CANADIAN JOURNAL OF SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY

CJSLPA | RCOA

REVUE CANADIENNE D'ORTHOPHONIE ET D'AUDIOLOGIE

Summer ▸ Été, 2012

Volume 36, No. 2

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The Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) is the only national body that supports and represents the professional needs of speech-language pathologists, audiologists and supportive personnel inclusively within one organization. Through this support, CASLPA champions the needs of people with communications disorders. The association was founded in 1964 and incorporated under federal charter in 1975. CASLPA's periodical publications program began in 1973.

The purpose of the Canadian Journal of Speech-Language Pathology and Audiology (CJSLPA) is to disseminate contemporary knowledge pertaining to normal human communication and related disorders of communication that influence speech, language, and hearing processes. The scope of the Journal is broadly defined so as to provide the most inclusive venue for work in human communication and its disorders. CJSLPA publishes both applied and basic research, reports of clinical and laboratory inquiry, as well as educational articles related to normal and disordered speech, language, and hearing in all age groups. Classes of manuscripts suitable for publication consideration in CJSLPA include tutorials; traditional research or review articles; clinical, field, and brief reports; research notes; and letters to the editor (see Information to Contributors). CJSLPA seeks to publish articles that reflect the broad range of interests in speech-language pathology and audiology, speech sciences, hearing science, and that of related professions. The Journal also publishes book reviews, as well as independent reviews of commercially available clinical materials and resources.

The Canadian Journal of Speech-Language Pathology and Audiology is supported by a grant in Aid to Scholarly Journals, provided by the Canadian Social Sciences and Humanities Research Council (grant # 651-2008-0062), for the period January 2009 to December 2011.

CASLPA Vision and Mission

Vision

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

Mission

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

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Vol. 36, No. 2
Summer 2012

ISSN 1913-200X

CJSLPA is published quarterly by the Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA). Publications Agreement Number: # 40036109. Return undeliverable Canadian addresses to: CASLPA, 1 Nicholas Street, Suite 1000, Ottawa, Ontario K1N 7B7. Address changes should be sent to CASLPA by e-mail to pubs@caslpa.ca or to the above-mentioned address.

REVUE CANADIENNE D'ORTHOPHONIE ET D'AUDIOLOGIE

Objet et Portée

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

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

La Revue canadienne d'orthophonie et d'audiologie est appuyée par une subvention d'Aide aux revues savantes accordée par le Conseil de recherches en sciences humaines du Canada (subvention no. 651-2008-0062), pour la période de janvier 2009 à décembre 2011.

ACOA : Vision et Mission

Vision

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

Mission

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

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Toutes les demandes visant à faire paraître de la publicité dans la RCOA doivent être adressées au Bureau national. L'acceptation d'une annonce publicitaire ne signifie absolument pas que l'ACOA fait la promotion du produit, du service ou de la compagnie. L'ACOA se réserve le droit de rejeter une annonce si le message, l'organisation, le produit ou le service n'est pas compatible avec la mission, la vision ou les valeurs de l'ACOA. L'ACOA n'assume pas la responsabilité de l'exactitude des déclarations des annonceurs.

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Mridula Sharma, Dave Moore, Piers Dawes, Patricia Cleave, May Bernhardt, Megan Hodge, Tara Whitehill, Rodney Gabel, Kara Beck, Susan Felsenfeld, Tim Saltuklaroglu, Laura Plexico, Tony Leroux, Prudence Allan, Jessica Ball, Diane Pesco, Sharla Peltier, Carla Johnson, Catherine Dench, Suzanne Urbanczyk, Alexandra D'Arcy, Jill Weeres, Bradley McPherson, Margaret Cheesman, JB Orange, Guylaine Le Dorze, Isabelle Barrière, Pascal Lefebvre, Heather Clark, Gary McCullough, Johanna-Pascale Roy, Lucie Ménard, Andrea MacLeod, Pam Millett, Josée Lagacé, Mary Ann Evans, Rena Krakow, Michael Kiefte, Lorienne Jenstad, Linda Garcia, Chantal Laroche, Rachel Caissie, Liz Smith, Joanne Cleland.

Droit d'auteur

Vol. 36, No. 2
Été 2012

ISSN 1913-200X

La RCOA est publiée quatre fois l'an par l'Association canadienne des orthophonistes et audiologistes (ACOA). Numéro de publication : #40036109.
Faire parvenir tous les envois avec adresses canadiennes non reçus au 1, rue Nicholas, bureau 1000, Ottawa (Ontario) K1N 7B7.
Faire parvenir tout changement à l'ACOA au courriel pubs@caslpa.ca ou à l'adresse indiquée ci-dessus.

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From the Editor

SPRING ISSUE

Welcome to the summer issue of CJSLPA. In the first few months as the new editor of the Canadian Journal of Speech-Language Pathology and Audiology (CJSLPA), I have quickly learned that what makes a scientific journal work is the behind-the-scenes commitment of the associate editors and the many reviewers who contribute their time to the peer-review process. I owe a big thank you to Tim Bressman, and two outgoing associate editors, Vincent Gracco and Joël Macoir, whose continued involvement helped immensely with the transition period. I also appreciate the work of Suzi Dumitrescu, our past editorial assistant at the University of Toronto, who stayed on several months until she was sure that everything was ready to move to Ottawa. I now welcome Sarah Healy, a student at the University of Ottawa, who will be assisting me with editorial details in the coming months. Our continuing associate editors and two new editors are working hard to maintain high quality papers and a timely review process. In addition, guest editors are working on special issues to be published in the next year.

The journal has almost fully moved to an online manuscript submission and review process. I invite authors to submit and follow the progress of their submission at: http://cjslpa.coverpage.ca and I invite our current and new reviewers interested in providing their expertise to register with the web-based system.

The summer CJSLPA issue includes six papers, three on audiology-related topics and three covering speech-language areas of interest. In the first paper, Coolen and colleagues present thought-provoking information from a survey with both audiologists and hearing aid users on ethical issues related to hearing aid provision and interactions with manufacturers. This paper is followed by reports from two different studies pertaining to stuttering conducted by colleagues in the United States. The first by Irani and Richmond reports students' perceptions of listener reactions to a number of pseudostuttering behaviors exhibited by the 43 graduate students in communication disorders. The second report on stuttering (St. Louis) compares two administration strategies, paper-and-pencil versus online, using a previously developed measurement tool, the Public Opinion Survey of Human Attributes–Stuttering (*POSHA–S*) to collect public attitudes towards stuttering.

In the second audiology paper, Jutras et al. present their work on developing normative data for two speech tests that have been adapted in French and are used in the assessment of Auditory Processing Disorders: the Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM) and the Staggered Spondaic Word (SSW) tests. The fifth article (Fraser & Steele) presents findings from a study that examined the effects of the use of the chin down position on swallowing safety in adults with dysphagia from a community acute care program. Finally, Fournier et al. describe the development and preliminary validation of a questionnaire, the FM-Benefit Counselling Tool, for use with adults who are fit with FM systems.

This journal issue follows on the heels of the annual CASLPA conference held in May in St. John's, Newfoundland. Many CJSLPA readers presented recent research and clinical reports across a spectrum of speech, language, hearing and other topics relevant to our fields. Many others will undoubtedly have presented new research at other spring conferences. I invite you to share your work through CJSLPA and disseminate it well beyond the conference platform. As an open-access journal, CJSLPA provides the opportunity to share your work to a broad readership.

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Mot de la rédactrice en chef

NUMÉRO DE PRINTEMPS

Bienvenue à l'édition estivale de la Revue canadienne d'orthophonie et d'audiologie. Au cours des premiers mois à titre de nouvelle rédactrice en chef de la RCOA, j'ai rapidement appris ce qui permet à une revue scientifique de fonctionner, soit l'engagement en coulisses des rédacteurs en chef adjoints et des nombreux évaluateurs qui contribuent de leur temps au processus d'évaluation par les pairs. Je me dois de remercier chaleureusement Tim Bressman et deux rédacteurs en chef adjoints sortants, Vincent Gracco et Joël Macoir, dont la participation continue a grandement facilité la période de transition. J'apprécie également le travail de Suzi Dumitrescu, notre adjointe à la rédaction de l'Université de Toronto, qui est demeurée en poste pendant plusieurs mois jusqu'à ce qu'elle soit rassurée que toutes les activités pouvaient être transférées à Ottawa. Je souhaite maintenant la bienvenue à Sarah Healy, une étudiante de l'Université d'Ottawa, qui m'aidera à peaufiner les détails rédactionnels au cours des prochains mois. Nos rédacteurs en chef adjoints qui demeurent en fonction et les deux nouveaux rédacteurs en chef travaillent d'arrache-pied pour conserver la qualité supérieure des articles et assurer un processus d'évaluation opportun. De plus, des rédacteurs en chef invités travaillent à des numéros spéciaux qui seront publiés durant la prochaine année.

La revue a presqu'entièrement effectué le passage à la présentation et au processus d'évaluation électroniques. J'invite les auteurs à présenter leurs articles et à en suivre le progrès à http://cjslpa.coverpage.ca.J'invite aussi nos évaluateurs actuels de même que les nouveaux évaluateurs intéressés à contribuer leur savoir-faire à s'inscrire auprès du système hébergé sur le Web.

L'édition estivale de la RCOA comprend six articles, trois sur des sujets liés à l'audiologie et trois couvrant des champs d'intérêt en orthophonie. Dans le premier article, Coolen et coll. présentent des renseignements inspirants sur une enquête menée à la fois auprès d'audiologistes et auprès d'utilisateurs d'appareils acoustiques sur les aspects déontologiques de la fourniture des appareils acoustiques et des interactions avec les fabricants. Cet article est suivi de deux études ayant trait au bégaiement et réalisées par des collègues américains. Le premier article par Irani et Richmond rapporte comment 43 étudiants en troubles de la communication ont perçu la réaction des auditeurs à plusieurs comportements de pseudobégaiement. Le deuxième article sur le bégaiement (St. Louis) compare deux stratégies d'administration, une de type papier-crayon et une électronique, en utilisant un outil de mesure mis au point antérieurement, le Public Opinion Survey of Human Attributes–Stuttering (*POSHA-S*) pour recueillir des données sur les attitudes populaires à l'égard du bégaiement.

Dans le second article en audiologie, Jutras et coll. présentent leurs travaux sur la compilation de données normatives pour deux épreuves de la parole qui ont été adaptées en français et qui sont utilisées dans l'évaluation des troubles du traitement auditif : les épreuves Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM) et Staggered Spondaic Word (SSW). L'article deFraser et Steele présente les résultats d'une étude qui a passé en revue les effets de l'utilisation de la posture « menton vers le bas » pour la sécurité de déglutition chez les adultes ayant une dysphagie qui sont suivis dans un programme de soins actifs communautaires. Enfin, Fournier et coll. décrivent l'élaboration et la validation préliminaire d'un questionnaire, le FM-Benefit Counselling Tool, pour fins d'utilisation avec les adultes munis de systèmes MF.

