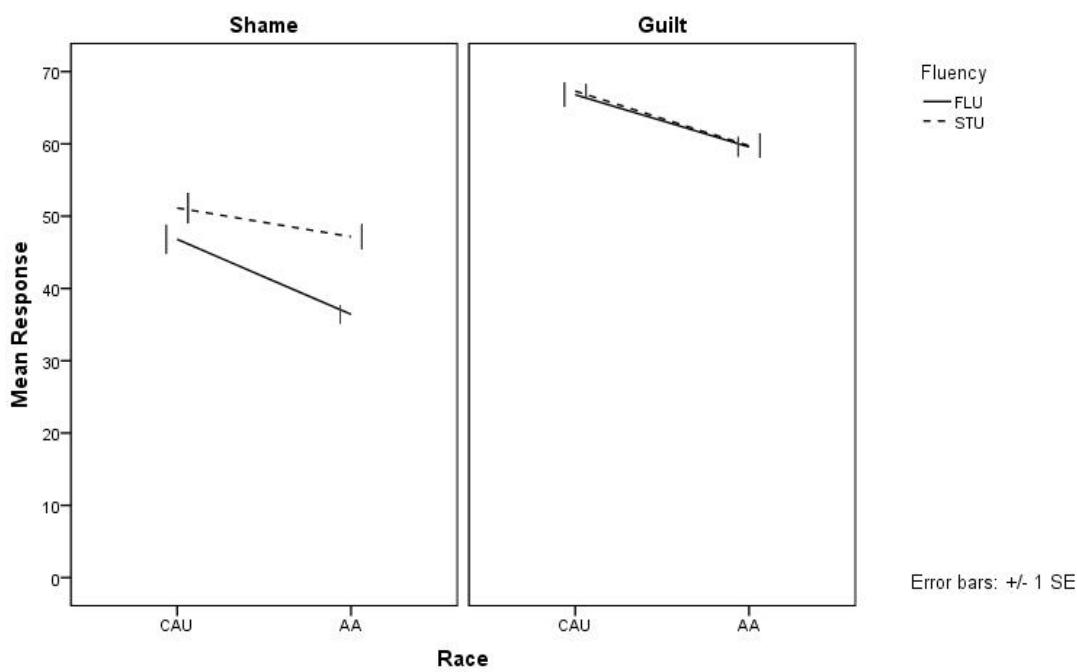

Figure 1: Means and SEM of African-American and Caucasian college students' perception of shame- and guilt-proneness of people who stutter and normally fluent individuals (FLU = fluent; STU = stutter; CAU = Caucasian; AA = African-American).

Internal consistency was good for both shame and guilt scale: For shame, Cronbach's alpha = .83 for both STU and FLU groups; for guilt, Cronbach's alpha = .82 for STU group and .80 for FLU group (Bland & Altman, 1997).

Discussion

The current study investigated college students' perception of shame- and guilt-proneness of PWS. The main findings are threefold. Firstly, both African-American and Caucasian participants perceived PWS as being more prone to shame compared to normally fluent individuals. Secondly, Caucasian participants scored higher on both shame- and guilt-proneness measures when compared to African-American participants. Thirdly, no significant interaction effect was found by fluency and race.

It is interesting to see that in listeners' eyes, stuttering is related to heightened possibility of feeling ashamed, but not guilty. This finding is important in that it illustrates listeners' conceptions of the nature and impact of stuttering. Social emotion researchers generally agree that shame relates to the stable, uncontrollable, and global self, whereas guilt is about a behavior or action that is specific, unstable, and controllable (Lewis, 1995; Tangney & Dearing, 2002; Tangney et al., 2007; Tracy & Robins, 2006). In this sense, results suggest that stuttering is tightly related to shame because stuttering is perceived as an internal, inseparable component of self that defines a PWS; stuttering is not as much related to guilt because stuttering is not perceived as an isolated speech act that happens haphazardly. This conception has a certain degree of truth considering the biological factors of stuttering supported by genetic studies (Fedyna, Drayna, & Kang, 2011; Kang et al., 2010; Raza, Riazuddin, & Drayna, 2010) and twin studies (Dworzynski, Remington, Rijsdijk, Howell, & Plomin, 2007), along with the proposed involuntary and persistent nature of stuttering for adult PWS (Bloodstein & Bernstein-Ratner, 2008; Kalinowski & Saltuklaroglu, 2006; Perkins, 1990). However, this conception neglects some important facts about stuttering. For example, a PWS' stuttering severity oftentimes fluctuates; even for a severe PWS, most of his/her speech contains fluent utterances; and, generally, stuttering does not have negative impact in one's motor abilities, language development, personality traits, and ability to perform at work, etc. (Bloodstein & Bernstein-Ratner, 2008; Van Riper, 1982). When listeners tend to think that PWS "should" feel ashamed for their stuttering, they may see PWS as having reduced self-worth and react to the PWS in a way that influences the PWS to feel less self-worth, and many negative consequences for PWS ensue. However, why listeners generally think

that stuttering is more related to the core self remains unanswered. One hypothesis is that listeners may share emotional fluctuations with PWS at moments of stuttering (Guntupalli, Everhart, Kalinowski, Nanjundeswaran, & Saltuklaroglu, 2007; White & Collins, 1984), that when a PWS struggles to utter the sound, he/she demonstrates negative emotional responses, and suffers from the damaged self, and so will the listeners. Future research is needed for support of this hypothesis.

These findings suggest that future research to determine the extent to which PWS experience shame- and guilt-proneness is needed. If PWS are shown to experience greater shame-proneness, such a finding would provide a theoretical frame to understand the development of the psychological and emotional consequences of stuttering. As previously discussed, PWS usually develop numerous avoidance strategies to "hide" from difficult speaking situations (Bloodstein & Bernstein-Ratner, 2008) and are emotionally and psychologically distressed by stuttering (Sheehan, 1958). Considering the differential influences of shame and guilt on motivation (i.e., guilt may lead to one's reparative efforts to amend the fault, and shame often motivates one to deny, hide from, or escape the shame-inducing situations; see previous discussion), one might infer that these behavioral, emotional, and psychological responses are consequences of stuttering's perceived impact on the global self (e.g., "I am a stutterer."), rather than specific behavior (e.g., "I just stutter sometimes."). Stuttering help groups and clinicians have intuitively employed the differential roles of shame and guilt on PWS' motivation for seeking therapy and maintaining fluency in their public education campaigns and treatment, respectively, for a long time. That is, although they used the pair of words in an interchangeable way, their work focuses more on separating stuttering from "me," that "me" is not a stutterer, but a person who stutters, and does so only sometimes. Findings from this study that listeners tend to see PWS as more shame-prone than guilt-prone offer a solid ground for their activities. Stronger evidence to support these activities will come from future research, if PWS are found to show greater proneness to shame than guilt.

Cultural difference was observed in perceptions of both shame- and guilt-proneness. Contrary to expectation, African-American participants assigned weaker proneness to shame and guilt to both themselves and PWS. However, because the social-personality literature has a poor coverage of racial-cultural variance, a functional explanation for this observation has yet to be discovered. Furthermore, no significant interaction effect of fluency by race was found, which did not agree

with the notion that African-American community puts a higher pressure on PWS (Leith & Mims, 1975), but was in accordance with other reports, which did not find a significant difference in the stuttering behaviors between African-American and Caucasian PWS (Olsen et al., 1999).

Future studies are needed to investigate both adult and young PWS' social emotion proneness, and parents' perceptions of social emotion in PWS. These studies will provide good descriptions of the role of social emotions for both PWS and their parents in the development of stuttering. Future research should also to correlate PWS' shame- and guilt-proneness to their stuttering behaviors. By correlating behaviors to their social emotion proneness, a better understanding of stuttering development, both psychologically and behaviorally, would be achieved.

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Authors' Note

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Évaluation de l'utilisation et de la réceptivité pour la vidéoconférence par internet chez les intervenants et les gestionnaires d'un programme de réadaptation pour adultes sourds gestuels

Assessing the Use, and Readiness for Internet Videoconferencing With Practitioners and Administrators of a Rehabilitation Program for Signing Deaf Adults

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En 2010, un service de vidéoconférence par Internet a été implanté dans le but d'améliorer les télécommunications non thérapeutiques entre les intervenants et les usagers adultes sourds gestuels dans un programme de réadaptation en déficience auditive. Afin de documenter l'utilisation de ce service, une étude pilote a été réalisée pour répondre aux objectifs suivants : 1) décrire l'utilisation du service par les intervenants du programme pendant la première année, 2) évaluer la réceptivité à ce service et 3) décrire les barrières à l'implantation du service, du point de vue des intervenants et des gestionnaires. Un devis prospectif, non expérimental, exploratoire et descriptif a été déployé auprès d'un groupe de participants comprenant 10 intervenants et 5 gestionnaires. Des données quantitatives d'utilisation de la vidéoconférence ont été recueillies mensuellement sur les trois postes informatiques dédiés au service. Un an après l'implantation du service, les questionnaires *Évaluation de la réceptivité face à la télésanté (praticien) et Évaluation de la réceptivité face à la télésanté (organisation)* ont été administrés et des entrevues semi-dirigées ont été réalisées. Les résultats mettent en évidence une utilisation limitée du service de vidéoconférence. La faible réceptivité apparaît liée au besoin apparemment restreint de ce moyen de communication pour les intervenants et les usagers, au soutien financier disponible pour en supporter l'utilisation et à la méthode de déploiement du service auprès de la clientèle. Néanmoins, le service a été jugé pertinent et utile par les intervenants, qui se montrent tous en accord pour son maintien.

Abstract

In 2010, an Internet videoconferencing service was implemented in order to enhance non-therapeutic telecommunications between practitioners and signing deaf adult users in a rehabilitation program for the Deaf. In order to document the use of that service, a pilot study was carried out to: 1) describe the use of the service by the program's practitioners during the first year; 2) evaluate the readiness to that service, and 3) describe the barriers to the implementation of the service, from the point of view of the practitioners and the administrators. A prospective, non experimental, exploratory and descriptive research design was used with a group of participants comprised of 10 practitioners and 5 administrators. Quantitative data on the usage of videoconferencing were collected on a monthly basis on the three computers that were dedicated to the service. One year after the implementation of the service, the questionnaires *Practitioner Telehealth Readiness Assessment Tool* and *Organizational Telehealth Readiness Assessment Tool* were administered, and semi-structured interviews were conducted. The results highlight a limited use of the videoconferencing service. The low readiness seems to be linked to the apparently restricted need for this means of communication for both practitioners and users, to the financial support available to support its use, and to the way the service was deployed with the clientele. However, the service was deemed relevant and useful for the practitioners, who all agree it should be maintained.

Au Québec, environ 850 000 personnes présentent une surdité irréversible pouvant induire des incapacités auditives, soit 10,67 % de la population (Shewan, 1990; Statistique Canada, 2012). De ce nombre, environ 6 %, soit 49 500 individus tous âges confondus, présentent une surdité de degré sévère à profond. Parmi ce groupe, entre 2 300 et 7 500 individus utiliseraient la langue des signes québécoise (LSQ) comme mode de communication principal, selon une estimation effectuée à partir des données de la plus récente enquête québécoise sur la participation et les limitations d'activités (Camirand et al., 2010), de l'étude de Mitchell, Young, Bachleda et Karchmer (2006) rapportant le nombre d'utilisateurs de la langue des signes américaine aux États-Unis ainsi que de celle de Johnston (2004), qui a fait de même avec la langue des signes australienne, en Australie.

Les communications téléphoniques avec les personnes sourdes se font par appareil de télécommunication pour les sourds (ATS). L'ATS permet de communiquer du texte écrit via une ligne téléphonique standard à l'aide d'un clavier QWERTY et d'un modem intégrés. Ce type de communication présente toutefois des limites pour les personnes sourdes : durée de la communication allongée, des mots parfois mal transmis, tronqués ou dont les lettres sont mélangées, écran ou texte affiché trop petit, conversation moins naturelle et problèmes de compatibilité avec les ordinateurs, les lignes téléphoniques numériques, les téléphones publics et le téléphone cellulaire (Bergevin, 2003; Bowe, 2002; Dubuisson & Daigle, 1998; Dubuisson, Machabée, & Parisot, 1997; Eureka Strategic Research, 2005; Hotton, 2004; Lane, Hoffmeister, & Bahan, 1996). Également, la transmission de texte dans une seule direction à la fois ne permet pas d'interrompre la conversation ou de débuter une réplique avant que l'émetteur ne laisse de lui-même le tour de parole (Bowe, 2002). De plus, un grand nombre de personnes sourdes dont la langue signée est le principal mode de communication éprouvent des difficultés persistantes à utiliser la langue écrite (Dubuisson & Daigle, 1998; Dubuisson et al., 1997; Nadeau, Vercaingne-Ménard, Dubuisson, Leclerc, & De Maisonneuve, 1994).

Les intervenants de l'Institut de Réadaptation en déficience physique de Québec (IRDPQ), qui dessert environ 400 adultes sourds gestuels (IRDPQ, 2009), rapportent devoir composer quotidiennement avec les limites de l'ATS lors de leurs communications à distance avec la clientèle. En plus des conversations prolongées, ces limites induisent de multiples contacts pour éclaircir un message ou compléter l'information, des incompréhensions amenant toutes sortes de situations désagréables (arriver en retard ou ne pas venir à un rendez-vous, comprendre l'inverse du message, sentiment d'incompréhension de la part de l'usager, frustration et colère) ou rendant nécessaire de prendre un rendez-vous en personne pour éclaircir une situation, exigeant même parfois que l'intervenant se déplace en dehors de l'établissement pour aller rencontrer l'usager dans son milieu, d'où une perte de temps, d'énergie et d'efficacité.

Ainsi, le recours à d'autres moyens de télécommunication correspondant davantage à la réalité des usagers sourds gestuels pourrait permettre d'améliorer les communications à distance entre ces usagers et les intervenants. À cet égard, la vidéoconférence par Internet apparaît très intéressante (Bergevin, 2003; Deaf Australia Online Consortium, 2001; Power & Power, 2009). De fait, il est possible de communiquer à distance en utilisant un ordinateur personnel, muni d'une caméra web et d'un logiciel de vidéoconférence, relié à une connexion Internet à haut débit. Dans une étude récente, Vincent, Bergeron, Hotton et Deaudelin (2010) ont évalué l'efficacité de cinq technologies de télécommunication auprès de 30 personnes sourdes gestuelles âgées de 19 à 65 ans (moyenne = 50,4 ± 11,9 ans) dans un contexte de laboratoire. L'efficacité communicationnelle de l'ATS a été comparée à celle de quatre systèmes de vidéoconférence par Internet, soit les logiciels Omnitor Allan eC, Polycom ViaVideo II et Microsoft Windows Live Messenger ainsi que le vidéophone D-Link DVC-1000. Les résultats de cette étude suggèrent que l'utilisation de la LSQ avec des systèmes de vidéoconférence par Internet permet une communication à distance plus efficiente que l'usage du français écrit avec le téléscripteur et la ligne téléphonique standard pour les personnes sourdes gestuelles qui désirent communiquer entre elles, même lorsque le dispositif de vidéoconférence utilisé n'a pas été développé spécifiquement pour cette clientèle.

Plusieurs logiciels de vidéoconférence conçus pour le grand public, dont plusieurs sont disponibles gratuitement sur le Web, auraient donc le potentiel de supporter plus efficacement les communications à distance entre les personnes sourdes gestuelles et les intervenants de réadaptation. La communication à distance dans une langue des signes via l'une de ces technologies pourrait ainsi devenir une alternative à l'usage de l'ATS en mode écrit pour ces personnes. Or, peu d'études se sont penchées sur l'utilisation des systèmes de vidéoconférence par Internet chez ces populations en situation réelle, particulièrement dans ce contexte de communication non thérapeutique. Par

ailleurs, les facteurs pouvant influencer l'utilisation de la vidéoconférence par les intervenants et leurs usagers sourds, dont la réceptivité face à la technologie, semblent également méconnus.

Recension des écrits

Une consultation des bases de données Medline, Embase, CINAHL et PsycINFO a été complétée en septembre 2013 dans le but d'identifier la littérature pertinente en lien avec la problématique énoncée ci-haut. Les mots-clés *deaf, distance communication, telecommunication, videoconferencing* et readiness ont été utilisés et combinés à l'aide d'opérateurs logiques de la manière suivante : deaf AND (telecommunication OR videoconferencing OR "distance communication" OR readiness). Aucune limite de temps n'a été spécifiée. Parmi les 401 titres identifiés grâce à cette consultation, 17 articles traitent de l'utilisation de la vidéoconférence par des personnes sourdes gestuelles, dont 9 dans un contexte de télé-intervention en santé (télésanté) (Berry & Stewart, 2006; Hopkins, Keefe, & Bruno, 2012; Houston & Stredler-Brown, 2012; Johnson, 2004; Lopez et al., 2004; McCarthy, 2010; McCarthy, Munoz, & White, 2010; Simmons, 2012; Wilson & Wells, 2009), cinq dans le domaine de l'éducation à distance (Bruce, 2012; Clymer & McKee, 1997; Erath & Larkin, 2004; Stryker, 2011; Wilson, 2007) et trois dans un contexte de communication quotidienne (Gotherstrom, Persson, & Jonsson, 2004; Power & Power, 2009; Power & Power, 2010). Aucune étude traitant de l'utilisation de la vidéoconférence par des personnes sourdes et leurs intervenants dans le domaine de la santé dans un contexte de communication non thérapeutique n'a pu être identifiée. De plus, aucun article à propos de la réceptivité face à la télésanté d'intervenants oeuvrant auprès de personnes sourdes gestuelles n'a été retracé.

Les articles recensés portant sur l'utilisation de la vidéoconférence avec les personnes sourdes gestuelles dans un contexte de télésanté suggèrent que cette technologie permettrait de mener des interventions à distance avec succès. Par exemple, une étude de cas a montré qu'un patient sourd ayant pu communiquer avec un psychiatre via la vidéoconférence, avec l'aide d'un interprète ASL (American sign language), a vu son état de santé psychiatrique s'améliorer à la suite de l'intervention (Lopez et al., 2004). Les résultats d'une autre étude (Wilson & Wells, 2009), menée auprès de 55 jeunes adultes sourds âgés de 29 ± 7,37 ans, suggèrent qu'une intervention de psychoéducation réalisée par vidéoconférence a permis de diminuer les symptômes

de dépression chez les participants. Par ailleurs, des réseaux de vidéoconférence à des fins de télésanté à l'intention des personnes sourdes gestuelles ont été développés au Maine (Hopkins et al., 2012), en Utah (Johnson, 2004) et en Colombie-Britannique (Simmons, 2012). Ces auteurs rapportent que la vidéoconférence y est utilisée notamment pour mener des consultations et interventions professionnelles à distance, pour offrir du support et de la formation aux parents et enseignants d'enfants sourds ainsi que pour l'interprétation à distance. L'utilisation de la vidéoconférence permettrait ainsi d'offrir des services à une population habitant en région éloignée, qui autrement ne pourrait pas être desservie.

L'étude de Power, Power & Horstmanshof (2007), réalisée auprès de 172 adultes sourds gestuels de l'Australie, illustre bien la diversité des outils de télécommunication utilisés par les personnes sourdes gestuelles. Les résultats de ce sondage ont révélé que 94 % des répondants utilisent les SMS, 89 % l'ATS et 74 % le télécopieur, alors que 91 % ont dit avoir accès à un ordinateur à la maison ou au travail. Les SMS seraient favorisés pour les interactions sociales et personnelles, alors que l'ATS (via le service de relais) serait davantage utilisé pour les communications plus longues avec des personnes entendantes ou pour obtenir des services. Le télécopieur et le courriel serviraient quant à eux pour des contacts professionnels et sociaux. Ce sondage a été reproduit en Europe (Power, Power, & Rehling, 2007), auprès de 102 répondants, provenant majoritairement d'Allemagne, et dont environ la moitié utilisait la langue des signes allemande comme mode de communication principal. Dans ce deuxième sondage, 96 % des répondants ont dit utiliser les SMS, 23 % l'ATS et 56 % le télécopieur, alors que 69 % ont dit avoir accès à un ordinateur à la maison ou au travail. En Allemagne, les SMS sont aussi utilisés pour les interactions sociales et personnelles, mais également pour le travail, pour des besoins fonctionnels (ex. appeler une remorqueuse ou un taxi) ou en situation d'urgence. La principale différence entre les résultats obtenus en Australie et en Allemagne est le plus faible niveau d'utilisation de l'ATS en Allemagne, ce qui a été attribué par les auteurs à l'absence de service de relais en Allemagne au moment de la réalisation de l'étude.

Selon ces deux études, la technologie de télécommunication qui serait la plus utilisée par les personnes sourdes en Australie et en Allemagne serait les SMS. Cette tendance serait expliquée du fait que les SMS permettent aux personnes sourdes de communiquer avec leurs amis, leur famille, leurs collègues de travail

ainsi qu'avec des entreprises ou services, entendants ou sourds, en utilisant la même fonction que tout utilisateur de téléphone portable (Power & Power, 2004).

Selon Jennett, Yeo, Pauls et Graham (2003), la réceptivité serait un facteur clé pour le succès à long terme de l'implantation d'initiatives liées à la télésanté. La réceptivité existe lorsqu'une organisation et ses membres sont prêts à accepter un changement de pratique. Elle comporte plusieurs facettes reliées notamment à la planification ainsi qu'à l'environnement technique et humain dans lequel est utilisée la télésanté. Ainsi, la planification de l'implantation de la télésanté devrait inclure les étapes suivantes : l'établissement d'un plan stratégique, une évaluation et une analyse des besoins impliquant la clientèle et les intervenants, l'élaboration d'un plan d'affaires pour assurer un financement adéquat du service ainsi que l'identification de promoteurs de la télésanté dans l'organisation (leaders aux niveaux clinique et administratifs) qui agiront comme moteurs de développement et d'utilisation. Une planification méticuleuse de l'implantation de la technologie favorisera son adoption, son utilisation et sa pérennité. D'autres facteurs pouvant favoriser le succès de l'implantation de la télésanté ont aussi été identifiés par ces auteurs, en lien avec la réceptivité du milieu de travail: la préparation et la formation adéquates du personnel, la communication et son implication dès les premières phases de l'implantation de la télésanté permettront d'augmenter la réceptivité face à la nouvelle pratique ; un coordonnateur de la télésanté qui connaît bien la technologie pourra aider ses collègues qui sont moins habitués à l'utiliser (coaching et transfert de connaissances) ; la gestion du changement de pratique dans l'organisation diminuera les résistances de la part des intervenants et gestionnaires ; un soutien technique et des équipements fiables, accessibles et faciles à utiliser ; la mise en place de politiques organisationnelles spécifiques à la télésanté.

Jarvis-Selinger, Chan, Payne, Plohman & Ho (2008) ont réalisé une revue de littérature exhaustive sur 225 articles traitant de la télésanté; ils précisent les conditions techniques minimales nécessaires pour permettre une communication à distance de bonne qualité, telles les vitesses de connexion requises, le placement des équipements et l'aménagement des locaux où sont utilisés les équipements de télésanté. Ils ajoutent aussi que l'élaboration de protocoles clairs pour l'utilisation des équipements de télésanté améliore le niveau de préparation des intervenants, ce qui favorise l'adoption et l'utilisation de la technologie

Bien que la réceptivité face à la télésanté d'intervenants ou d'organisation œuvrant auprès de personnes sourdes gestuelles ne semble pas avoir été spécifiquement étudiée à ce jour, les travaux d'Austen et McGrath (2006a, 2006b) suggèrent certaines pistes à ce sujet. Ces auteurs se sont intéressés à l'utilisation de la vidéoconférence par le personnel de cliniques offrant des services de santé mentale à des personnes sourdes gestuelles. Cent trente-quatre intervenants, âgés de 16 à 65 ans, provenant de cinq centres de santé du Royaume-Uni ont répondu à un sondage visant à documenter l'accessibilité, les motifs d'utilisation, les bénéfices et les limites de la vidéoconférence. Les résultats montrent que la majorité des répondants connaissent l'existence du dispositif de vidéoconférence dans leur clinique et qu'ils peuvent y avoir accès en moins de 30 minutes. Toutefois, seulement 12 % des participants ont mentionné l'avoir déjà utilisé. Parmi les motifs d'utilisation les plus fréquemment mentionnés, on retrouve les discussions de cas et les réunions administratives; seulement un intervenant a mentionné avoir utilisé la vidéoconférence avec un usager. Les participants ont rapporté les bénéfices suivants de la vidéoconférence : une meilleure communication, une communication en mode visuel, une économie de ressources et un accès plus facile aux personnes se trouvant à distance de la clinique, notamment en raison de déplacements qui peuvent être évités. Les auteurs disent que les limites de la vidéoconférence qui ont été identifiées par les répondants s'apparenteraient davantage à des craintes ou à une forme d'anxiété face à ce qui pourrait éventuellement se produire lors d'une vidéoconférence plutôt qu'à de réelles embûches s'étant produites, comme par exemple la crainte que la confidentialité des échanges ne soit compromise, la crainte de ne pas pouvoir percevoir une information non verbale ou une détresse importante chez le patient qui aurait pu être notée lors d'une entrevue en face-à-face, la crainte que des problèmes techniques ou de sécurité informatique ne surviennent ou encore le malaise de l'intervenant d'être filmé. Ces craintes mèneraient plusieurs participants à s'interroger à propos du caractère approprié ou non de l'utilisation de la vidéoconférence auprès des usagers sourds, dans leur contexte d'intervention en santé mentale. Les auteurs concluent que les intervenants consultés utilisent peu la vidéoconférence et que des mesures devraient être prises pour favoriser son utilisation, comme par exemple donner plus de formation et de temps d'entraînement aux intervenants pour diminuer les craintes y étant liées.