Cette édition de la revue a été préparée dans la foulée du congrès annuel de l'ACOA qui a eu lieu en mai à St. Jean, Terre-Neuve.. Un grand nombre de lecteurs de la RCOA ont présenté des recherches récentes et des rapports cliniques couvrant tout le spectre des troubles de la parole, du langage, de l'audition et d'autres sujets propres à nos disciplines. De nombreux autres ont, à n'en pas douter, présenté de nouvelles recherches à d'autres congrès du printemps. Je vous invite à partager vos travaux par l'intermédiaire de la RCOA et à les diffuser bien au-delà de la plateforme des congrès. À titre de revue en mode libre accès, la RCOA vous offre la possibilité de partager vos travaux avec un vaste lectorat.

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Ethical Dilemmas: Are Audiologists and Hearing Aid Users on the Same Side?

Les dilemmes déontologiques : Les audiologistes et les utilisateurs d'aides auditives sont-ils du même bord?

James Coolen
Rachel Caissie
Steve Aiken

KEY WORDS

ETHICS

CONFLICTS OF INTEREST

INCENTIVES

HEARING AID MANUFACTURERS

AUDIOLOGISTS

Abstract

This study examined the opinions of audiologists and hearing aid users on ethical issues related to the provision of hearing aids and interactions with hearing aid manufacturers. With support from two national organizations, Canadian Association of Speech-Language Pathologists and Audiologists and Canadian Hard of Hearing Association, audiologists and hearing aid users from across Canada were recruited to participate in an online survey. A total of 302 respondents (109 audiologists and 193 hearing aid users) completed a questionnaire where they rated the ethicalness of 20 scenarios posing potential ethical dilemmas faced by audiologists. Results showed that, although hearing aid users and audiologists exhibited similar patterns of perception regarding the ethicalness of the scenarios, the actual ratings for the two groups were significantly different for the majority of the scenarios. When differences were observed, hearing aid users tended to consider the scenario more ethically problematic than did audiologists. In general, views were similar between private practice audiologists and public practice audiologists for most scenarios.

Abrégé

Cette étude a sondé les opinions d'audiologistes et d'utilisateurs d'aides auditives à propos des questions déontologiques touchant la fourniture d'aides auditives et les échanges avec leurs fabricants. Deux organisations nationales, l'Association canadienne des orthophonistes et audiologistes et l'Association des malentendants canadiens, ont aidé au recrutement des audiologistes et des utilisateurs d'aides auditives à l'échelle nationale pour participer à un sondage en ligne. Au total, 302 répondants (109 audiologistes et 193 utilisateurs d'aides auditives) ont rempli un questionnaire dans lequel ils ont évalué le caractère éthique de 20 scénarios soulevant des dilemmes déontologiques potentiels auxquels sont confrontés les audiologistes. Les résultats ont montré que, bien que les utilisateurs d'aides auditives et les audiologistes aient affiché des motifs de perception similaires quant au caractère éthique des scénarios, les évaluations réelles chez les deux groupes étaient significativement différentes dans la majorité des scénarios. Lorsque les résultats révélaient des différences, les utilisateurs d'aides auditives avaient tendance à estimer le scénario plus critique sur le plan éthique que ne le faisaient les audiologistes. En général, les perspectives étaient similaires entre les audiologistes en pratique privée et les audiologistes du secteur publique dans la plupart des scénarios.

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Ethical issues in health care and the practices of health care professionals have been, and continue to be, a topic of much debate (Brennan et al., 2006; Dana & Loewenstein, 2003; Garner, 2010; Hawkins, Hamill, & Kukula, 2006; Katz, Caplan, & Merz, 2003; Margolis, 2007; nofreelunch, n.d.; Palmer, 2009; Wazana, 2000; Wazana & Primeau, 2002; Windmill, Freeman, Jerger, & Scott, 2010;). Physicians, medical residents, and the public have raised ethical concerns over pharmaceutical marketing to physicians, which commonly includes gifts, sponsorship of educational activities, and recreational activities. Audiologists encounter similar ethical dilemmas in their interactions with hearing aid manufacturers; they often receive gifts from manufacturers attempting to influence their hearing aid recommendation practices. While the medical literature abounds with research examining the perceptions of physicians and patients regarding the provision of gifts from industry and the influence of interactions with pharmaceutical industry on drug prescribing practices and patient care (e.g., Blake & Early, 1995; Brett, Burr, & Molloo, 2003; Gibbons et al., 1998; Mainous, Hueston, & Rich, 1995; Steinman, Shlipak, & McPhee, 2001), few such studies exist in the audiology literature.

There is a presumption that small gifts such as pens and notepads do not influence behavior, and that only gifts of substantial value represent a conflict of interest (Katz et al., 2003). However, there is a large body of evidence from medical, pharmaceutical, and social sciences research that shows that even gifts of minimal value do influence behavior whether consciously or unconsciously (Cialdini, 2007; Wazana & Primeau, 2002). For example, fund raising by the Disabled American Veterans' organization via direct-mail solicitation showed that when an inexpensive gift was included (customized address labels), the response rate was 35%, compared to only 18% when no gift was included (Katz et al., 2003). Gifts, regardless of the value, create a sense of obligation or feeling of reciprocity towards the provider (Katz et al., 2003; Cialdini, 2007). Simply stated, if the provision of small gifts did not influence behavior, pharmaceutical or hearing aid manufacturers would not use it as a marketing strategy.

Conflicts of interest are not always readily apparent to health care professionals. As pointed out by Garner (2010), some clinicians accept gifts from industry because they do not recognize the conflict of interest of gift giving. Other professionals may view these gifts as standard or expected practice (Wazana & Primeau, 2002) and may believe that gifts will not influence their professional behavior (Steinman et al., 2001). As argued by Wazana and Primeau (2002), "It doesn't affect me" is a widely held belief among professionals, even though the process of persuasion used by industry is a well-documented stratagem known to influence behavior (Cialdini, 2007). For example, research by Orlowsky and Wateska (1992) examined hospital drug prescribing records before and after physicians attended an all-expenses-paid trip in a luxurious resort; physicians were found to significantly increase their recommendation for the sponsor's drug after attending the workshop. Interestingly, they denied that the trip had any influence on their prescribing practices. Steinman and colleagues (2001) further showed that medical residents think that they are not influenced by gifts from the industry; however, they also believe that their peers are influenced by such gifts.

Over the past few years, the American Academy of Audiology (AAA) and the Academy of Doctors in Audiology (ADA) have attempted to raise awareness about ethical issues and conflicts of interest related to the provision of hearing aids and interactions with hearing aid manufacturers. Their effort resulted in a jointly produced document entitled Ethical Practice Guidelines on Financial Incentives from Hearing Instrument Manufacturers (American Academy of Audiology, 2003). These guidelines suggest that gifts of minimal value that primarily benefit patients, and that are not linked to a product purchase, are acceptable. The codes of ethics of the Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) and the Canadian Academy of Audiology (CAA) do not provide as specific guidelines with regards to incentives from hearing aid manufacturers. In the medical field, the Pharmaceutical Research and Manufacturers of America code (PhRMA, 2008) provides specific guiding principles for interactions between pharmaceutical manufacturers and physicians; the code stipulates that educational gifts (such as textbooks) or modest meals during a presentation are acceptable, but non-educational items such as pens or mugs with or without a manufacturer's logo are not appropriate.

What do clinicians think about industry marketing activities such as gift giving? Researchers have investigated physicians' perceptions by asking them to rate whether or not they thought that common marketing scenarios were ethically problematic. In one study, physicians and medical residents were asked to rate 18 scenarios on a 4-point Likert scale ranging from not ethically problematic, mildly problematic, moderately problematic, to very problematic (Brett et al., 2003).The scenarios described activities such as receiving pens and notepads, drug samples, textbooks, meals, and trips to a resort. Results showed that although recreational gifts were seen more problematic than educational gifts, on average most scenarios were

rated as either not problematic or mildly problematic. The scenario with the highest rating was a trip to a resort, with 59% of physicians indicating that this was moderately to very problematic. Similar results were obtained by Steinman and colleagues (2001) who found that most medical residents considered appropriate seven of the nine promotional gifts investigated.

If many physicians believe that most of industry marketing activities do not pose major ethical concerns, how do the opinions of patients measure up? Studies that have examined patients' perceptions of gifts from pharmaceutical companies show that generally patients are aware that physicians receive gifts for office use; however, many are unaware that they are also offered gifts for personal use (Blake & Early, 1995; Gibbons et al., 1998; Mainous et al., 1995). In the study by Blake and Early (1995), patients did not consider trivial gifts or gifts that could benefit patients to be problematic; however, disapproval rates were high for more expensive gifts that did not benefit patients. Moreover, about one third of patients disapproved of physicians accepting that a pharmaceutical company pays for their travel expenses to a medical conference.

Gibbons and colleagues (1998) compared the opinions of physicians and patients on the appropriateness of various gifts given by the pharmaceutical industry, and on whether they thought that each gift would influence prescribing practices. Results showed disagreement between physicians and patients on the degree to which each gift was ethically appropriate and influential, with patients rating most gifts as less appropriate, and more likely to influence prescribing, than did physicians. Gifts considered the least appropriate by patients and physicians included trips, dinners at fine restaurants, and pocketknives; while gifts such as textbooks, educational videos, and pens, were considered appropriate by most patients and physicians. Gibbons and colleagues further noted that about half of the patients were already aware of industry gift giving practices, and of those who were not aware, 24% said that participating in the study had changed their perception of the medical profession. The authors argued that the perception likely became more negative, based on the finding that patients who reported changes in perception were also more likely to disapprove of gift giving practices than patients who did not report changes in their perception of the medical profession.

A few comparable studies exist in the audiology literature. Kirkwood (2003) investigated the opinions of hearing health care providers by asking them to rate four scenarios: (1) receiving $100 with each high-end hearing aid purchased, (2) accepting pens and notepads with a manufacturer's logo, (3) attending an out-of-town conference with expenses paid by a manufacturer, and (4) receiving credits with hearing aid purchases that could be redeemable for a cruise. While the majority of respondents agreed that accepting pens and notepads did not pose any ethical concern, they rated the other three scenarios as less ethically appropriate, and their opinions differed based on their work settings. That is, hearing instrument specialists were less likely than audiologists to rate each scenario as unethical; and private practice audiologists were less likely than public practice audiologists to rate the scenarios as unethical. Kirkwood (2009) further showed that hearing health care providers with less than 10 years of practice, as well as female hearing health care providers, were more likely to view scenarios as ethically problematic.

Hawkins, Hamill, VanVliet, and Freeman (2002) compared the opinions of audiologists to those of consumers with hearing loss on 17 scenarios describing various incentives offered by hearing aid manufacturers. Respondents were asked to rate the ethicalness of the scenarios on a 4-point Likert scale, ranging from "I think that there is nothing wrong with this practice" to "I think that this business practice is clearly unethical." Similar to results obtained by Gibbons and colleagues (1998) with physicians, Hawkins et al.'s results showed that patients were more likely than audiologists to view several of the scenarios as ethically problematic. In 2006, Hawkins and colleagues re-administered the survey to audiologists and noted changes in the opinions of audiologists since the administration of the first survey in 2002. Generally, results suggested that audiologists were becoming increasingly cognizant of the notion that accepting gifts may constitute a conflict of interest. Similar changes in opinions were also observed by Kirkwood (2009). Hawkins and colleagues (2006) and Kirkwood (2009) pointed out that the observed changes in perspectives over time may have resulted from AAA's efforts to provide workshops aimed at increasing audiologists' awareness of ethical guidelines.