En somme, aucune étude n'a traité à ce jour de l'utilisation de la vidéoconférence pour la communication

à distance dans une langue des signes dans les services de santé à des fins non thérapeutiques. De plus, la réceptivité des utilisateurs à ce type de service n'a pas été évaluée. Il apparait donc pertinent de se pencher sur l'utilisation et la réceptivité des utilisateurs d'un service de vidéoconférence par Internet ayant été mis en place pour permettre l'utilisation de la LSQ dans les télécommunications non thérapeutiques entre les intervenants et les usagers adultes sourds gestuels. À cet égard, la présente étude avait pour objectifs de (d') : 1) décrire l'utilisation du service par les intervenants pendant la première année, 2) évaluer la réceptivité face à ce service du point de vue des intervenants et des gestionnaires ; et 3) identifier les obstacles à l'implantation du service.

Méthodologie

Devis de recherche

Un devis prospectif, non expérimental, exploratoire et descriptif a été déployé. Pour l'objectif 1, les données d'utilisation ont été extraites des ordinateurs dédiés à la vidéoconférence pendant un an, alors que pour les objectifs 2 et 3, la collecte a eu lieu un an après la mise en place du service de vidéoconférence par internet, à l'aide de questionnaires et d'entrevues. Le projet a été approuvé par le Comité d'éthique de la recherche de l'IRDPQ (projet # 2010-199).

Service et technologie

En 2010, un service de vidéoconférence par Internet a été déployé pour permettre l'utilisation de la LSQ dans les télécommunications non thérapeutiques entre les intervenants et les usagers sourds gestuels. L'objectif du service était de mettre à la disposition des intervenants et des usagers un moyen complémentaire de communication à distance visant à pallier l'usage du téléphone, au même titre que l'ATS, le télécopieur ou le courrier électronique, dont l'utilisation est déjà bien implantée. Ce service ne visait toutefois pas à fournir aux intervenants un nouvel outil de réadaptation supportant une intervention distante. En ce sens, il ne s'agit pas à proprement parler d'un service de télésanté. En effet, le Réseau universitaire intégré de santé de l'Université de Montréal (2014) définit la télésanté comme « une activité, un service ou un système lié à la santé ou aux services sociaux, pratiqué à distance au moyen des technologies de l'information et des communications, à des fins éducatives, de diagnostic ou de traitement, de recherche, de gestion clinique ou de formation. Toutefois, cette expression ne comprend pas les consultations par téléphone ».

Ainsi, trois postes informatiques munis de caméras web, d'un logiciel de vidéoconférence et reliés à Internet à haute vitesse ont été installés dans les locaux de l'organisation. Ces ordinateurs ont été placés dans des endroits stratégiques et étaient disponibles en tout temps. Tous les intervenants travaillant auprès de la clientèle adulte sourde, soit environ 12 personnes, ont été formés à l'utilisation des équipements et des profils d'utilisateur ont été créés pour chacun d'eux. Ils étaient ensuite libres d'utiliser le dispositif à leur guise pour communiquer avec leurs usagers. L'organisation a publicisé la mise en place du nouveau service auprès des usagers sourds gestuels et des partenaires communautaires œuvrant auprès de cette clientèle. Notamment, des affiches ont été placées dans les différents sites de l'organisation fréquentés par ces usagers, des lettres ont été envoyées aux associations de sourds gestuels de la région de Québec et des annonces ont été publiées dans leurs journaux communautaires; un article a également été publié dans un journal hebdomadaire local s'adressant à un public général (Québec Hebdo, 2010).

Une consultation menée auprès de trois membres très impliqués de la communauté sourde de la région de Québec a permis de sélectionner ooVoo (ooVoo LLC, 2013) comme logiciel de vidéoconférence en raison de son utilisation répandue au sein de la communauté. Ce logiciel présente des caractéristiques similaires au logiciel Windows Live Messenger, qui avait été testé et jugé efficace par Vincent et al. (2010). Un essai préliminaire a montré que la qualité vidéo du logiciel ooVoo permettait une communication efficace à distance en LSQ. Ce logiciel avait aussi été utilisé par Tousignant (2009) ainsi que par le secrétariat du Service régional d'interprétariat de l'Est-du-Québec (2009), qui se disaient satisfaits du rendement offert par ooVoo pour l'efficacité de la communication à distance en LSQ. Ce logiciel est disponible gratuitement sur Internet.

Les trois ordinateurs personnels étaient basés sur le système d'exploitation Microsoft Windows XP. Ils répondaient aux critères de configuration requise suggérée par ooVoo LLC (2009) et étaient munis de caméras web répondant aux normes de l'Union internationale des télécommunications (1999, 2007) pour la transmission d'une langue signée. Ils étaient reliés à une connexion Internet à haut débit. Un poste était situé dans le secrétariat du programme, un deuxième dans le bureau de l'organisateur communautaire et un troisième dans un local d'équipe.

Participants

Les intervenants ont été recrutés lors d'une réunion du personnel œuvrant auprès de la clientèle adulte sourde gestuelle alors que les gestionnaires ont été invités à participer par téléphone.

L'échantillon regroupe dix intervenants et cinq gestionnaires. Le groupe des intervenants comptait neuf femmes et un homme âgés de 23 à 54 ans (moyenne de 37,4 ans). Ils occupaient l'une des fonctions suivantes : travailleur social (n=1), éducateur spécialisé (n=3), audiologiste (n=1), secrétaire (n=2), organisateur communautaire (n=1) et agent d'accueil, d'évaluation et d'orientation (n=2). Ils comptaient en majorité plus de deux ans d'expérience de travail auprès de la clientèle adulte sourde gestuelle et détiennent tous une formation avancée en LSQ, tel que stipulé dans la description de leurs postes. Parmi les cinq gestionnaires ayant participé à l'étude, trois étaient des femmes et deux des hommes; leur âge variait de 36 à 57 ans, avec une moyenne de 46,6 ans. Les gestionnaires sont des professionnels de la santé, mais dont les tâches quotidiennes sont centrées sur la gestion des ressources humaines, techniques et matérielles, l'assurance de la qualité des services et la tenue des plans d'intervention interdisciplinaires.

Procédures

Les données d'utilisation du service de vidéoconférence étaient extraites mensuellement sur les trois ordinateurs dédiés à la visioconférence. À la fin de l'année, les intervenants et les gestionnaires ont complété des questionnaires standardisés évaluant la réceptivité face à la technologie de vidéoconférence. De plus, chaque intervenant a été rencontré individuellement pour réaliser une entrevue semi-dirigée, afin de recueillir les commentaires en lien avec l'utilisation du service et permettre d'identifier les obstacles à son implantation.

Mesures

La fréquence d'utilisation du service, la durée des appels, le nombre d'intervenants et d'usagers ayant utilisé le service ont été compilés en consultant l'historique mensuel des appels de chaque intervenant, sur chacun des trois postes informatiques.

Les versions francophones (Légaré et al., 2010) de deux questionnaires visant à mesurer la réceptivité à l'implantation de services en télésanté (Jennett et al., 2003) ont été auto-administrés. *L'Évaluation de la réceptivité face à la télésanté (praticien)* considère trois thèmes, soit la réceptivité générale, l'engagement et la

réceptivité des infrastructures. Il comprend 17 indicateurs permettant d'établir un score final sur 85. *L'Évaluation de la réceptivité face à la télésanté (organisation)* s'intéresse à quatre thèmes, soit la réceptivité générale de l'organisation, l'engagement et la planification organisationnelle, la réceptivité du milieu de travail et la réceptivité technique organisationnelle; il comprend 28 indicateurs, incluant des questions portant sur les obstacles administratifs, légaux et professionnels, définissant un score total de 140. Les indicateurs des deux questionnaires sont cotés sur une échelle de Likert, de 0 à 5. Un score final entre 81 et 85 au questionnaire de praticiens indique qu'ils sont en bonne position pour utiliser la télésanté, un score entre 61 et 80 montre que certains items peuvent influencer de façon négative l'utilisation de la télésanté et un score entre 0 et 60 soulève l'existence d'obstacles à la réussite de l'implantation de la télésanté. Un score entre 130 et 140 au questionnaire des administrateurs indique que l'organisation est en bonne position pour réussir l'implantation de la télésanté, un score entre 86 et 129 montre que certains items peuvent influencer de façon négative la réussite de l'implantation de la télésanté et un score entre 0 et 85 met en évidence l'existence d'obstacles à la réussite de l'implantation de la télésanté qui doivent être surmontées avant d'aller plus loin dans le processus d'implantation.

Les entrevues semi-dirigées (Fortin, 2010) d'une durée d'environ 30 minutes portaient sur l'expérience d'utilisation du service. Le plan d'entrevue comportait quatre questions sur les motifs d'utilisation ou de non utilisation du service, ses avantages et ses limites, les commentaires reçus de la part des usagers sourds et l'opinion quant au maintien du service. En ce qui a trait aux commentaires reçus de la part des usagers sourds, il n'était pas demandé aux intervenants de questionner formellement leurs usagers à ce sujet, mais plutôt de rapporter les commentaires que des usagers sourds leur auraient transmis spontanément. Un pré-test du plan d'entrevue a été effectué en réalisant l'entrevue auprès d'un utilisateur expérimenté d'un logiciel de vidéoconférence par Internet avec des interlocuteurs sourds. Les entrevues semi-dirigées ont été enregistrées sur bande audio puis transcrites avant d'être analysées selon une approche qualitative inductive (Baker, Wuest, & Stern, 1992; Guba, 1981; Sandelowski, 1986). Le verbatim a ainsi été compilé selon quatre thèmes correspondant aux quatre questions du plan d'entrevue (motifs d'utilisation, avantages et limites, commentaires reçus de la part des usagers sourds et opinion quant au maintien du service). Pour chaque thème, une synthèse du point de vue des intervenants a été complétée.

Résultats

Données d'utilisation extraites des postes informatiques

Au cours de l'année du projet, six intervenants sur dix ont utilisé le service de vidéoconférence à des fins non thérapeutiques au moins une fois, alors que quatre intervenants ne l'ont jamais utilisé. Des six utilisateurs, deux intervenants ont eu recours au service en moyenne plus d'une fois par mois et quatre l'ont fait moins d'une fois par mois. Pendant la durée du projet, les six intervenants sont entrés en contact avec 52 personnes sourdes gestuelles différentes, étant des usagers ou des partenaires œuvrant auprès d'organismes communautaires.

Il y a eu 406 appels de tous types (entrants, sortants, en absence, sortants sans réponse) en cours d'année, en considérant tous les intervenants et tous les postes informatiques. La répartition de ces appels par type et par période d'un mois est présentée à la Figure 1. Quatre-vingt-dix-neuf appels entrants ont été reçus et 107 appels sortants ont été logés par les intervenants au cours de l'année, ce qui constitue un total de 206 appels pour lesquels il y a eu une conversation à distance entre intervenants et usagers.