Within the Canadian context of health care delivery, there is a lack of research examining the perceptions of audiologists and hearing aid users regarding audiologists' interactions with hearing aid manufacturers and acceptance of gifts, meals, or business-related incentives. Moreover, in recent years, some hearing aid manufacturers have begun purchasing audiology private practices; and patients may not be aware that the clinic where they receive services is owned by a hearing aid manufacturer. Little is known about whether audiologists and patients regard this ownership arrangement as potentially ethically problematic. The main goal of the present study was

to provide a Canadian perspective on the opinions of audiologists and patients regarding ethics matters related to the provision of hearing aids and audiologists' interactions with industry. A secondary goal of the study was to compare the opinions of audiologists working in public versus private settings. In Canada, most audiologists working in private practice settings are responsible primarily for recommending, fitting, and dispensing hearing aids; therefore, they are more likely to have numerous contacts with hearing aid manufacturers than audiologists working in public settings who may be primarily involved in diagnostic audiology. Work by Kirkwood (2003) has suggested that opinions differ between private and public practice audiologists regarding incentives from industry. The current study sought to investigate potential differences in opinions within the Canadian health care context.

Methods

Participants

Canadian audiologists, and hearing aid users who were members of the Canadian Hard of Hearing Association (CHHA), were invited to participate in this study. More information on the demographic characteristics of each group may be found at the beginning of the results section. This study sought to recruit experienced hearing aid users, rather than new hearing aid users or individuals considering trying hearing aids for the first time, in order to mitigate potential risks for participants and audiologists. Based on Gibbons and colleagues' (1998) finding that 24% of patients said that participating in a study about gifts from pharmaceutical companies had changed their perception of the medical profession, we targeted recruitment of experienced hearing aid users. The purpose of this recruitment strategy was to reduce the risk that participating in the present study might negatively change the perception that some patients have about audiologists. It was believed that experienced hearing aid users would be more likely to have already established long-term relationships with audiologists, and therefore would be less likely to be negatively affected by participating in the study. It was speculated that hearing aid users who belong to CHHA would fall into this group, and hence CHHA was used as the means to recruit patients.

Materials

Two brief questionnaires were developed to gather demographic information relevant to each group. The background questionnaire for audiologists contained questions related to gender, number of years in practice, private versus public work setting, and whether they recommend or dispense hearing aids. Geographical location was not sought in order to preserve the anonymity of respondents as the researchers might have been able to determine the identity of some of the respondents based on their geographic location coupled with their responses to other demographic questions (in particular for work settings where audiologists are not numerous such as school boards or universities). The background questionnaire for hearing aid users included questions pertaining to gender, age, length of time wearing hearing aids, and whether they visited an audiologist or a hearing instrument specialist (or both) regarding their hearing care needs.

The main questionnaire was a compilation of 20 scenarios that pertained to issues such as the acceptance of small gifts and incentives from hearing aid manufacturers or their sales representatives, substantial gifts or large business incentives offered by hearing aid manufacturers, and industry involvement in continuing education activities (see Appendix A). The scenarios were directly taken or adapted from Hawkins and colleagues (2002) and Kirkwood (2009). Some scenarios were modified to fit the Canadian context with regard to location (Scenario 13 and 14). One new scenario (Scenario 17) was added to seek the participants' opinions regarding hearing aid manufacturers purchasing private clinics. As in Hawkins and colleagues (2002, 2006), the following 4-point Likert scale was given so that the respondents could rate how ethical they believed the scenario to be:

(1) I think there is nothing wrong with that practice.

(2) While not unethical, that practice may not be in the patient's best interest. I would be more comfortable working with a professional who did not engage in that business practice.

(3) I think this business practice is highly suspect and certainly borders on unethical.

(4) I think this business practice is clearly unethical.

The above full statements were provided at the beginning of the questionnaire, and for simplicity, these categories were shortened after each scenario to the following statements: "Nothing wrong", "Better if not done", "Bordering on unethical", and "Clearly unethical".

Procedure

Email letters were sent to CHHA, CASLPA, and CAA to ask for their assistance in recruiting participants for the study. Upon further communication with each of these organizations, a website address and description of the study was provided to relay to each of their membership lists. This Uniform Resource Locator (URL) took respondents directly to Dalhousie University's

Opinio, a secured website used for surveys. CHHA and CASLPA sent the survey description and URL to their members and were successful in recruiting participants for the survey. However, due to circumstances beyond the control of the researchers, CAA did not take part in the distribution of the survey.

Audiologists and hearing aid users from across Canada received an email from their respective organization inviting them to participate in the study. Hearing aid users were required to be at least 18 years of age to participate in the study. Cochlear implant users, and normally hearing parents of children who wore hearing aids, were not eligible to participate in the study. The URL provided by CHHA and CASLPA brought respondents directly to the survey where they were greeted with an information letter in which the above inclusion and exclusion criteria were specified. This letter also contained information that is found in typical research consent forms. Participation was voluntary and informed consent was assumed based on the respondents' choice to abstain or complete the survey. At the end of the information letter, a link was provided to access the questionnaire.

Results

Respondents' characteristics

Demographic characteristics for the audiologists and hearing aid users are shown in Table 1. A total of 109 audiologists, 85 females (78%) and 24 males (22%), responded to the survey. Eighty percent of audiologists had at least 6 years of experience; 51% reported having more than 15 years of practice. Sixty-two audiologists (57%) worked in public practice settings (including hospitals, school boards, universities, and non-profit organizations) and 47 (43%) worked in private practice (private clinics and industry). The proportion of workload pertaining to hearing aids varied among audiologists; however, the majority of audiologists (91%) indicated that they recommended hearing aids, while 67% indicated that they also dispensed hearing aids. Of those audiologists who reported dispensing hearing aids, all but one also reported recommending hearing aids.

A total of 193 hearing aid users, 119 females (62%) and 72 males (37%), responded to the survey (two respondents did not provide an answer to the question about gender). Seventy-five percent of the hearing aid users were more than 50 years of age. The majority were experienced users of hearing aids, with 94% of them having used hearing aids for at least 3 years and 67% of them for more than 15 years. Over half of the hearing aid users (61%) reported seeing only an audiologist for their hearing care needs, while 15% reported seeing only a hearing instrument specialist; most of the remaining respondents saw both types of professionals.

Although there was a greater female representation in both groups, gender distribution was comparable for hearing aid users and audiologists. A Mann-Whitney U-test, performed on perception ratings averaged over all scenarios, showed no significant difference between female and male respondents' opinions ($U = 9862.0$, $p = .85$). It should also be pointed out that 35% of hearing aid users were over 65 years of age, thus likely older than the group of audiologists. The hearing aid users' ratings averaged across all scenarios were compared for the different age groups using a Kruskal-Wallis test. Results showed that the respondents' age did not significantly influence their opinions ($X^2 = 5.63$, $p = .13$). Similarly, no significant difference was found when audiologists were compared based on years of practice ($X^2 = 3.26$, $p = .35$).

Ratings of scenarios

To determine if the mean ratings were significantly different between audiologists and hearing aid users, and between private practice audiologists and public practice audiologists, nonparametric Mann-Whitney U-Tests were performed on participants' ratings averaged across all scenarios, as well as on each individual scenario. A level of significance of 0.05 was retained for all comparisons.

When ratings averaged across all scenarios were examined, results showed a significant difference between audiologists and hearing aid users ($U = 6584.5$, $p < .0001$). Mean ratings for each scenario, and significance level values, are illustrated in Figure 1 (see Appendix A for the full description of the scenarios). Similar patterns of perception regarding the ethicalness of the scenarios were observed for audiologists and hearing aid users; however, the ratings values were statistically significantly different for 16 of the 20 scenarios. That is, on average both audiologists and hearing aid users gave ratings close to 1 (nothing wrong) for activities such as workshops or visits from manufacturer representatives, which might include small gifts or light meals (e.g., Scenarios 1, 6, 7, 9, 11, and 12), while both groups gave average ratings greater than 3 for scenarios involving more substantial gifts for personal use (e.g., Scenarios 2, 5, 14). However, the rating values for these scenarios were significantly different between the two groups. For example, although on average both audiologists and hearing aid users believed that it was appropriate for audiologists to accept pens, notepads, and lunch, hearing aid users rated these gifts significantly higher (more problematic) than did audiologists. Hearing aid users were also significantly more likely than audiologists to judge as less acceptable

scenarios that were related to continuing education paid by a hearing aid manufacturer (Scenario 13) or scenarios that pertained to business issues such as hearing aid sales in exchange of business-related expenses or equipment, volume discounts in exchange for primarily prescribing the manufacturer's brand of hearing aids, receiving a commission based on the number of hearing aids sold, or patients being unaware that a manufacturer owns a clinic (Scenarios 3, 4, 15, 17, 18).

The percentage of audiologists and hearing aid users who answered either "Nothing wrong with that practice" or "Clearly unethical" is displayed in Table 2. When the scenario did not involve any gifts or food (Scenarios 6 and 11), the vast majority of hearing aid users and audiologists (over 90%) thought that there was nothing wrong with that practice. When small gifts or meals were included (Scenarios 1, 7, 12), over 80% of audiologists continued to believe that the behavior was acceptable, compared to only 53 to 66% of hearing aid users. Four scenarios were rated as "Clearly unethical" by more than half of the hearing aid users. These included the audiologist receiving a traveler's cheque for each high-end hearing aid sold, a manufacturer paying for a spouse's travel, volume discounts in exchange for primarily prescribing the manufacturer's brand of hearing aids, and the patient being unaware that a clinic was owned by a hearing aid manufacturer (Scenarios 5, 14, 15, and 17). In general, a smaller proportion of audiologists rated these same scenarios as "Clearly unethical".

The current study also investigated any differences in opinions between audiologists working in private practice versus those working in public settings (see Figure 2 and Table 2). When ratings were averaged across all scenarios, a significant difference was observed between audiologists in public and private practice ($U = 927.0$, $p = .001$). However, when each scenario was analyzed separately, the two groups showed significantly different ratings for only 6 out of the 20 scenarios. For those scenarios where differences were observed, public setting audiologists generally gave higher ratings (i.e., they viewed scenarios as more problematic) than private practice audiologists. Significant differences between the two groups were observed for scenarios related to business practices, such as hearing aid sales in exchange of business-related expenses or equipment, and volume discounts in exchange for primarily prescribing the manufacturer's brand of hearing aids (Scenarios 3, 4, and 15). Although many private practice and public practice audiologists believed that it was unethical to receive a traveler's cheque for each high-end hearing aid sold or accept that a manufacturer pays for a spouse's travel (Scenarios 5 and 14), public setting audiologists rated these scenarios significantly higher than private practice audiologists. Finally, public setting audiologists were significantly more likely than private practice audiologists to view as ethically problematic a manufacturer paying an audiologist's travel expenses to attend an out-of-town conference (Scenario 13).

Table 2 shows that only one scenario was rated as "Clearly unethical" by slightly more than half (53%) of private practice audiologists (Scenario 2); less than one third of private practice audiologists rated any of the remaining scenarios as "Clearly unethical". In comparison, four scenarios were rated as "Clearly unethical" by more than half of public practice audiologists (Scenarios 2, 5, 14, and 15).

Discussion

This study was conducted to compare the opinions of audiologists and hearing aid users from across Canada regarding ethical dilemmas surrounding the provision of hearing aids and interactions with hearing aid manufacturers. Results showed that hearing aid users are significantly more likely than audiologists to view gift giving and incentives from hearing aid manufacturers as ethically problematic. This finding is consistent with results obtained by Hawkins and colleagues (2002), and by Gibbons and colleagues (1998) with physicians and patients regarding gift giving from pharmaceutical industry. The current study also showed that hearing aid users and audiologists nevertheless agree on the types of behavior that they consider ethically appropriate versus those that they consider problematic. For example, although hearing aid users were more likely than audiologists to have some level of discomfort about audiologists accepting pens, notepads, and small meals, both groups believed that these activities do not pose any major ethical concern. On the other hand, the majority of audiologists and hearing aid users agreed that activities involving more substantial gifts for personal use are unethical; however, hearing aid users showed a greater level of discomfort with such activities than audiologists.

In general, hearing aid users were less comfortable than audiologists with incentives or gifts that were tied to hearing aid sales (such as getting either personal or business-related goods in exchange for hearing aid sales or receiving a commission) or incentives that encouraged audiologists to recommend one manufacturer's products almost exclusively. Moreover, it appears that opinions about hearing aid manufacturers being involved in the management of hearing care clinics depend on whether patients are aware of such involvement. That is, many hearing aid users and audiologists see nothing wrong with an audiologist owning a hearing aid manufacturer's

franchise and making the brand name of the product obvious to patients, even though that product brand is used almost exclusively. In contrast, they have ethical concerns when patients are not aware that a hearing aid manufacturer has purchased a hearing care clinic and that the manufacturer's products are used almost exclusively. Indeed, 56% of hearing aid users viewed this latter ownership arrangement as clearly unethical compared to only 14% when they were aware of the industry's involvement in the clinic.

Given that audiologists working in private practice settings generally have more frequent interactions with hearing aid manufacturers, the current research examined whether the opinions of private practice audiologists differed from those of public practice audiologists. The results showed more similarities than differences between private practice and public practice audiologists. That is, no significant differences were found for the majority of the scenarios. The differences observed were mostly for scenarios related to business expenses, with public practice audiologists rating the scenarios as more ethically problematic than private practice audiologists.

Overall, the perceptions of Canadian audiologists and hearing aid users were found to be similar to those of American audiologists and consumers (Hawkins et al., 2002, 2006; Kirkwood, 2003). However, results of the current study did not show a generation gap or a gender gap in the respondents' opinions. This was in contrast with Kirkwood (2009) who found that female hearing care providers and providers with less than 10 years of experience were more likely to view scenarios as ethically problematic. The reason for the disagreement between American and Canadian hearing care providers is unclear; however it should be pointed out that statistical analysis of the results was not performed in Kirkwood's study, which may account for the observed disagreement.

It should be noted that the majority of hearing aid users sampled in this study had more than 15 years of experience with hearing aids. Hearing aid users who have achieved long term relationships with audiologists might be less likely to see some activities as unethical. It is possible that hearing aid users with less experience would rate the scenarios as less ethical, however there is no reason to expect a different pattern of responses. Nevertheless, it is recognized that the results of this study reflect primarily the opinions of experienced hearing aid users rather than those who are new users of hearing aids.

Research shows that hearing aid users are generally less tolerant of ethically questionable practices than

Table 1. Respondents' demographic characteristics.

Audiologists (n=109)	Percentage of respondents	**Hearing aid users** (n=193)	Percentage of respondents
Years in practice:		*Age:*	
2 years or less	10	18-30 years	9
3-5 years	9	31-50 years	15
6-15 years	29	51-65 years	40
More than 15 years	51	66+ years	35
Work settings:		*Length of hearing aid use:*	
Hospital/clinic	53	2 years or less	6
Private clinic	41	3-5 years	9
School board	1	6-15 years	18
University	3	More than 15 years	67
Hearing aid manufacturer/industry	2		
Proportion of total workload related to hearing aids:		*Who do you see about your hearing aids?*	
0-25 %	34	Audiologist only	61
26-50%	18	Hearing instrument specialist only	15
51-75%	21	Both audiologist and hearing instrument specialist	22
76-100%	27	Other	2

Table 2. Percentage of respondents who answered either "Nothing wrong with that practice" or "Clearly unethical" to each scenario.

Scenarios	"Nothing Wrong"			"Clearly Unethical"		
	HA users	Public Audiol.	Private Audiol.	HA users	Public Audiol.	Private Audiol.
1. Rep visit with pens and notepads provided	64	92	94	4	0	0
2. Credit redeemable towards clothing or cruise with HA sale	8	3	2	43	60	53
3. Credit redeemable for business-related expenses with HA sale	19	31	53	33	24	6
4. HA manufacturer offers equipment in exchange of HA sale quota per year	10	15	11	49	47	23
5. $100 travel cheque for each high-end HA sold	5	6	15	64	68	32
6. Rep visit to discuss products	92	98	100	1	0	0
7. Rep visit to discuss products with lunch provided	53	81	87	4	0	2
8. Rep takes clinician and spouse for dinner; only briefly discuss products	18	23	32	24	16	9
9. Party sponsored by manufacturer at convention; open to all delegates	77	92	94	2	2	0
10. Dinner party by invitation only at a conference	40	53	68	5	8	0
11. Manufacturer seminar to cover product updates; held in town	94	97	100	0	0	0
12. Manufacturer seminar with breakfast and lunch	66	87	89	2	0	0
13. Travel to attend conference in Vancouver is paid by manufacturer	25	48	70	18	7	2
14. Manufacturer also pays travel for spouse	4	7	6	52	57	30
15. Volume discount in exchange of clinician using the manufacturer for most patients	9	13	22	54	51	20
16. Clinician purchases franchise, sign of brand name is on door; this brand used almost exclusively	41	39	57	14	15	9
17. Manufacturer owns a private clinic; patient unaware that manufacturer owns the clinic	6	11	15	56	44	26
18. Clinician receives salary and commission on HA sold	15	32	47	31	15	13
19. Clinician does research for manufacturer; manufacturer decides if research is published	11	11	21	45	44	26
20. Get a $50 camera after listening to a demonstration at a conference	29	43	53	15	10	6

Abbreviations: rep: manufacturer sales representative; HA: hearing aids.

audiologists. Given these differences, audiologists may want to consider the perception of the public when deciding whether to accept promotional gifts or incentives from hearing aid manufacturers. In today's public demands for more transparency and accountability of business practices, uncovering the views of patients and audiologists on ethical issues may be an essential step towards maintaining the integrity of the audiology profession and its services. The results of this study may help elicit discussion, promote education regarding the importance of maintaining ethical practice among audiologists in Canada, and lead to an advance of policies on ethical standards specifically related to the provision of hearing aids and relationships with manufacturers. Future guidelines should consider the different viewpoints of patients and audiologists. Apart from this, findings of this study may be used as a reference with which to compare future research, enabling other investigators to explore changes in the perceptions of audiologists and patients over time.

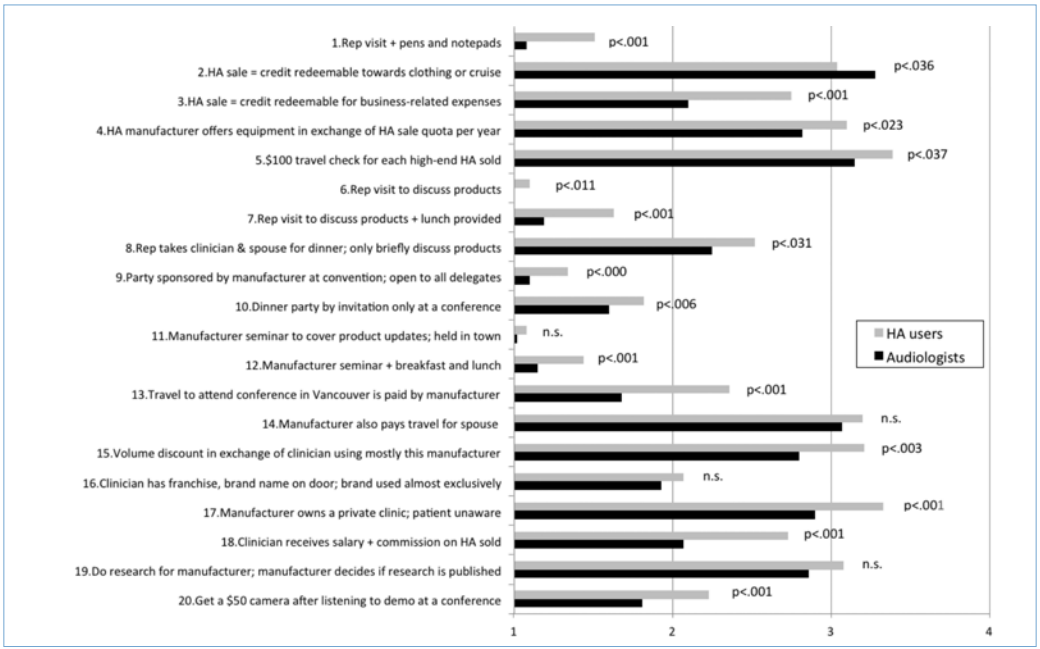

Figure 1. Average ratings for audiologists and hearing aid users for each scenario.

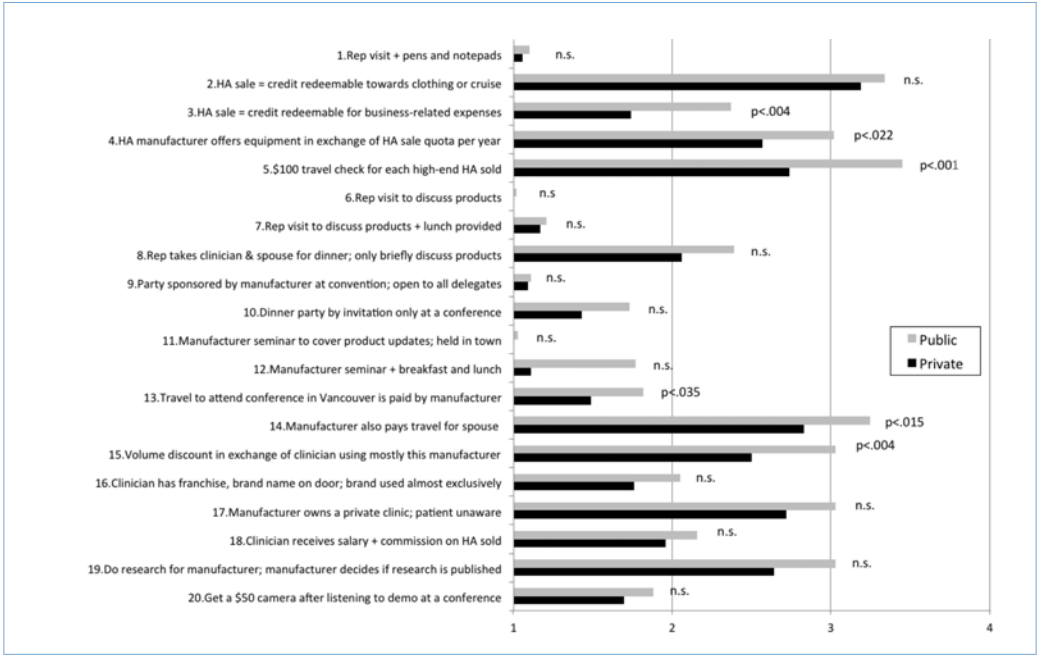

Figure 2. Average ratings for private practice audiologists and public practice audiologists, for each scenario.