La répartition des appels de toute l'année par type et par catégorie de professionnel est présentée à la Figure 2. À noter que l'organisateur communautaire a été responsable à lui seul de 253 appels de tous types, dont 137 appels entrants et sortants; cet intervenant a donc réalisé plus de la moitié des appels comptabilisés pendant l'année. En excluant ce sujet, les 5 autres intervenants ayant utilisé le service l'ont fait en moyenne moins de 3 fois par mois (tous les types d'appels confondus); les deux secrétaires ont comptabilisés 101 appels de tous types, contre 52 pour les trois autres intervenants.

La durée moyenne des appels a été de 6 minutes 17 secondes. Seulement deux messages vidéo ont été reçus et quatre messages vidéo ont été envoyés par les intervenants pendant la durée du projet.

Réceptivité des intervenants et des gestionnaires

Les scores moyens (scores partiels et totaux) obtenus au questionnaire « Évaluation de la réceptivité face à la télésanté » pour les groupes des intervenants et des gestionnaires sont présentés à la Figure 3. Afin de faciliter la comparaison entre les groupes, les scores bruts ont été transformés en pourcentage. Les intervenants ont obtenu un score moyen de réceptivité de 52,8 % (score brut moyen de 44,9/85), indiquant qu'il existe des obstacles à la réussite de l'implantation de la télésanté selon les intervenants. Une variabilité assez importante a été observée dans les scores de réceptivité individuels obtenus par chaque intervenant. Pour les intervenants
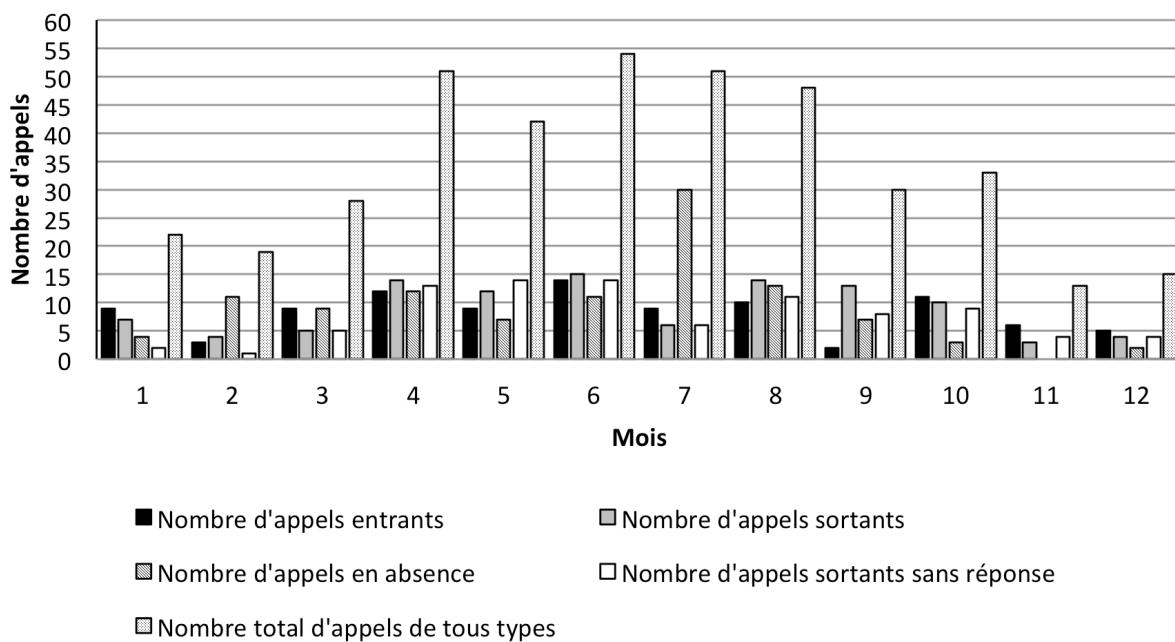

Figure 1. Répartition des appels par type et par période.
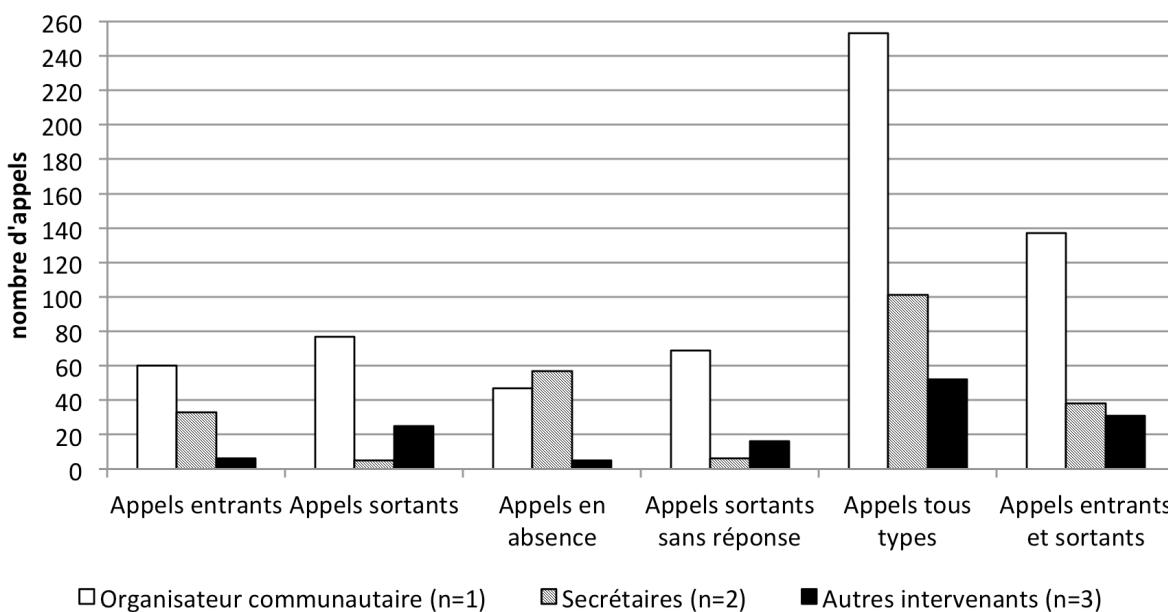
Figure 2. Répartition des appels par type et catégorie de professionnel (1 an).

ayant utilisé le service, le score total de réceptivité varie de 18,8 à 70,6 % (n=6); pour les non utilisateurs, ce score varie de 43,5 à 57,6 % (n=4). Le sujet 6 a quant à lui obtenu un score de 67,1 %, ce qui le classe au troisième rang des participants ayant obtenu le score de réceptivité le plus élevé. Le score moyen de réceptivité des gestionnaires a été de 58,7 % (score brut moyen de 82,2/140), indiquant également la présence d'obstacles à l'implantation de la télésanté. Le score total de réceptivité obtenu par chaque gestionnaire varie de 46,4 à 67,9 % (n=5). Pour le groupe des intervenants, la sous-échelle « réceptivité générale » a obtenu le score le plus faible (38,7 %) alors que la sous-échelle « engagement » est celle ayant obtenu le score le plus élevé (68,0 %). Chez les gestionnaires, la sous-échelle « réceptivité du milieu de travail » (56,0 %) obtient le score le plus faible et la sous-échelle « réceptivité générale de l'organisation » (64,0 %) obtient le score le plus élevé.

Les indicateurs des questionnaires ayant obtenu les scores moyens les plus élevés sont présentés au tableau 1. Ceux ayant obtenu les scores moyens les plus faibles sont présentés au tableau 2. Pour le groupe des intervenants, des items de la sous-échelle « engagement » (items 5, 7, 6 et 10) ont obtenu les scores les plus élevés, variant de 4,0 à 4,5 sur 5, alors que des items des sous-échelles « réceptivité des infrastructures » et « réceptivité générale » (items 13, 16, 15, 1 et 3) les scores les plus faibles. D'autre

part, les gestionnaires ont donné les scores les plus élevés (4,2 sur 5) à des items des sous-échelles « réceptivité générale » et « engagement et planification » alors qu'ils ont attribué les scores les plus faibles (de 1,2 à 2,0 sur 5) à des items des sous-échelles « engagement et planification », « réceptivité technique » et « réceptivité du milieu de travail » (items 15, 17, 26, 20 et 21).

La perception des intervenants face au service

Motifs d'utilisation ou de non utilisation. Au cours des entrevues, les intervenants ont mentionné avoir utilisé le système de vidéoconférence par Internet pour 1) communiquer avec un usager sourd dans le contexte de son suivi de réadaptation, 2) communiquer avec des représentants d'associations de la communauté sourde, 3) répondre à des questions à propos des services offerts par le programme. Les deux participants ayant travaillé au secrétariat du programme rapportent que des personnes sourdes appelaient le secrétariat principalement pour joindre un intervenant de l'équipe ou une employée sourde, tel un service de téléphonie. Ces deux participants disent n'avoir reçu aucun appel visant la prise de rendez-vous avec un professionnel de l'équipe.

Les participants n'ayant jamais utilisé le service de vidéoconférence par Internet en cours d'année ont rapporté ne pas avoir ressenti le besoin de s'en servir ou ne
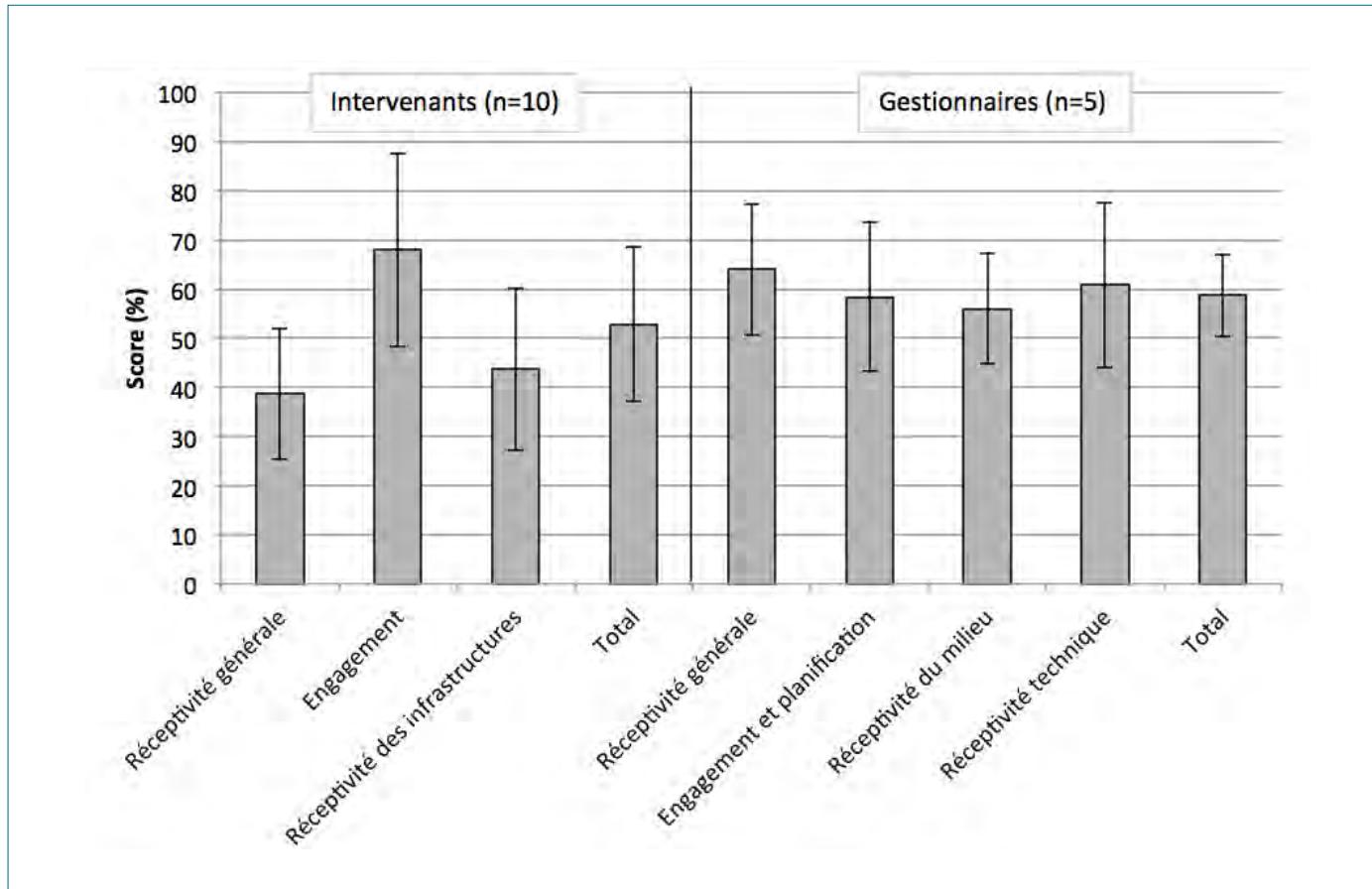
Figure 3. Scores moyens reportés sur 100 au questionnaire « Évaluation de la réceptivité face à la télésanté ».

pas en avoir reçu la demande de la part d'usagers sourds. Certains de ces participants ont dit être satisfaits des moyens de communication écrite actuellement utilisés avec leurs usagers. Il a également été mentionné que le système de vidéoconférence mis en place ne répondait pas nécessairement aux besoins de tous les usagers sourds desservis.