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Received date: April 28, 2011

Accepted date: July 22, 2011

APPENDIX A

Ethics Survey

This section of the questionnaire includes 20 hypothetical scenarios. Please rate each scenario based upon one of the four categories listed below:

1. "I think there is nothing wrong with that practice."
2. "While not unethical, that practice may not be in the patient's best interest. I would be more comfortable working with a professional who did not engage in that business practice."
3. "I think this business practice is highly suspect and certainly borders on unethical."
4. "I think this business practice is clearly unethical."

Each of these categories has been shortened for convenience to the following descriptions:

1) Nothing Wrong, 2) Better If Not Done, 3) Borders on Unethical, 4) Clearly Unethical.

Note: The term hearing care provider is used to refer to either an audiologist or a hearing aid dispenser.

1. A hearing aid manufacturer sales representative visits the hearing care provider's office and brings pens, pencils, and notepads with the name of the new product on it. The hearing care provider accepts.
2. A hearing aid manufacturer has a new promotion. For every hearing aid sold, the hearing care provider will earn one "credit". The hearing care provider can redeem credits for products ranging from those offered in a clothing catalogue to a cruise to the British Virgin Islands.
3. A hearing aid manufacturer has what it calls a "professional development plan." For each hearing aid sold, the manufacturer places money into an investment account that is redeemable for the purchase of equipment, books, continuing education workshops or other business-related expenses. The hearing care provider joins the plan.
4. A hearing care provider needs a new piece of hearing aid equipment. He or she could borrow the money and arrange a plan through a bank. Instead, the hearing care provider accepts a hearing aid manufacturer's offer of this equipment in exchange for buying a defined number of hearing aids within a year.
5. A hearing aid manufacturer offers a promotion whereby the hearing care provider receives a $100 traveler's cheque for each high-technology hearing aid that is purchased. The hearing care provider takes advantage of this offer.
6. A hearing aid manufacturer sales representative makes a personal visit to the hearing care provider to discuss the hearing aids that the manufacturer sells. The hearing care provider listens to the salesperson.
7. A hearing aid manufacturer sales representative visits the hearing care provider over the noon hour and takes him or her to lunch, or the representative brings in lunch for the hearing care provider and staff. They discuss the manufacturer's line of products.
8. A hearing aid manufacturer sales representative takes the hearing care provider and his/her spouse out for dinner. The sales representative only briefly discusses the manufacturer's products.
9. A hearing care provider goes to a party at a professional convention sponsored by a hearing aid manufacturer. The party is open to all hearing care providers regardless of whether they dispense that brand of product.
10. At an annual professional conference, the hearing care provider attends a dinner party that is by invitation only. The hearing care provider was given the invitation by the area hearing aids sales representative.

11. A hearing care provider goes to a free continuing education seminar offered by a hearing aid manufacturer. The seminar covers the features of the manufacturer's new products, and instructions on fitting the hearing aid. The seminar is held in town.
12. A manufacturer offers a free continental breakfast and buffet lunch in addition to a continuing education course. The hearing care provider attends and accepts the offered meals.
13. A hearing aid manufacturer sponsors a continuing education conference in Vancouver. The conference discusses the fitting of the manufacturer's line of hearing aids, and how to determine which product will help which patient. A hearing care provider from Toronto is invited and attends. The hearing aid manufacturer pays the hearing care provider's travel expenses.
14. For the same continuing education conference in Vancouver, the hearing aid manufacturer pays the expenses of the hearing care provider's spouse, who is not a hearing health care professional. The hearing care provider and the hearing care provider's spouse attend.
15. A hearing care provider is offered a substantial volume discount by a hearing aid manufacturer provided that he / she selects this manufacturer's brand of hearing aids for most of his or her patients. The hearing care provider accepts.
16. A hearing care provider has purchased a franchise from a hearing aid manufacturer with a well-known name, one that advertises nationally, and one that consumers easily recognize. The sign on the door indicates the brand name. The hearing care provider dispenses this product line almost exclusively. The hearing care provider only uses another manufacturer's product when there is no franchise product that can meet the client's needs.
17. A hearing aid manufacturer has purchased a private hearing care clinic. The hearing care provider dispenses hearing aids from this manufacturer almost exclusively. There are no obvious signs appearing to patients which indicate that the hearing aid manufacturer owns the clinic (i.e., patients may be unaware).
18. A hearing care provider is an employee for a clinic. The hearing care provider receives a salary, plus a commission based upon the dollar amount of hearing aids sold.
19. A hearing care provider is offered $25,000 by a manufacturer to research the effectiveness of a newly released high-technology hearing aid. The hearing care provider is asked to sign a contract stipulating that the company will decide how and if the results of the research are made public.
20. In the exhibit hall at a professional conference, a hearing aid manufacturer is offering a digital camera (wholesale price of $50) to any hearing care provider who watches a demonstration of the manufacturer's latest product. The hearing care provider watches the demo and accepts the gift.

Listener Reactions to Pseudostuttering Experiences

Les réactions des auditeurs face aux expériences de pseudo-bégaiement

KEY WORDS
PSEUDOSTUTTERING
LISTENER REACTIONS
STUTTERING

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Abstract

This study examined listener reactions to a variety of pseudostuttering behaviors as reported by 43 graduate students majoring in communication disorders. A pseudostuttering survey was used to measure location information, student perceptions, and listener reactions. Each student completed an on campus, off campus, and phone conversation pseudostuttering experience. Descriptive statistics and qualitative analyses were used to examine trends in student reports of the type of stuttering behaviors used, listener choice, location, and perceived listener reactions. Results, based on 129 reported pseudostuttering experiences, indicated that repetitions were the most frequently reported core behavior. In general, the students reported that the majority of listeners were patient, followed by patience with confusion. Future research is needed to further examine the importance of core behavior type and listener characteristics on pseudostuttering training experiences.

Abrégé

Cette étude a passé en revue les réactions d'auditeurs face à une gamme de comportements de pseudo-bégaiement tels que signalés par 43 étudiants diplômés se spécialisant en troubles de la communication. Un sondage sur le pseudo-bégaiement a permis de mesurer les données sur l'emplacement, les perceptions d'étudiants et les réactions d'auditeurs. Chaque étudiant s'est prêté à une expérience de pseudo-bégaiement lors de conversations sur le campus, hors campus et par téléphone. Nous avons utilisé des statistiques descriptives et des analyses qualitatives pour examiner les tendances de signalement par les étudiants du type de comportements de bégaiement utilisé, du choix des auditeurs, de l'emplacement et des réactions perçues des auditeurs. Les résultats, fondés sur 129 expériences de pseudo-bégaiement déclarées, ont indiqué que les répétitions étaient le comportement le plus souvent signalé. En général, les étudiants ont déclaré que la majorité des auditeurs étaient d'abord patients, puis patients et confus. D'autres recherches sont nécessaires afin de mieux comprendre l'importance du type de comportements et des caractéristiques des auditeurs dans le cadre d'expériences de formation sur le pseudo-bégaiement.

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Introduction

Stuttering is defined as a complex multifactorial disorder (Bennett, 2006; Smith, 1999), comprised of three main components: affective, behavioral and cognitive. This multifactorial nature of stuttering potentially affects daily activities as well as an individual's overall participation in society (Yaruss, 2007). Based on the nature of stuttering, an effective training program for student clinicians should incorporate a description of overt stuttering behaviors, thoughts or feelings associated with stuttering, and cognitive reactions to stuttering. Although in-class experiences can expose student clinicians to the basic stuttering behaviors, pseudostuttering experiences provide a glimpse of how people who stutter (PWS) are viewed by those in their environment.

Listener Reactions to Stuttering

Several studies have reported the presence of a negative stereotype of PWS by various societal groups which includes personality traits such as shy, nervous, self-conscious, tense, guarded, anxious, fearful, and introverted (Turnbaugh, Guitar, & Hoffman, 1979, 1981; Woods & Williams, 1971, 1976). According to Smart (2001), people with disabilities often internalize such negative stereotypes and believe them as true about themselves.

Listener reactions to stuttering have often been studied in the past using varying methodologies (Rosenberg and Curtiss, 1954;Turnbaugh, Guitar, & Hoffman, 1979, 1981; Wingate and Hamre 1967; Woods & Williams, 1971, 1976; Yovetich & Dolgoy, 2001). Some studies have explored listeners' perceptions to stuttering by asking various societal groups to rate their attitudes toward PWS (Turnbaugh, Guitar, & Hoffman, 1979, 1981; Woods & Williams, 1971, 1976). In addition to self-reported attitudes toward stuttering, a few studies have also explored observed listener reactions to stuttering. For example, Rosenberg and Curtiss (1954) used an experimental procedure to study listener responses to stuttering. They specifically analyzed listener's eye contact, hand movements, and other bodily movements during stuttering and non-stuttering speech. The experimental method involved deception of subjects who were brought in to be subjects for a psychological experiment, where they interacted with a PWS or a person who does not stutter (PWDS) in the waiting room while two investigators observed and noted the listener's reactions to the two conditions. The results of this study found statistically significant differences in listener duration of loss of eye contact, frequency with which a change in eye contact away from the PWS was made, decreased initiation of hand movements, decreased duration of other bodily movements, and decreased initiation of bodily movements. Results were interpreted as indicating that stuttering significantly affected listener behavior and stuttering appears to act as a behavioral depressant to a listener.

In addition to observation of listener reactions in a controlled method using deception, studies have also explored perceptions of listener reactions by PWS. Wingate and Hamre (1967), in one such study, investigated whether PWS are prone to perceive negative reactions in listeners as a projection of their own attitudes toward their own stuttering. Twenty PWS and matched controls were shown a video of 10 people listening to individual speakers. Participants were asked to identify if the speaker in the video segment stuttered and to describe the listener's reaction. Results of this study found no differences between PWS and PWDS in the identification of speakers and descriptions of listener reactions, indicating that PWS do not project their own attitudes and beliefs about stuttering to listeners.