Avantages et limites. Les intervenants ont rapporté plusieurs avantages du service. Tous ceux l'ayant utilisé ont mentionné que la communication avec les usagers sourds via la vidéoconférence par Internet était plus facile, plus claire et plus naturelle, par rapport à la communication par ATS et par courriel. Il était plus simple de comprendre l'usager sourd et de s'assurer qu'il avait bien compris le message. De plus, les intervenants disent que l'utilisation du service de vidéoconférence leur a permis d'économiser du temps et des déplacements. Par exemple, un échange par caméra web en LSQ a pu servir à préciser une conversation ayant eu lieu par ATS entre un intervenant et un usager sourd; sans cette nouvelle technologie, l'intervenant et l'usager auraient dû se rencontrer en personne, ce qui aurait entraîné

des déplacements et donc du temps supplémentaire. Les intervenants ont également dit que l'utilisation du dispositif de vidéoconférence, à la place d'un mode de communication écrit, a favorisé un meilleur contact avec l'usager sourd ainsi que le développement d'une meilleure relation de confiance. Par exemple, la technologie a permis à un intervenant de démontrer ses capacités d'accueil et de communication en LSQ à un nouvel usager sourd qui était réticent à consulter, qui s'est alors senti mieux compris. Un autre intervenant a pu rencontrer la conjointe et les enfants d'un usager grâce au dispositif, ce qui a contribué à la relation de confiance. Enfin, les intervenants pensent que l'implantation du service de vidéoconférence par Internet sert à démontrer une ouverture de l'établissement à la LSQ et à la culture sourde face à la communauté sourde de la région.

Les intervenants ont toutefois mentionné plusieurs limites de ce service. Selon eux, plusieurs usagers sourds n'ont pas accès à un ordinateur avec caméra web branché sur Internet à haute vitesse, soit pour une raison financière, plusieurs usagers sourds présentant une situation socio-économique précaire, soit parce qu'ils ne savent pas

Tableau 1. Items du questionnaire « Évaluation de la réceptivité face à la télésanté » ayant obtenu les scores les plus élevés (≥ 3,8/5)

Item (numéro)	Score (/5)	Sous-échelle
- Intervenants		
Je suis curieux de voir l'influence de la télésanté sur l'amélioration de la prestation des soins de santé (5).	4,5	Engagement
J'ai besoin d'interagir avec d'autres praticiens (7).	4,3	Engagement
J'ai du respect pour les autres dans l'équipe de télésanté (6).	4,1	Engagement
Je suis prêt à investir du temps supplémentaire au début (10).	4,0	Engagement
Je crois que la télésanté peut tenir compte des difficultés d'horaire et des appréhensions face aux charges de travail élevées (11).	3,8	Réceptivité des infrastructures
- Gestionnaires		
Votre organisation est au courant des besoins et est capable de les énoncer clairement (1).	4,2	Réceptivité générale
Votre organisation soutient fortement la télésanté (3).	4,2	Engagement et planification
Votre organisation comprend des promoteurs de la télésanté (cliniciens, gestionnaires et individus dans la communauté) (4).	4,2	Engagement et planification
Votre organisation s'assure que le milieu de travail est prêt à recevoir la technologie et l'équipement pour la télésanté (18).	4,0	Réceptivité du milieu de travail
Votre organisation a résolu les questions de faisabilité et d'exigences techniques (24).	3,8	Réceptivité technique
Votre organisation a un soutien technique complet, disponible sur place et sur demande (28).	3,8	Réceptivité technique
Votre organisation comprend des leaders qui prennent des risques et des pionniers en matière d'innovations (5).	3,8	Engagement et planification

Tableau 2. Items du questionnaire « Évaluation de la réceptivité face à la télésanté » ayant obtenu les scores les plus faibles (≤ 2,2/5)

Item (numéro)	Score (/5)	Sous-échelle
- Intervenants		
J'ai des plans de remboursement en place pour l'utilisation de la télésanté (13).	0,8	Réceptivité des infrastructures
J'ai accès à des données cliniques valides et à de la formation médicale continue via la télésanté (16).	0,9	Réceptivité des infrastructures
J'ai accès à un réseau de consultation clinique fiable et disponible lorsque j'utilise la télésanté (15).	1,5	Réceptivité des infrastructures
J'ai un sentiment d'insatisfaction face aux manières actuelles de fournir les soins (1).	1,5	Réceptivité générale
J'ai un besoin pressant de traiter un problème de santé d'un patient ou communauté qui pourrait être résolu grâce à la télésanté (3).	1,9	Réceptivité générale
Je suis innovateur et/ou leader dans le domaine de la télésanté (4).	2,2	Engagement
- Gestionnaires		
Votre organisation participe à un processus de consultation communautaire (15).	1,2	Engagement et planification
Votre organisation possède un plan d'affaire stratégique (17).	1,8	Engagement et planification
Votre organisation a une approche systématique pour vérifier la fidélité de la transmission des données (26).	1,8	Réceptivité technique
Votre organisation établit ouvertement la communication (20).	2,0	Réceptivité du milieu de travail
Votre organisation gère la réceptivité au changement (21).	2,0	Réceptivité du milieu de travail
Votre organisation est insatisfaite des moyens actuels de prestation des soins (2).	2,2	Réceptivité générale
Votre organisation a accès à un financement suffisant (8).	2,2	Engagement et planification
Votre organisation a établi des partenariats (9).	2,2	Engagement et planification

comment utiliser un ordinateur. Les intervenants ont expliqué que lorsqu'un usager présentant l'un ou l'autre de ces profils démontre le besoin d'utiliser un outil de télécommunication différent de l'ATS, la solution mise de l'avant par l'équipe est alors de recourir au télécopieur, puisque cette solution serait moins dispendieuse, plus simple à utiliser et plus répandue dans les différents services publics (services de santé, banque, garage, milieux de travail, etc.) que la vidéoconférence par Internet, permettant à l'usager de développer son autonomie sur le plan de la communication plus rapidement. Une autre limite serait liée à la mise en place du service de vidéoconférence par Internet sans offre de soutien technique aux usagers sourds. Par exemple, si un usager souhaite utiliser le service, mais ne sait pas comment installer ou configurer le logiciel ooVoo ou la caméra web sur son ordinateur, il n'y a aucune personne ressource pour le soutenir. Même si les intervenants peuvent donner quelques conseils, ils ne sont pas outillés pour le supporter davantage. D'autre part, les intervenants rapportent que certains usagers sourds utilisent un autre logiciel de vidéoconférence, ou qu'ils préfèrent utiliser d'autres technologies de télécommunication, telles le télécopieur, les SMS ou le courriel. Les intervenants ont aussi mentionné que la disponibilité du service ne semblait pas bien connue des usagers sourds, soulevant un questionnement sur la diffusion de l'information à propos de la mise en place du système. Enfin, il n'y aurait qu'un centre qui propose à ses usagers sourds un service de vidéoconférence par Internet dans la région. Il était ainsi difficile de convaincre un usager de se munir des équipements informatiques requis, pour l'unique fin de joindre les intervenants du centre. Un arrimage avec les partenaires communautaires et autres services publics régionaux visant une offre de service comparable, basé sur une même plateforme informatique, pourrait favoriser une adhésion plus grande de la communauté sourde à l'utilisation de la vidéoconférence.

Commentaires reçus de la part des usagers. Selon les intervenants, des usagers sourds ont trouvé que la communication avec le système était efficace et que la qualité des images était bonne. Certains ont demandé à ce que le service soit maintenu. D'autres ont demandé l'adoption d'un autre logiciel de vidéoconférence. Quelques usagers ont été dérangés du fait que l'intervenant n'avait pas le dispositif de vidéoconférence dans son bureau; selon eux, cela pouvait nuire à la rapidité de réponse aux appels et à la confidentialité des échanges.

Opinion quant au maintien du service. Tous les participants se sont montrés favorables au maintien du service de vidéoconférence par Internet. Cette technologie serait de plus en plus utilisée par les usagers sourds de la région; elle serait incontournable lorsque l'on travaille auprès de cette clientèle. Toutefois, les intervenants proposent que des améliorations soient apportées au service, notamment en offrant aux usagers la possibilité d'utiliser un autre logiciel de vidéoconférence, en considérant l'offre d'un soutien financier et technique aux usagers sourds n'ayant pas accès à la technologie et en révisant les méthodes de publicité employées pour mieux faire connaître le service.

Discussion

Cette étude visait à décrire l'utilisation à des fins non thérapeutiques d'un service de vidéoconférence par Internet par des intervenants œuvrant auprès d'usagers sourds gestuels au cours de la première année suivant son implantation, à évaluer la réceptivité des intervenants et des gestionnaires d'un centre de réadaptation face à ce service et à identifier les obstacles à son implantation dans le milieu.

Les résultats de cette étude suggèrent qu'il existe des obstacles à l'implantation du service qui ont induit une utilisation limitée du système de vidéoconférence par Internet. En effet, à l'exception du sujet 6, le service de vidéoconférence par Internet a été peu utilisé par les intervenants. Le nombre d'intervenants ayant utilisé le service est demeuré stable pendant toute l'année. De plus, bien qu'il y ait eu une progression dans le nombre total d'appels effectués au cours des six premiers mois (voir la figure 1), cet indicateur est revenu à son point de départ par la suite.

Une analyse des réponses fournies par les participants aux questionnaires et aux entrevues permet de mettre en lumière les principaux obstacles ayant mené à ce faible taux d'utilisation. Si les résultats montrent un bon niveau d'engagement de la part des intervenants, ils suggèrent aussi la présence d'obstacles limitant la réceptivité générale. De fait, les intervenants ressentiraient peu le besoin d'utiliser la vidéoconférence avec leurs usagers sourds gestuels car ils sont satisfaits des autres moyens de communication disponibles. Pour leur part, les gestionnaires soulignent que l'organisation serait elle aussi satisfaite des moyens de communication actuellement disponibles pour la clientèle visée. Ce constat semble en contradiction avec les commentaires formulés par les intervenants avant le début du projet de recherche au regard de leurs insatisfactions envers l'ATS et les autres modes de communication écrits.

Cette apparente contradiction soulève la question de

l'évaluation des besoins préalable à l'implantation d'un tel service. En effet, une évaluation approfondie de cet aspect devrait faire partie du processus de planification précédant l'implantation d'une technologie de télésanté (Jennett et al., 2003). Selon ces auteurs, une mauvaise évaluation des besoins serait l'un des facteurs principaux menant à un échec de l'implantation de services de télésanté, avec le manque de préparation du personnel et la résistance aux changements. Ainsi, une planification peu rigoureuse de l'implantation du service, incluant l'évaluation des besoins, serait suffisante pour expliquer un faible taux d'utilisation (Yellowlees, 1997).

Dans la littérature, il était précisé que, lorsque l'ensemble des facteurs reliés à la planification et aux conditions techniques de la télésanté sont considérés par une organisation (Jennett et al., 2003; Jarvis-Selinger et al., 2008), la mise en place de la télésanté a plus de chances de réussir. Les résultats de notre étude suggèrent que ces facteurs n'ont possiblement pas tous été pris correctement en compte lors de l'implantation du service de vidéoconférence par Internet qui a été évalué.

Outre la réceptivité générale des intervenants et de l'organisation qui a pu limiter l'utilisation du service mis en place, la réceptivité des infrastructures pourrait aussi avoir posé un obstacle à l'implantation de la vidéoconférence. Selon le point de vue des intervenants et des gestionnaires, il y aurait un manque de financement de la vidéoconférence ainsi qu'un problème de réseautage avec le milieu. Le manque de financement serait non seulement du côté organisationnel, mais aussi en lien avec la clientèle qui n'aurait accès à aucune aide financière pour obtenir les équipements et utiliser le service. Jarvis-Selinger et al. (2008) mentionnent en effet que le manque de financement est souvent rapporté dans la littérature comme un obstacle important à la pérennité de la télésanté au-delà de la phase d'implantation. Il s'agirait de plus d'un élément très important dans la construction de la réceptivité organisationnelle (Jennett et al., 2003). Ces auteurs précisent que des fonds doivent être prévus pour couvrir les coûts initiaux de mise en place du service, mais aussi pour son maintien dans le temps (ex. ressources humaines, coordonnateur de la télésanté, soutien technique, gestion). Également, il y aurait eu peu de concertation avec la communauté et les partenaires en lien avec ce service. Il s'agit aussi d'un facteur de succès qui aurait dû être considéré selon Jennett et al. (2003). Un meilleur soutien financier à l'équipe d'intervenants et aux usagers ainsi qu'un meilleur arrimage avec le réseau socio-sanitaire régional aurait pu favoriser une réceptivité plus élevée, ce qui aurait pu mener à une utilisation plus

fréquente du service.

La réceptivité technique de l'organisation ne semble toutefois pas présenter de problème majeur. Selon les gestionnaires et les intervenants, les équipements disponibles seraient fiables, la faisabilité est démontrée, les exigences techniques sont satisfaites et un soutien technique est disponible sur demande pour les intervenants. Cependant, l'absence de soutien technique aux usagers constitue un problème ayant pu limiter l'utilisation du service de vidéoconférence.

Par ailleurs, les raisons sous-tendant le peu d'utilisation du service de vidéoconférence par Internet, telles que rapportées par les intervenants, sont différentes de celles notées dans les études de Austen et McGrath (2006a, 2006b). Ces auteurs ont mentionné que leurs sujets semblaient présenter certaines craintes ou de l'anxiété face à l'utilisation de la vidéoconférence. Ces éléments ne sont pas ressortis dans la présente étude, les participants expliquant davantage leur faible taux d'utilisation du service par le fait qu'il ne répondait pas bien aux besoins ou à la réalité de plusieurs de leurs usagers sourds. En effet, les intervenants ont mentionné que plusieurs usagers sourds préfèrent utiliser d'autres technologies de télécommunication, telles que le télécopieur, le courriel ou les SMS, ou qu'ils n'ont pas accès à Internet en raison de capacités financières ou personnelles limitées. Ces opinions concordent avec les résultats des sondages allemands et australiens présentés plus haut (Power, Power, & Horstmashof, 2007; Power, Power, & Rehling, 2007).

Bien que Power and Power (2009, 2010) suggèrent que l'utilisation de la caméra web reliée à Internet serait en croissance chez les personnes sourdes gestuelles, cette technologie ne représenterait pas actuellement un outil permettant de répondre aux besoins de tous les usagers sourds, du moins dans les pays où les services de relais vidéo ou d'interprétation à distance ne sont pas encore disponibles, comme c'est le cas au Canada. Ainsi, il serait judicieux d'inclure le service de vidéoconférence par Internet à une palette de moyens de télécommunication offerts aux usagers sourds gestuels, en considérant l'ensemble des options disponibles localement pour répondre à différents besoins communicationnels, d'où l'importance également de bien évaluer ces besoins avant de procéder à l'implantation du dispositif de télésanté.

Le fait que seulement deux messages vidéo aient été reçus et quatre messages vidéo envoyés par les intervenants pendant la durée du projet peut paraître surprenant. En effet, la fonction de messagerie vidéo

comprise dans le logiciel de vidéoconférence utilisé paraissait a priori être une option tout à fait pertinente et potentiellement utile. Néanmoins, elle n'a pratiquement pas été utilisée, ni par les intervenants, ni par leurs usagers sourds. Dans leurs travaux, Dalle-Nazébi et Bacci (2011) ont aussi relevé cette observation. Ces auteurs mentionnent que, bien que réceptifs à l'implantation d'un service de relais-vidéo, les sourds français ayant fait partie de l'étude ont vécu durement certains aspects de la télécommunication dont ils ne soupçonnaient pas l'existence, notamment d'avoir à composer avec un système de messagerie et avec l'incertitude que l'interlocuteur ait bien reçu le message. Il est possible que les usagers sourds des intervenants ayant participé à la présente étude n'aient pas été familiers avec la messagerie vidéo, à l'instar des participants de l'étude de Dalle-Nazébi et Bacci (2011), ce qui pourrait expliquer le taux d'utilisation faible de cette fonction.

Enfin, les commentaires des intervenants permettent de faire ressortir un autre obstacle important face à l'utilisation du service de vidéoconférence par Internet. Il semblerait que plusieurs usagers sourds ne connaissent pas l'existence du service. Si les usagers ne connaissent pas l'existence du service, il apparaît évident qu'ils ne seront pas en mesure de l'utiliser.

Limites du projet de recherche

Les limites de l'étude sont essentiellement liées à la validité externe. Bien que tous les intervenants du programme des adultes sourds disponibles et tous les administrateurs impliqués directement dans les décisions liées à la mise en place du service aient participé à l'étude, les résultats pourraient être différents si l'étude était menée dans un autre centre, où la réceptivité des individus et de l'organisation pourrait être différente. Ainsi, l'implantation d'un dispositif identique dans une autre organisation, en suivant le même protocole, pourrait mener à un niveau d'utilisation différent, selon le degré de réceptivité propre à l'organisation.

Par ailleurs, bien que les questionnaires pour mesurer la réceptivité aient été conçus pour être appliqués à une vaste gamme de technologies de télésanté (Légaré et al., 2010), il n'est pas démontré que son utilisation pour évaluer la réceptivité face à la vidéoconférence par Internet pour une clientèle d'adultes sourds gestuels dans un contexte de communication non thérapeutique soit appropriée. En effet, les intervenants ont rapporté que, selon eux, certains items des questionnaires seraient moins pertinents considérant la technologie

de vidéoconférence utilisée et la clientèle ciblée. Par exemple, les items 6 (j'ai du respect pour les autres dans l'équipe de télésanté), 7 (j'ai besoin d'interagir avec d'autres praticiens) et 15 (j'ai accès à un réseau de consultation clinique fiable et disponible lorsque j'utilise la télésanté) du questionnaire à l'intention des intervenants font référence au travail en équipe entre professionnels et à la mise en réseau du service de télésanté entre plusieurs sites cliniques, alors que le dispositif de vidéoconférence implanté vise la communication à distance entre l'intervenant et l'usager. De plus, l'item 16 (j'ai accès à des données cliniques valides et à de la formation médicale continue via la télésanté) s'intéresse à un tout autre aspect de la télésanté qui n'est pas ciblé par le service mis en place. La validité des questionnaires de Légaré et al. (2010) pour une utilisation dans le contexte particulier de cette étude devrait être vérifiée. Selon les résultats, les questionnaires pourraient possiblement être adaptés pour devenir plus spécifiques à la technologie utilisée et à la clientèle visée.

Enfin, ce projet pilote s'est intéressé à l'utilisation du nouveau service de vidéoconférence, à la réceptivité face à ce service et aux obstacles à son implantation du point de vue des intervenants et des gestionnaires de l'organisation. Toutefois, ces variables sont aussi liées aux besoins des usagers sourds gestuels. Dans le but de mieux cerner ces besoins et de proposer un service y répondant d'une manière optimale, il serait nécessaire également de vérifier l'utilisation, la réceptivité et les obstacles à l'implantation du service directement auprès de la clientèle concernée, les usagers sourds gestuels.

Conclusion

Les résultats de ce projet pilote suggèrent qu'il peut exister des obstacles à la réussite de l'implantation d'un service de vidéoconférence par Internet pour des communications non thérapeutiques avec des usagers sourds gestuels. En particulier, le besoin réel des intervenants et des usagers, le financement du service ainsi que la méthode de déploiement auprès des partenaires régionaux et de la clientèle ciblée limitent l'utilisation du système. Toutefois, malgré des niveaux de réceptivité et d'utilisation du service peu élevés, les intervenants ayant participé au projet l'ont apprécié pour sa pertinence et l'économie de temps. Ils suggèrent que le service soit maintenu mais que des mesures soient prises pour qu'il devienne plus utilisé, telles que la possibilité d'utiliser un autre logiciel de vidéoconférence, l'offre d'un soutien financier et technique aux usagers sourds n'ayant pas accès à la technologie et la révision des méthodes de

publicité employées pour faire connaître le service. Enfin, ce projet pilote a évalué la réceptivité et les obstacles à l'implantation du service du point de vue des intervenants et des gestionnaires d'un centre de réadaptation. Il serait également important de vérifier la réceptivité et les obstacles à l'implantation du service du point de vue de la clientèle concernée.

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Review: Inter and Intra-Reader Agreement Among Audiologists in Reading Auditory Brainstem Response Waves

Revue : concordances entre audiologistes et chez le même audiologiste pour la lecture des ondes des potentiels évoqués auditifs du tronc cérébral

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Abstract

This paper presents a review conducted to evaluate the scientific evidence regarding variability in audiologists' interpretation of auditory brainstem response (ABR) tests and to determine the factors that may affect audiologists' performance when reading ABRs. A search of the literature on Pubmed, Medline (Ovid), ScienceDirect and Google scholar yielded 4,735 articles. After culling, only six articles remained which investigated audiologists' variability in interpreting ABR, and the findings were inconsistent. Four of the six studies reported evidence that audiologists were variable when reading ABR waves, while two studies reported that audiologists were highly consistent when reading ABR waves. This conflict may be explained by the heterogeneity in the methods used in the six studies. More experienced audiologists were likely to show less variability in interpretation, but no other factors were shown to predict variability.

Abrégé

Il s'agit d'une revue de littérature effectuée pour évaluer la preuve scientifique de la variabilité dans l'interprétation, par les audiologistes, des tests de potentiels évoqués auditifs du tronc cérébral (PÉATC) et pour déterminer les facteurs pouvant affecter la performance des audiologistes à lire les PÉATC. Une recherche sur Pubmed, Medline (Ovid), ScienceDirect et Google scholar a permis de répertorier 4 735 articles. Après élagage, il n'est resté que six articles qui portaient sur la variabilité des audiologistes dans leur interprétation des ondes des PÉATC, et dont les conclusions étaient contradictoires. Quatre des six études rapportaient la preuve que la lecture des ondes des PÉATC était variable entre les audiologistes tandis que deux autres rapportaient qu'elle concordait fortement. Cette divergence peut s'expliquer par l'hétérogénéité dans les méthodes utilisées dans les six études. Les audiologistes possédant plus d'expérience auraient moins de variabilité dans leur interprétation. Aucun autre facteur n'apparaissait comme pouvant prédire la variabilité.

The Auditory Brainstem Response in audiology

What is ABR?

The auditory brainstem response (ABR) is an electrical evoked potential that arises as a result of the neural activity from the auditory nerve, auditory nuclei, and the tracts of lower brainstem within the first 10-15ms after a click or tone burst stimulus (Ballachanda, Moushegian, & Stillman, 1992; Hall, 2007; Vidler & Parker, 2004). The ABR was first described by Jewett, Romano and Williston in the 1970s, when they reported recording a series of waves through the scalp after stimulating the ear with a click stimulus. Since then, the potential applications of the ABR have been explored including establishing hearing thresholds, diagnosing retrocochlear lesions, monitoring brain activity during surgical operations, and using it as a hearing screening tool for newborns (Hall, 2007; Hood, 1998)

The most frequent stimulus used in the ABR testing is the click, which is a broadband signal that can excite a wide region at the cochlea (Hood & Berlin, 1986). Click ABRs are usually used to assess auditory nerve and auditory brainstem pathway integrity and determine the hearing threshold for infants and young children when behavioral audiometric results cannot be obtained reliably. However, the click stimulus lacks frequency specificity. This means that the ABR from a click may not reflect responses for cochlear regions that are responsive to lower frequencies (Bogus, 1996). Tone burst or tone pips are alternative stimuli for ABR testing that can provide frequency specific auditory thresholds (Hood & Berlin, 1986).