Similarly, Yovetich and Dolgoy (2001) explored the impact of listener's facial expression on PWS and a matched control group to investigate whether the impact of listeners' reactions on PWS differed from that of PWDS. The results of this study indicated that PWS did not show a greater tendency to assign negative attributes to listener reactions than the control group, suggesting that perception of non-verbal behavior by PWS is similar to that of PWDS.

Listener Reactions to Pseudostuttering

Although numerous studies have investigated listener reactions to stuttering (for e.g. Turnbaugh, Guitar, & Hoffman, 1979, 1981; Woods & Williams, 1971, 1976), very few studies have explored listener reactions to pseudostuttering activities completed by students undertaking a course in fluency disorders.

Simulated stuttering or "pseudostuttering" activities have often been used to train students in communication disorders (Ham, 1990; Mayo, Mayo, & Williams, 2006; McKeehan, 1994). According to Manning (2004), engaging in pseudostuttering activities can help students better understand the nature of stuttering, thereby developing more positive relations with their clients. A few studies have explored the value of using pseudostuttering activities to prepare student clinicians to work with PWS (Ham, 1990). Ham (1990) investigated the use of a pseudostuttering activity to prepare clinicians to understand and empathize with clients who stutter. As part of the study, 24 graduate students taking an advanced class in fluency disorders were required to assume the role of a PWS and stutter in all speech contacts for the day. The students were

required to record listener reactions in a variety of speaking contexts including three phone calls and three face-to-face contacts with strangers. The students were allowed to inform family and friends that this was part of an assignment, however, were asked to not disclose this information to strangers. All students reported to be tense while completing the assignment, while a few reported being terrified. An analysis of listener responses indicated that the students perceived the reactions of a majority of strangers (76%) and known contacts (72%) as negative. Negative auditor reactions were described as frustration, agitation, embarrassment, anxiety, rudeness, and curtness. Overall, the results of this study indicate that a majority of responses to pseudostuttering were perceived negatively irrespective of the student's familiarity with the listener. A limitation of this particular study is that it failed to collect data on the type of core stuttering behavior used by students completing this activity. There is also no information about the students perceived severity of pseudostuttering at the time of recording listener reactions. This additional information would be very helpful in a clinical setting to judge what overt stuttering behaviors are perceived more positively by listeners and whether the use modification techniques would impact listener reactions.

In a similar study, McKeehan (1994) investigated listener reactions recorded by sixteen graduate students who applied commonly used fluency facilitating strategies for seven days, simulating the treatment experiences of clients. The students recorded listener responses to their speech when using these strategies. Information about familiarity with the listener was also recorded. For analysis, student reports of listener reactions on the first and fourth day of the assignment were analyzed. Analysis of student reported listener reactions indicated that on the first day, students coded nearly equal numbers of neutral and negative responses (43% neutral; 41% negative). On the fourth day, after gaining more experience with using the fluency facilitating strategies, an increase in the number of listener responses coded as neutral and a decrease in responses coded as negative for both familiar and unfamiliar listeners. The results of this study are encouraging and indicate that listeners are more likely to have neutral responses to fluency facilitating strategies; which improves over time as the speaker becomes more comfortable with the use of these strategies. The study however, does not list exact strategies used and perceived reactions to each strategy. This would provide the reader with information about what strategies appear to be the most acceptable or least distracting to listeners.

Mayo, Mayo, and Williams (2006), investigated affective, behavioral, and cognitive responses of students completing a pseudostuttering exercise as part of their graduate coursework. The study reported that almost all participants reported a desire to avoid pseudostuttering and listener responses to their pseudostuttering. Additionally, all students reported feeling high levels of anxiety while completing this activity and 97% reported negative listener reactions. The students further reported that they anticipated negative listener responses and many students expressed anger and humiliation over their listeners' reactions. Overall, this study not only provides the reader with information about possible perception of listener reactions to stuttering, but also provides an insight to the speakers' cognitive and affective responses to stuttering and the act of speaking itself.

Need for this study

In the past, pseudostuttering activities have been used to help students in the field of communication disorders increase empathy and gain a better understanding of the client's perspective. A few published studies (e.g., Ham, 1990; Manning, 2004; Hughes, 2010) have discussed various aspects of the pseudostuttering including its impact on the students completing the pseudostuttering activities, the listener reactions reported by the students, and the students' thoughts/feelings about the exercise. This has been accomplished in the past by the use of various methodologies of data collection and analysis.

The present study expands on the findings of previous explorations of pseudostuttering with a specific emphasis on listener reactions to pseudostuttering, as reported by graduate students, and various variables that could impact these perceived listener reactions. This study specifically explores perceived reactions based on the specific types of core behaviors used, whether secondary behaviors were used, and the content of the conversation. Students' reports of listener reactions to various core behaviors in different situations were also determined. It should be noted that the aim of this study was to report on the speaker's (in this case graduate students) perceptions of listener reactions. Thus, the data reported in the study might not necessarily be the actual listener reaction, but the perception of the speaker. A highly controlled methodology for data collection was implemented in order to answer the following research questions:

1. What types of core and secondary behaviors are students more likely to use during pseudostuttering experiences?

2. What is the relationship between the core behaviors performed during pseudostuttering experiences and perceived listener reactions?
3. What is the relationship between the content of pseudostuttering experiences and perceived listener reactions?

Methods

Participants

The participants consisted of 43 first year graduate students at a southwestern university. All students were majoring in communication disorders and participated in the study while completing a graduate course in fluency disorders. The data from the student's pseudostuttering assignment was used for the current study. Students signed an informed consent for their data to be used in the current study. While a total of 55 students completed the pseudostuttering assignment, 43 students signed the informed consent and agreed to be included in this study. Forty-two participants were females between the ages of 22 and 50 years and one participant was a 22 year-old male.

Procedures

Participant training. The project consisted of three individual components: observations, training, and out of class experiences. The participants viewed educational video clips of children and adults who stuttered. After viewing each clip, the instructor led a discussion on a specific topic related to stuttering (e.g. core behaviors, feelings of those who stutter, and genetic components of stuttering). Next the students practiced pseudostuttering for three in-class training sessions. The training was completed in the following format: (1) the instructor modeled the target behaviors, (2) the students practiced the behaviors independently and (3) the students practiced the target behaviors within small groups.

During the first training session, the students learned how to pseudostutter using the core behaviors of stuttering (i.e. blocks, prolongations, and repetitions). During the second training session, the students learned how to incorporate secondary behaviors and primary physical concomitants in their moments of pseudostuttering. The secondary behaviors modeled by the students included eye blinks, foot tapping, and head jerks. For the final training session, the students practiced pseudostuttering during a discussion with a partner. During each session, the students were required to write the stuttering behaviors that they modeled and how they felt about the pseudostuttering experiences. The written information was for the students records and was not kept by the instructor.

Data collection. The out of class experience consisted of each student completing a pseudostuttering experience within three different locations; on campus, off campus (or community), and during a phone conversation. Students completed a custom pseudostuttering survey (Appendix A) for each location. The focus of this current study was to analyze the students' description of listener reactions to their pseudostuttering in relation to the type of core behavior used, presence of secondary behavior, and content of the conversation. The students were required to observe and document the listener's initial reaction immediately following the situation in which pseudostuttering was used.

Data Analysis

Quantitative analysis. Descriptive statistics were calculated for all responses to forced choice questions on the custom questionnaire. This included information about the type of stuttering behavior used, secondary behaviors used, the content of the conversation, and perceived listener reactions reported by the student. For the purpose of this analysis, perceived listener reactions were coded using thematic analysis as described in the section below.

Qualitative analysis. The qualitative data for this study consisted of open-ended responses about listener reactions submitted by each student following the completion of the three pseudostuttering experiences. The data was analyzed using categorizing strategies including coding and thematic analysis (Maxwell, 2005). This analysis was completed in four steps as displayed in Figure 1. The first step involved familiarizing oneself with the data. All open-ended responses were read in full by the first author to determine relevant topic areas. The second step of this process involved identifying several statements representing a common theme. The statements were then highlighted within and between participants thereby identifying codes. After completing this task, similar codes were clustered together to generate themes. The themes were coded numerically to allow for frequency counts.

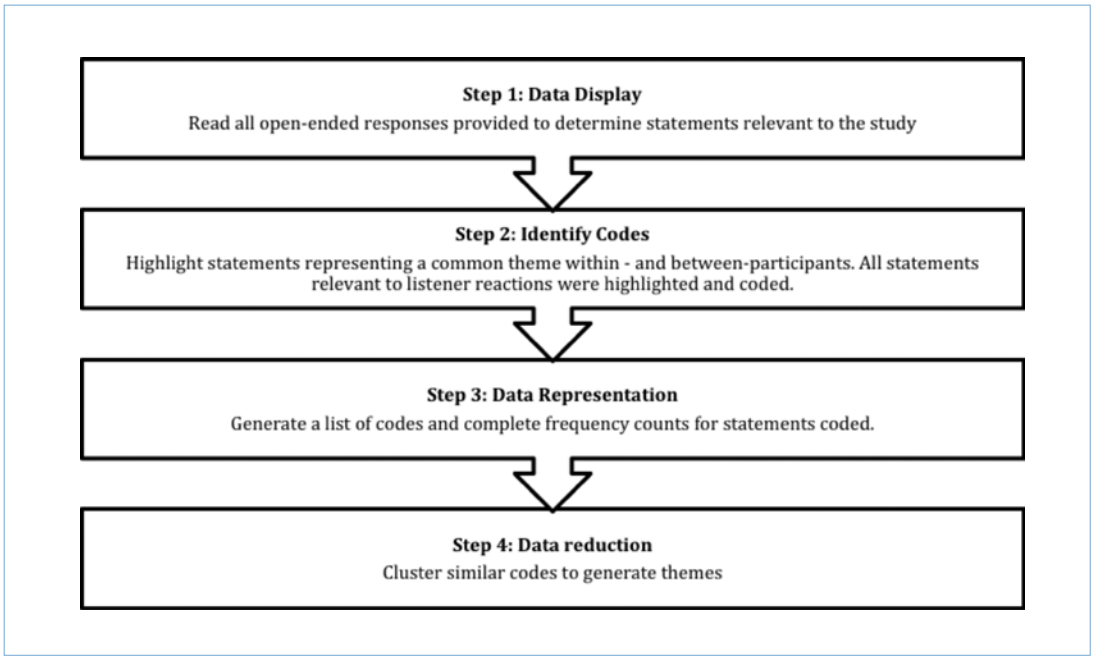

Figure 1. Steps in qualitative analysis.

To enhance reliability of this analysis, the second author coded all responses independently. The numerical codes were used to allow for a statistical comparison to determine inter-judge reliability. A Pearson's Product Moment Correlation (PPMC) was then conducted to confirm inter-judge reliability of the themes. Results of this analysis indicate a significant positive correlation
(r = .779; p = .000).

Results

Core Behaviors during Pseudostuttering Experiences

In general, the student participants reported that the on campus pseudostuttering experiences occurred in public settings (e.g. library and bookstores). Students reported completing a total of 129 pseudostuttering situations. During the pseudostuttering experiences, the students reported using repetitions (n = 29), repetitions combined with prolongations (n = 27), a combination of blocks, repetitions, and prolongations (n = 25), a combination of blocks and repetitions (n = 20), followed by relatively fewer instances of a combination of blocks and prolongations (n = 11), blocks exclusively (n = 9) and prolongations exclusively (n = 8). "Repetitions" was the highest occurring core behavior during phone conversations (n = 12). This is displayed in Figure 2. Additionally secondary behaviors accompanying moments of stuttering were used more in community locations (n = 16) than campus locations (n = 10). Additionally, students used secondary behaviors in only 20.3% of all pseudostuttering experiences (n = 26).

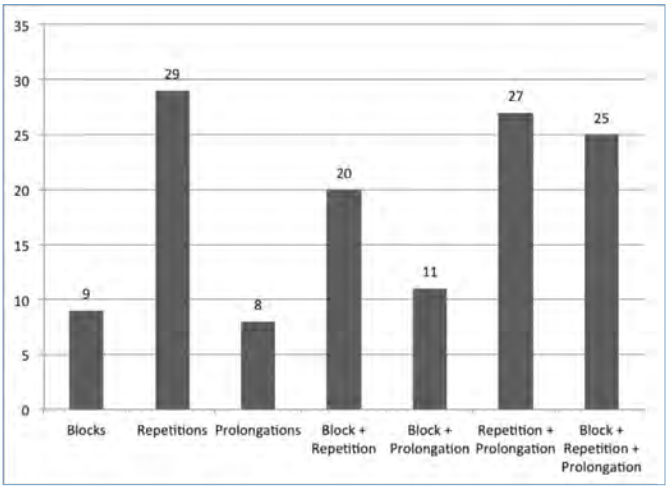

Figure 2. Frequency of core behaviors used.

Listener Reactions

Qualitative analysis. Student reports of various listener reactions were read by the primary author and coded using thematic analysis, as described in the methods section. Thematic analysis of this particular data set yielded six main themes: Patience; Patience and Confusion; Confusion/Uncertain; Frustration; Active Help; and No reaction.

The first theme, "patience" was used to code reactions that indicated the listener appeared unfazed by the pseudostuttering and did not interrupt the speaker or make the speaker uncomfortable. Some examples from this theme include:

> This individual to my surprise was really nice and just smiled and kept looking at me and waited for me to finish. I wanted to ask what her major was after that cause I didn't expect a reaction like that.

> He actually had no visual response. He was polite and waited quietly.

The second theme, "patience and confusion" was used to code reactions that indicated the listener appeared shocked or confused at first; however, gathered themselves and were patient and comfortable to talk to after the initial surprise/discomfort with the act of pseudostuttering. Some examples include:

> This lady was [momentarily] surprised but was very calm. I think I saw in her expression that she was prepared to have patience. When I told her it was an assignment and that I didn't really stutter, she said she knew someone who stuttered so she "was kind of used to it."

> I was so nervous that it began to feel like I was really stuttering. I tried not to make eye contact in the moment of my stutter but afterwards he just kind of looked at me, but did not laugh or make other remarks. I don't think he was expecting me to stutter.

It is interesting to note that one student (see quote above) felt compelled to disclose to the listener that this was a class assignment. While instructions did not particularly discourage students from disclosing, this example is a demonstration of how powerful this activity can be for some students that they feel the need to disclose, a luxury not available to PWS.

The third theme, "confusion/uncertain" was used to code listener reactions that were reported to indicate the listener was either surprised or confused by the pseudostuttering behavior that was easily noticed by the speaker. This includes acts such as giggling or looking surprised, for example:

> I was at the Tap Room and asked the waitress what was good to eat here at the Tap Room and stuttered while I asked her. She gave me a really weird look and wasn't sure what happened I don't think. She just repeated what I ordered after we had the stuttering incident.

> The cashier was smiling at me, saying "thanks," and handing me my receipt. When I started blocking she stopped smiling.

The fourth theme, "frustration", coded listener reactions that clearly made the speaker uncomfortable and indicated the listener expressed some form of frustration, including but not limited to making the speaker feel embarrassed or rushed, for example:

> He seemed annoyed I was even asking a question and the stuttering appeared to perplex him slightly. He barely looked at me.

> Avoided eye contact once repetitions were severe and took a long time. Rephrased questions so that I wouldn't have to talk as much. Cut me off by giving me the answer when I attempted to ask another question.

The fifth theme, "active help", was used to code a single reaction reported where the listener attempted to "help" the student by completing the sentence for her. This code was used because the participants' reported perceiving this as a good intention on part of the listener and is also often reported by clients attending therapy. An example of this theme includes:

> The woman was great. I guess because she is a leasing agent she is used to communicating with different types of people. The only response she gave was completing my block, "guarantor."

The last theme, "no reaction" provided was used when students did not provide a description of the reaction they received from their listener in a particular situation.

Quantitative analysis. Overall the listener reactions on campus were categorized as "patient" (n = 16). The lowest rating for listener reaction at campus locations was equal for "frustration" and "active help" (n = 3). Listener reactions for community locations had the highest rating for both "patience" and "patience and confusion" (n = 11) and the lowest rating for both "frustration" and "active help" (n = 2). Listener reactions during phone conversations were not coded due to the nature of the activity. Students were asked to provide listener reactions for only face-to-face encounters and not the phone conversations.

Frustration and active help. The categories of "frustration" and "active help" could represent areas of great concern for people who stutter. Therefore these two categories were examined in more detail. The "frustration" category was used more in situations when

the student used all three core behaviors of stuttering (i.e. blocks, repetitions, and prolongations; *n* = 3). In terms of content, "frustration" was found more in instances of asking for directions and "ordering a product" (*n* = 2). Active help was reported in the "other" content category (*n* = 2). In total, participants reported very few listener reactions that fit the theme of frustration (*n* = 5) and active help (*n* = 5). Thus the categories of frustration and active help accounted for only 11.5% of listener reactions reported.

Interestingly, the majority of listener reactions coded as "patience" were in response to the use of repetitions (*n* = 8) and the theme "patience and confusion" was reported most often when the participants used a combination of repetitions and prolongations (*n* = 10).

Location and content of pseudostuttering activity. Analysis of the types of core behaviors used by students in the three different locations (campus, community, and phone conversations) is displayed in Figure 3. This indicates that students demonstrated a clear preference for using repetitions (*n* = 29) or a combination of a core behavior that included some form of repetition over the prolongations and blocks, especially during phone conversations.

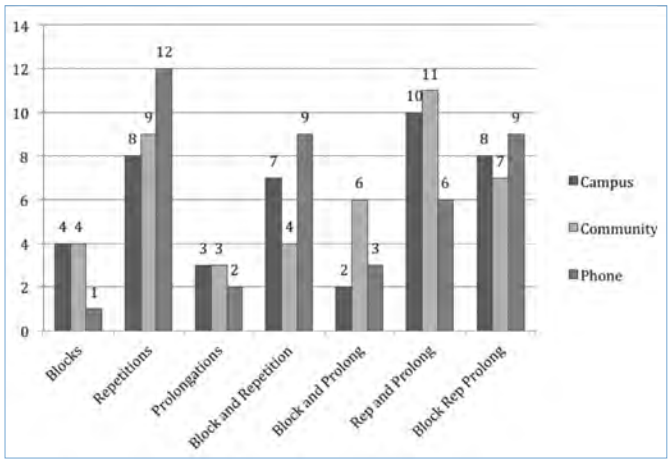

Figure 3. Type of core behaviour performed on campus, in the community, and the phone.

An analysis of the content of conversations in which pseudostuttering was used indicate that most students used pseudostuttering while ordering a product (*n* = 46; e.g. at the store or restaurant), asking for directions (*n* = 21), or seeking advice (*n* = 12; for e.g. at the library). Thus, a majority of the pseudostuttering situations were completed with a person at work in a service industry. Analysis of the perceived listener reaction based on the content of the conversation (Figure 4) indicates "patience" as the dominant theme (*n* = 28), with "patience and confusion" (*n* = 23) as the second most recurrent theme.

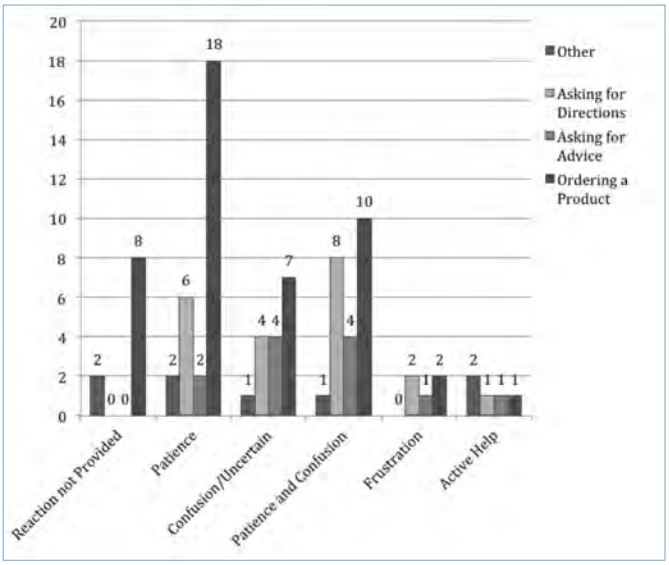

Figure 4. Relationship between the content of conversation and the perceived listener reaction.

Discussion

The purpose of the present study was to expand on the current knowledge about perceived listener reactions to pseudostuttering exercises as reported by graduate students in communication disorders. Additionally, the study also examined the relationship between the core behaviors performed and the perceived listener reactions.

In order to gather this information, 43 graduate students enrolled in a course in fluency disorders completed the pseudostuttering activity in three different locations (on campus, off campus, and telephone) and recorded information such as the type of stuttering behavior used, secondary behaviors used, and perceived listener reactions for each face-to-face situation.

The results of this study indicated that students showed a clear preference for the use of repetitions, or a combination of repetitions and prolongations over other core behaviors. Further, the type of core behaviors used also varied based on the situation, with repetitions being used with the highest frequency during phone conversations. The study did not ask students to explain their choice of locations and/or behaviors chosen; however, it is important to understand why the students chose to use repetitions most frequently and its possible clinical implications. Future studies could add a qualitative component requiring students to discuss why certain behaviors were preferred over others, when given the choice. From a student training perspective, requiring students to discuss their selection of behaviors could also help the students gain more clinical insight and possibly more empathy for their clients.

One can assume that students showed a preference for repetitions on the phone to ensure the listener heard the moments of stuttering. This also prevented the listener from abruptly ending phone calls prior to the student's pseudostuttering. Future studies could measure student reported anxiety in similar situations when they are allowed to choose the type of stuttering behavior versus when they do not have a choice. Clients who stutter do not always get to "choose" the core behavior to be used in various situations. Therefore a pseudostuttering activity with more strict guidelines about what behaviors are to be used would provide students with a more realistic experience, closer to their clients' daily experiences. Controlling for the type of behavior used in each situation would also simulate stuttering more closely.