The ABR elicited to clicks consists of seven waveforms; however, only waves I, III and V are identified and analyzed in clinical settings due to the variability in waves II, IV, VI and VII (Burkard, Eggermont & Don, 2007; Roeser, Valente & Hosford-Dunn, 2007). Wave I appears at approximately 1.67ms following a click stimulus and is believed to reflect afferent activity of the auditory nerve fibres from the cochlea to the auditory brainstem. Wave III is evident approximately 3.8ms following a click stimulus; is thought to arise from the cochlear nucleus, the trapezoid body, and the superior olivary complex. Wave V, arising about 5.6ms following a click stimulus, is the largest and most robust wave in the ABR. It is thought to arise from the lateral lemniscus termination in the inferior colliculus (Hall, 2006). To interpret the ABR waveforms and determine hearing thresholds, audiologists consider a number of characteristics such as amplitude, latency and reproducibility (Burkard et al., 2007; Roeser et al., 2007).

Purposes of ABR

The ABR is commonly used either to establish hearing threshold with patients for whom a behavioral response is difficult to elicit or to detect lesions or abnormalities in the auditory system (Hyde & Blair, 1981). For hearing threshold estimation purpose, wave V is usually targeted, as it is a robust wave even close to threshold, while for lesion detection purpose, all ABR waves are targeted and monitored (Hall, 2006). The ABR is a valuable tool in the test battery of estimating hearing threshold for hard to test patients such as pediatric populations and developmentally delayed patients who cannot complete the conventional behavioral audiometry tests (Burkard et al., 2007; Cornacchia, Vigliani, & Arpini, 1982; Jerger, Hayes, & Jordan, 1980). Schmulian and McMahon (2005) referred to the ABR as the most important and definitive test in assessing infants. The ABR is now widely used in young infants to obtain information about hearing threshold from each ear in the frequency range between 500-4000 Hz using both air and bone conduction stimuli (Schmulian & McMahon, 2005; Stapells, 2000). The second purpose for the ABR is lesion detection. Previous work has shown that ABR is a sensitive tool for detecting large lesions (equal or larger than 2 centimeters), but not sensitive for small lesions (equal or less than 1 centimeters) (Chandrasekhar, Brackmann, & Devgan, 1995; Gordon & Cohen, 1995; Schmidt, Sataloff, Newman, Spiegel, & Myers, 2001; Zappia, O'Connor, Wiet, & Dinces, 1997).

ABR interpretation

Because the ABR does not require any verbal or behavioral response from the patient, it has been referred to as an objective test of hearing. However, the ABR is highly dependent on the interpretation and judgment of the audiologist (Cone-Wesson, Dowell, Tomlin, Rance, & Ming, 2002; Stueve & O'Rourke, 2003) and indeed Weber referred to ABR as one of the most subjective audiometric techniques (Weber, 1983). In order to determine hearing thresholds from the ABR, audiologists use a visual inspection method by looking at waveforms to determine whether the waves are absent or present. In most cases, the same audiologist determines the latency of each wave (Weber, 1983). Despite the fact that minimum standards have been set to define the most reliable threshold, the final decision for hearing threshold estimation still depends on the interpretation of individual audiologists (Vidler & Parker, 2004). Weber (1983) suggested that the ability to read and mark waves of ABR could improve with experience, which may take a long time, particularly if the examiner is mainly "self taught". He also argued that the skills required

to interpret ABR waves are often underestimated and even the most experienced and skilled audiologists may struggle to interpret some difficult cases during their career (Weber, 1983).

Decision making and reliability in the ABR interpretation

As reading the ABR results and estimating the different latencies for different waves requires perceptual judgment and decision making, it is likely that it is susceptible to a range of factors that influence human perception and judgment. The ability of one or more readers to produce the same result for the same sample under similar settings defines the reliability of a rating (Downing, 2004; Gajdosik & Bohannon, 1987). Relatively little attention has been paid to measuring or improving the reliability of the ABR.

In the present review, two types of reader reliability are discussed:

- Inter-reader reliability or agreement, the degree to which measurements performed by different readers are similar (Hayen, Dennis, & Finch, 2007).

- Intra-reader reliability or agreement, the degree to which measurements performed by the same observer are consistent over time (Hayen et al., 2007).

An understanding of the extent of variability in ABR interpretation and the factors that influence audiologists' decisions should help to minimize possible errors and improve practice standards. Therefore, this review has two aims. The first aim is to identify studies that have investigated audiologists' variability when reading ABR waves. The second aim is to identify the factors, highlighted through previous literature, which may influence audiologists' performance when reading ABR results.

Search method

Our review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) principles, which describes the minimum set of evidence base for reporting in systematic reviews and meta-analyses (The PRISMA Group, 2009). The databases used in searching data for this narrative review were PubMed, Medline (OvidSP), ScienceDirect and Google scholar. Searching included all languages and all dates until the final date of the search (December 12, 2013). The research team developed a broad list of topics and key words for searching and an experienced librarian assisted in building the search process. Details about the search strategy are available from the authors. Keyword searches for databases

were carefully chosen to maximize the potential to identify relevant articles with a slight change in each database. Keywords used for searching included: "auditory brainstem response", "auditory brainstem evoked potentials", "variability", "consistency", "observer variation" and "audiology". All keywords were combined and appropriate subject heading terms were used in searching databases. The first step of the search yielded a total number of 4,735 papers. The authors excluded 470 duplicate references. Non-duplicate items that satisfied the keyword search requirements were then screened by title and subsequently by abstract. 4,101 articles were excluded based on the title alone. For example, studies that are not related to the auditory brain stem response at all and/ or that related to a different purpose for the ABR testing. A further 107 studies were excluded following an analysis of abstracts ("e.g." studies that were not related to reader variability). Six articles remained that related directly to variability among audiologists in interpretation of the ABR results (Fig.1).

Results

Overview of the literature

The search found a limited number of articles that investigated audiologists' variability in interpreting the ABR waves. Conflicting conclusions were drawn regarding audiologists' variability in reading ABR traces (Table 1). Results were analyzed according to three main aspects: inter-reader agreement; intra-reader agreement, and the factors that affect audiologists' variability when reading the ABR waves.

Inter-reader agreement

Inter-reader agreement is the extent to which two or more examiners/ raters give similar scores to an identical observation when using similar rating measurement (Gisev, Bell, & Chen, 2013). High inter-reader agreement is therefore one index of low variability in measurement. While four studies reported that audiologists show variability when reading ABR results (Gans, Del Zotto, & Gans, 1992; Naves, Pereira, Nasuto, Russo, & Andrade, 2012a; 2012b; Vidler & Parker, 2004), two studies reported that audiologists show good agreement when reading ABR waves (Olsen, Pratt, & Bauch, 1997; Pratt, Olsen, & Bauch, 1995). The difference in results may be explained by the different methods adopted to examine audiologists' variability.

Poor inter-reader agreement.

Two studies with the largest samples of audiologists provided strong evidence of variability between audiologists
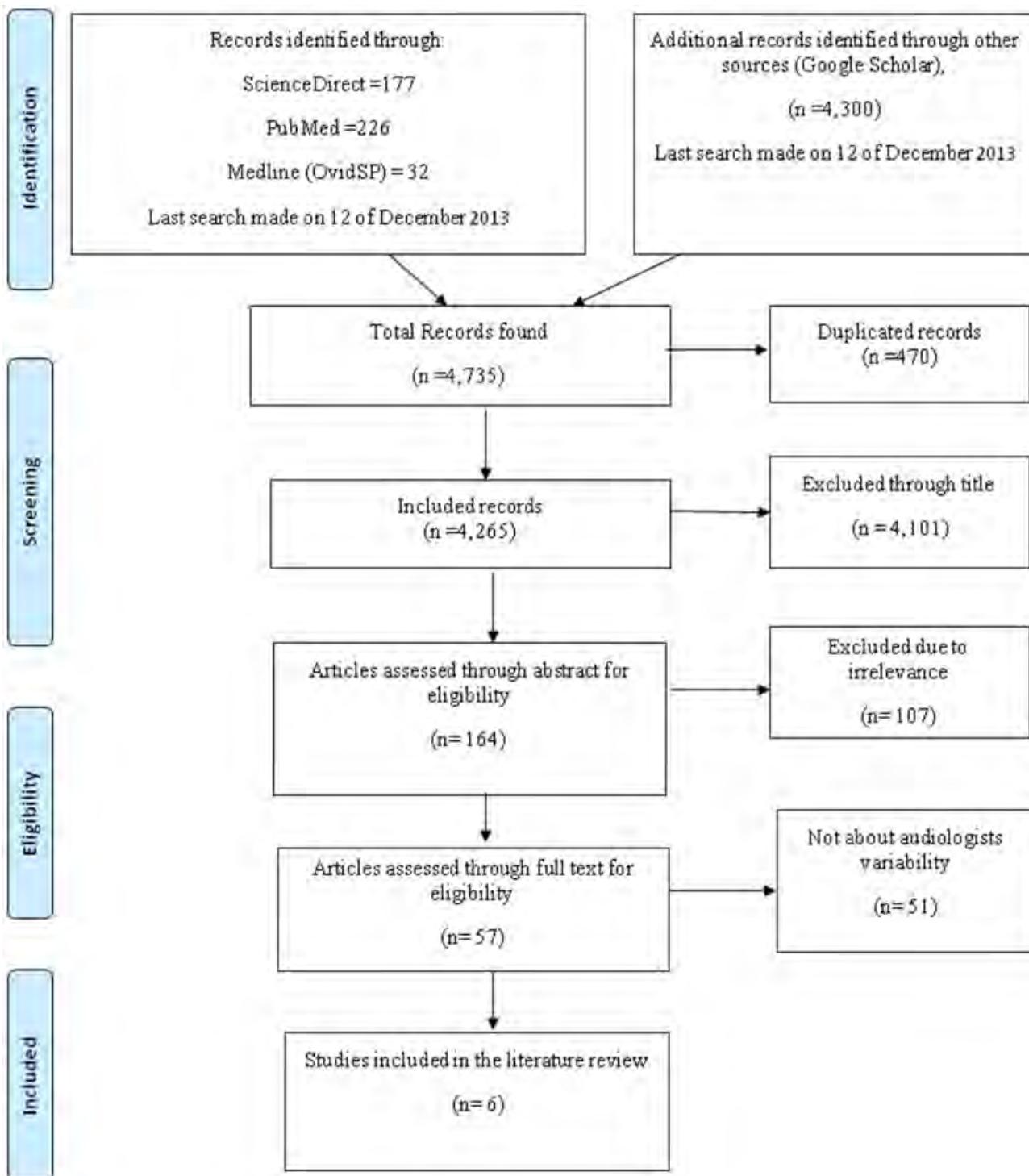
Figure 1. Selection process.

Table 1. Summary of the included studies

The study	No. of audiologists	Experience in reading ABR	Method*	Findings and factors highlighted
Gans, et al., (1992)	9	8 audiologists had experience ranging from (4-40) months with average of 8 months. One audiologist has no experience in reading ABR.	Estimation of ABR hearing threshold for 50 multi handicapped children who were tested behaviorally. Each case was presented to the audiologists twice with one week gap. Either true threshold (TT) or false thresholds (FT) information were provided. Bias occurred if audiologist sets the threshold for the same case differently according to the TT or FT.	Significant variability within and among audiologists. More experienced audiologists were more consistent in estimating ABR waves.
Pratt et al., (1995)	3	Each audiologist had 4 years experience.	Marking of the three main waves: I, III, V and their latencies for a group consisting of 63 ears, the same task was repeated six month later. Comparison for the estimated latencies was performed among the three audiologists.	86-100% consistency between audiologists. Good intra-reader agreement 87- 95% for different montages.
Olsen et al., (1997)	3	Each audiologist had 4 years experience.	Determine the latency and interpret a multi-channel ABR traces for 30 patients. Four months later, audiologists were asked to repeat the same task.	Great consistency among and within audiologists in estimating latency with difference equal or less than 0.2ms in 90% of cases.
Vidler and Parker (2004)	16	Range from 1.5-25 years Average of 8.41 years	Determine hearing threshold for 12 ABR cases designed through computer-simulation. Audiologists had control over data acquisition "e.g." determine the stimulus level and decide when to terminate the averaging of each trace.	No agreement on thresholds estimation for any of the 12 cases across the 16 audiologists. In nine of the cases, the difference between highest and lowest estimated threshold was 40dB or greater and the maximum difference was 60dB.

Naves et al., (2012)	4	Range from 3-11 years Average of 7.25 years.	Interpret ABR data for ten normal hearing adults through estimating the first five waves and their latencies at four intensity levels. Latencies values were compared between each pair of audiologists. If difference exceeded (0.1ms), indication of significant variability.	A difference of 0.1ms or more in estimated latencies between audiologists found in 40% of the cases. Audiologists with different level of experience showed well-matched results and the least experienced audiologist showed the largest discrepancy.
Naves et al., (2012a)	4	Range from (3-11 years). Average of 7.25 years.	Interpret ABR data for ten normal hearing adults through estimating the first five waves and their latencies at four intensity levels. Compared the performance between audiologists.	A difference of equal or more than 0.1ms between audiologists in estimating wave's latencies appeared in 18% of the studied sample.

* All studies used click stimulus to elicit the ABR

(Gans et al., 1992; Vidler & Parker, 2004). Both studies used hearing threshold estimation as the method of choice for assessing variability among audiologists. Audiologists were given a number of ABR cases, they were asked to read the results and estimate a hearing threshold for each case. Variability was assessed through comparing the estimated threshold by each one of the audiologists.

Gans et al. (1992) asked nine audiologists to estimate hearing thresholds for 50 multi-handicapped children and compared the estimated thresholds among audiologists. The authors reported that audiologists' estimates of hearing thresholds varied when different information was provided about the same case, suggesting variability in interpreting the traces (Gans et al., 1992). The second study asked 16 audiologists to estimate the hearing thresholds for 12 computer-simulated cases of ABR results. In this study, audiologists had control over the stimulus levels they wanted to test and the number of traces they needed to make their decision. They found no agreement on threshold estimation for any of the 12 cases across the 16 audiologists, suggesting high levels of variability. Furthermore, for 9 of the 12 cases the difference between maximum and minimum

estimated threshold was 40 dB or greater (Vidler & Parker, 2004). Despite the fact that this study tried to provide audiologists with the optimum clinical conditions to perform ABR testing by using computer-simulated cases, high levels of variability were observed among audiologists.

Two additional studies with fewer numbers of audiologists suggested the presence of variability among audiologists (Naves et al., 2012a; 2012b). It should be noted that both studies used the same set of data and method as they were undertaken by the same team of researchers. However, each study reported different aims and the data were analyzed differently. Four audiologists, all whom were experienced in reading ABR (average of 7.25 years), were asked to mark the first five waves and their latencies for ABR results of 10 normal hearing adults. A comparison between the latencies values obtained by each of the four audiologists was made; a difference of equal to or more than 0.1ms among the audiologists in estimating wave latencies was considered as indicative of variability. In both studies, audiologists showed significant level of variability; differences in latency estimation among audiologists were reported in 40% of the cases (Naves et al., 2012b) and

variability of equal or more than 0.1ms among audiologists in estimating waves latencies appeared in 18% of the studied sample (Naves et al., 2012a).

Good inter-reader agreement

Two of the six studies reported that audiologists show good agreement when reading ABR results (Olsen et al., 1997; Pratt et al., 1995). The two studies were conducted by the same team of researchers. Variability was investigated through comparing the latencies values obtained by each one of the audiologists for the three main waves I, III and V. A difference of equal or more than 0.2ms among audiologists in estimating wave latencies was considered as indicative of variability. Both of the studies found considerable consistency among audiologists in estimating latencies with at least 90% agreement (Olsen et al., 1997) and 86-100% agreement among readers (Pratt et al., 1995). However, the results of these studies should be interpreted cautiously as the authors themselves served as the only participants. Furthermore, both studies included audiologists who apparently work in very similar environments and with similar levels of experience (4 years) in reading ABR results, which can reduce variability and enhance agreement.

This narrative review presents a limited number of studies that investigated agreement among audiologists who read ABR results but with conflicting findings. Four studies found that audiologists show variability when interpreting the same set of ABR results and two studies, with questionable methods, found good agreement among audiologists.

Intra-reader agreement

Intra-reader agreement can be defined as the degree to which measurements performed by the same observer are consistent over time (Hayen et al., 2007). While all of the six studies examined inter-reader variability in audiologists, only three studies assessed intra-reader variability in audiologists (Gans et al., 1992; Olsen et al., 1997; Pratt et al., 1995). Conflicting results were found. While one study reported that audiologists show a poor level of consistency in reading the same set of ABR results over time (Gans et al., 1992), two other studies indicated that audiologists show a good level of consistency (Olsen et al., 1997; Pratt et al., 1995). One study assessed intra-reader agreement by asking audiologists to estimate the hearing threshold for the same set of ABR data twice over one week. The audiologists were not aware that they were assessing the same sets of data, and different information for each case in relation to the possible behavioural threshold was presented each time. Results showed that audiologists estimated a different

hearing threshold for the same cases over time. In addition, giving different clues about the possible hearing thresholds was shown to affect the audiologists' decision (Gans et al., 1992). This suggests that audiologists' interpretation of ABR results was affected by factors beyond the traces itself, such as contextual information.

The other two studies assessed intra-reader agreement by asking audiologists to mark the three main waves with their latencies for the same set of ABR data twice over six months (Pratt et al., 1995) and four months (Olsen et al., 1997). Both of the studies found that audiologists show good consistency in their ABR interpretation over time with 87-95% and more than 90% respectively. However, it is not clear whether audiologists knew that they were examining the same set of ABR data on the second occasion or not. Furthermore, the results could be confounded by the fact that the authors served as the only participants in both the studies.

In summary, only a limited number of studies have investigated the intra-reader agreement of audiologists when reading ABR waves and the available studies suggest conflicting results due to their different approaches.

Factors affecting audiologists' performance in reading ABR results

Only two studies have compared years of experience with audiologists' performance in reading ABR results (Gans et al., 1992; Naves et al., 2012b). One study suggested that audiologists with more experience show greater consistency over time in reading the same set of ABR results (Gans et al., 1992). The other study found that audiologists with different levels of experience in reading ABR results showed well matched results, with the exception that the largest discrepancy was linked to the least experienced audiologist (Naves et al., 2012a). While both of the studies commented on the experience of the audiologists, different levels of experience were adopted by each of the studies. Gans et al. (1992) included nine audiologists, eight of whom had an 8 months average in reading ABR results compared to four audiologists with average of 7.25 years in reading ABR results (Naves et al., 2012a). While both studies concluded that greater experience in reading ABR waves results in more consistency over time and better agreement among audiologists, the low level of experience among participating audiologists in Gans et al. (1992) study limits the generalizability of the conclusion.

The heterogeneity in the methods used to investigate the variability across the present studies makes it difficult to understand if audiologists vary in their assessment

when reading ABR results: different tasks were adopted (hearing threshold estimation or wave latency estimation); different status of hearing were examined (normal or hearing impaired); and different numbers of audiologists were included with varied levels of experience in reading ABR waves. The different definitions of variability used in the studies should also be taken into consideration (Naves et al., 2012a, 2012b; Olsen et al., 1997; Pratt et al., 1995), as different values yielded different results. Authors who defined variability as a difference of 0.2ms or more, found less evidence of variability than those who defined it as a difference of 0.1ms or more. At present, the literature shows some disagreement regarding what is an acceptable variation level with 0.1ms or 0.2ms being described as acceptable (Don, 1989; Hood, 1998; Vannier, Adam, & Motsch, 2002). A range of different statistical and descriptive criteria was used to establish reliability, ranging from linear regression (Naves et al., 2012a) to visually comparing the estimated thresholds for all cases among the audiologists (Vidler & Parker, 2004). Gans et al. (1992) compared the judges' accuracy with the level of experience using the Spearman Correlation Coefficient. Naves et al. (2012b) implemented the Bland Altman statistical method to assess inter-examiner agreement and variability in one of their papers and used the linear regression statistical method to compare the performance between each pair of audiologists in the other paper (Naves et al., 2012a).

Evaluation of methodological/ scientific evidence

An evaluation of the available published research was undertaken in three aspects; firstly, the level of evidence against the National Health and Medical Research Council (NHMRC); secondly, the quality of evidence represented by the risk of bias; thirdly, the quantity of evidence represented by the sample size of audiologist participants.

Criteria for quality of evidence suggests that the published literature provides only level III or IV evidence for variability among audiologist in ABR interpretation (National Health and Medical Research Council, 2000). Risk of bias was the second aspect in evaluating the current evidence. For this review, low risk of bias was defined as audiologists not being aware/ informed that they were assessing the same set of ABR data over time. High risk of bias was defined when the participating audiologists were the authors themselves and/ or were aware that they are assessing the same set of data. Some of the studies made this point clear by mentioning that audiologists were naive to the cases that they assessed on a second occasion but in other studies, it was not clear. The third aspect in evaluating the evidence was the sample size. For this review, using a larger number of audiologists was considered to provide better representation of variability among audiologists. None of the included studies discussed the limitation of its sample size (Table 2).

Table 2. Evaluating the evidence.

The study	Level of evidence against NHMRC	Quality of evidence (risk of bias)	Quantity of evidence (participant sample size)
Gans et al., (1992)	III or IV	Low risk of bias	12
Pratt et al., (1995)	III or IV	High risk of bias	3
Olsen et al., (1997)	III or IV	High risk of bias	3
Vidler and Parker (2004)	III or IV	Unclear risk of bias/ not applicable	16
Naves et al., (2012)	III or IV	Unclear risk of bias/ not applicable	4
Naves et al., (2012a)	III or IV	Unclear risk of bias/ not applicable	4

Discussion

Interpretation of ABR results is a highly subjective process. Different interpretations of ABR results may lead to different management plans and patient outcomes. It is important to understand the possible sources of variability and factors that may influence audiologists' decision making when reading ABR waves. This will minimize the possible errors and improve practice standard. This review identified six studies that evaluated audiologists' variability in interpreting ABR results and examined the factors that may affect audiologist's performance. There is relatively little evidence on the variability among audiologists when reading ABR results. Four of the studies suggested that audiologists interpret the same set of ABR results differently; the remaining two studies reported that there is no variation among audiologists when they interpret the same set of ABR results. However, results from these two studies may be subject to a high risk of bias, as the authors were also the only participants in their investigation. Little data on intra-reader variability in audiologists was discussed in the literature and is conflicting. Further investigation is clearly warranted. Only one factor-experience-was identified as impacting on audiologists' variability when reading ABR waves, with audiologists more experienced in reading ABR being less variable. More investigation of the role of experience on audiologists' performance in reading ABR waves is needed. Only a small number of studies investigated audiologists' variability and those studies provide a low level of research evidence. This raises the need for more investigation using better quality evidence.

Conclusion

Overall, the results suggest that there is variability in ABR interpretation both within and among audiologists. Furthermore, level of experience was the only factor highlighted as contributing to audiologists' improved consistency when reading ABR waves. However, due to methodological concerns, variable sample sizes and the use of computer-generated cases, the quality of evidence and the applicability to clinical knowledge is difficult to ascertain.

In light of the importance placed upon the ABR test in determining hearing loss in pediatric clients and its highly subjective nature, it is important to highlight the factors that may affect audiologists' decisions in determining hearing threshold. The authors are currently conducting a study investigating factors that may affect upon ABR interpretation such as, experience and expertise, variability during the day in reading ABR, and psychological factors. The anticipated findings from this project should help policy makers, clinical directors, or educational leaders to determine optimum activities, and this in turn will promote the audiologist's performance in ABR threshold estimation.

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Information for Contributors

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Contributors should use the electronic CJSLPA manuscript submission system at **http://powerreview3.aptaracorp.com/ journals/sac-oac/** 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 the PDF proofs and verify its content to the publication office within 72 hours of receipt of such 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 acknowledgements 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), 6th Edition. 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.

Acknowledgements: Acknowledgements 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 non financial 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 communi-cation 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://powerreview3. aptaracorp.com/journals/sac-oac/**. 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 leas 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.