Interestingly, the students perceived listener reactions were most positive when they used core behaviors of either repetitions or a combination of repetition and prolongations. Clinically, this could have significance because often the initial stages of a stuttering modification program requires the client to identify a moment of stuttering such as a block and use post-block or in-block corrections. These corrections are often taught by asking the client to use the bouncing technique where a client is asked to repeat a stuttered word or syllable several times with an easy, very relaxed production (Yairi & Seery, 2011). Thus, further exploration of whether listeners are more receptive to the use of repetitions and/or a combination of repetitions and prolongations, using a variety of methodologies would have immense clinical value.

It is also important to note that students used secondary behaviors in only 20.3% situations. This is important because it indicates that most students probably regarded secondary behaviors as undesirable and hence chose not to use them in a vast majority of the situations. This finding also has important clinical implications and should be brought to the attention of clients and student clinicians alike.

A promising trend reported by students completing this activity is the type of reactions recorded from a variety of listeners from both on-campus and off-campus locations. A vast majority of the listeners were reported to be patient and good listeners, and a few were reported as looking confused or shocked at first. A very small number of listeners (n = 5) were reported as being frustrated with pseudostuttering or reported to complete a sentence/word during a pseudostuttering situation (n = 5). This trend is extremely promising and indicates that a large majority of listeners are in fact sensitive to, and respond appropriately to stuttering, especially in the service industry. This is similar to the trend reported by McKeehan (1994) that a majority of listener reactions were found to be neutral.

Limitation and Directions for Future Research

One possible limitation of this study is the duration of the pseudostuttering exercise. Students were required to complete only three situations for this study. A recent study by Hughes (2010) reports the benefits of extending the duration of the pseudostuttering exercise and demonstrated that students spent more time pseudostuttering as they gained more experience and experience a decrease in anxiety.

Future studies in this area could use a mixed method paradigm that includes a semi-structured interview or focus group with students following the completion of this activity with a focus on their experiences and strategies regarding choice of core and secondary behaviors used. Additionally, in the future, studies could also debrief the listener and request a semi-structured interview with the listener to gain a deeper understanding of the listener's perspective.

Further, it would also be important to require students to complete this activity in pairs. One team member engages the listener while both members independently record the listener's reaction to the pseudostuttering. This will help determine if there is a difference in perception of listener reactions based on the students' perception of self while using pseudostuttering in a conversation. Currently, we only recorded listener reactions as perceived by the students. Each individual however, would differ in his or her perceptions of listener reactions. Thus, the listener reactions reported might not always be the actual reactions of the listener; however, the goal of this study is to simulate the experience of stuttering and gain perspective of listeners' reactions as perceived by the speaker. A recent study by Rami, Kalinowski, Stuart, and Ratstatter (2003) found that students rated themselves negatively on a semantic differential instrument assessing 25 dimensions of personality immediately after completing a pseudostuttering activity on the phone. There is no information or knowledge about how that negative self-assessment might impact a student's perception of listener reactions and needs to be evaluated further.

While this study and previous studies have demonstrated a promising trend of neutral to positive listener reactions, it is important to note that none of the studies controlled for the type of core behavior used and whether secondary behaviors were used in the interactions. This has always been left to the discretion of the students completing the activity. It was found in this study that students showed a preference for part-

word repetitions or a combination of core behaviors that included part-word repetitions. It would be interesting to see if there is a difference in listener reactions if the study controlled for the core behavior used. That would also be ideal from a pedagogical perspective because students would then simulate stuttering more closely, where the speaker does not always chose core behaviors and/or the presence of secondary behaviors in different situations.

A thorough search for literature yielded only two studies addressing the projection of negative feelings by PWS (Wingate & Hamre, 1967; Yovetich & Dology, 2001). These studies indicated that PWS did not show a greater tendency to assign negative attributes to listener reactions than control groups. Future studies could further explore this concept by matching graduate speech-language pathology students with PWS to look for differences in perceived listener reactions by both groups in real life stuttering situations.

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Received date: September 12, 2010

Accepted date: March 5, 2012

APPENDIX A

Name: _____

Please fill out this information immediately after each pseudostuttering experience:

Location: Campus Community Phone

Gender of person you spoke to: M F

Type of psedostuttering performed:

Block/s Repetition/s Prolongation/s

Secondary characteristics used: Y N

Content of your conversation (circle one):

Asking for directions Asking for advice Ordering a product

If it was a face to face interaction, please describe the person's initial reaction:

_____

_____

_____

POSHA–S Public Attitudes Toward Stuttering: Online Versus Paper Surveys

Projet *POSHA-S* sur les attitudes populaires face au bégaiement : Enquêtes électroniques c. imprimées

Kenneth O. St. Louis

KEY WORDS

STUTTERING

ATTITUDES

POSHA–S

ONLINE

PAPER-AND-PENCIL

Abstract

Purpose: Attitudes toward stuttering, measured by the *Public Opinion Survey of Human Attributes–Stuttering* (*POSHA–S*), are compared between two strategies of administration: paper-and-pencil versus online.

Method: Two convenience samples of adults filled out *POSHA–S*s, one using printed paper surveys and another using an electronic link to an online survey.

Results: Public attitudes were very similar between paper-and-pencil and online administrations, even though a few substantial differences were observed between the two samples.

Conclusions: The *POSHA–S* generally appears to be robust with respect to type of administration.

Abrégé

Objectif : Les attitudes des personnes face au bégaiement, mesurée grâce au Sondage de l'opinion publique sur les caractéristiques de personnes ayant un bégaiement *(POSHA–S)*, font l'objet d'une comparaison entre deux stratégies d'administration : version papier c. version électronique.

Méthode : Deux échantillons d'adultes ont rempli un questionnaire *POSHA–S*, un échantillon l'a fait en utilisant une version papier et l'autre une version électronique en utilisant un hyperlien menant vers le sondage en ligne.

Résultats : Les résultats associés aux attitudes populaires étaient très similaires entre les versions papier et électronique, même si on a observé quelques différences de fond entre les deux échantillons.

Conclusions : Le *POSHA–S* semble généralement fiable peu importe le mode d'administration que ce soit en version papier ou électronique.

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USA

Introduction and Purpose

A rapidly growing area of research has shown that the public holds a number of negative attitudes toward stuttering, especially when rating hypothetical people who stutter (e.g., Al-Khaledi, Lincoln, McCabe, Packman, & Alshatti, 2009; Betz, Blood, & Blood, 2007; Blood, Blood, Tellis, & Gabel, 2003; Boyle, Blood, & Blood, 2009; Doody, Kalinowski, Armson, & Stuart, 1993; Dorsey & Guenther, 2000; Evans, Healey, Kawai, & Roland, 2008; Gabel, Blood, Tellis, & Althouse, 2004; Hughes, Gabel, Irani, & Schlagheck, 2010; Hulit & Wirtz, 1994; Langevin, 2009; MacKinnon, Hall, & MacIntyre, 2007; St. Louis, Reichel, Yaruss, & Lubker, 2009). These studies utilized paper-and-pencil questionnaires administered either individually or in groups. Other strategies have included face-to-face conversations (e.g., de Britto Pereira, Rossi, & Van Borsel, 2008; McDonald & Frick, 1954; Van Borsel, Verniers, & Bouvry, 1999) or telephone calls (e.g., Craig, Tran, & Craig, 2003; Ham, 1990). Published studies of online surveys of public attitudes toward stuttering are scarce or nonexistent; however, a few online surveys relating to stuttering have been published (e.g., Au-Yeung, Howell, Davis, Charles, & Sackin, 2001). Also, stuttering self-help organizations have posted announcements of a number of recent online surveys relating to people who stutter (e.g., BSA, 2011; NSA, 2011).

In 1999, the author and several colleagues inaugurated the International Project on Attitudes Toward Human Attributes (IPATHA) with the purpose of developing a standard measure of public attitudes toward stuttering that could be used anywhere in the world (St. Louis, 2011a). The instrument developed is known as the *Public Opinion Survey of Human Attributes-Stuttering* (*POSHA–S*) (St. Louis, 2005, 2011b; St. Louis, Lubker, Yaruss, Adkins, & Pill, 2008). Aspects of its psychometric and practical qualities have been reported in several recent publications: test–retest reliability (St. Louis, 2012; St. Louis, Lubker, Yaruss, & Aliveto, 2009), construct and concurrent validity (St. Louis, 2012; St. Louis, Reichel, et al., 2009), internal consistency (Al-Khaledi, et al., 2009; St. Louis, 2012), sensitivity to differences in convenience versus probability sampling (Özdemir, St. Louis, & Topbaş, 2011), translatability to another language (St. Louis & Roberts, 2010), and sensitivity to experimentally-induced changes in attitudes (Flynn & St. Louis, 2011).

As a result of technological advances in recent years, surveys are increasingly administered online. Comparisons of paper-and-pencil with online results vary with the content of the survey, but typically investigators have found small yet relatively insignificant differences between the two types of administration strategies (e.g., Cole, Bedeian, & Feild, 2006; Miller et al., 2002; Raat, Mangunkusumo, Landgraf, Kloek, & Brug, 2006; van de Looij-Jansen & de Wilde, 2008). Coupling the current capabilities of online surveying techniques with the burgeoning number of studies of public attitudes in diverse settings around the world, the need exists to determine the extent to which *POSHA–S* results from paper-and-pencil surveys are comparable to those from an online survey strategy. Similar results from the two procedures would add further and needed confidence that the *POSHA–S* can be administered in online formats.

Method

This investigation was approved by the West Virginia University Institutional Research Board (IRB). It was carried out in accordance with accepted procedures for protecting human subjects.

POSHA–S

The *POSHA–S* has three sections, a demographic section, a general section that compares stuttering to four other "anchor" attributes (intelligent, left handed, mentally ill, and obese), and a detailed section on stuttering. Descriptions of the *POSHA–S* have been presented previously in several publications (e.g., St. Louis, 2005, 2011a, 2011b, 2012; St. Louis et al., 2008; St. Louis, Lubker, et al., 2009; St. Louis, Reichel, et al., 2009). Rating scales in the demographic and general sections require a 1-5 rating. Items in the detailed stuttering section require a "yes," "no," or "not sure" choice; these choices are converted to a 1-3 scale as follows: "no" = 1, "not sure" = 2, and "yes" = 3. Furthermore, all rating scales are converted to a scale from -100 to +100 where 0 = neutral. The signs (+ or –) of the converted scores for some detailed stuttering items, e.g., "People who stutter are nervous and excitable" are reversed so that, uniformly, lower scores reflect less accurate, sensitive, or knowledgeable attitudes and higher scores reflect more accurate, sensitive, or knowledgeable attitudes.

The *POSHA–S* is scored by averaging clusters of items that reflect various components. For example, the "Traits" component is the mean of three items, i.e., people who stutter: (a) are to blame for their stuttering, (b) are nervous and excitable, and (c) are shy and fearful. As another example, the "Social Distance/Sympathy" component reflects means for: (a) feeling comfortable, pity, or impatience while talking with a person who stutters; (b) being worried or concerned if one's doctor, neighbor, sibling, or oneself stuttered; and (c) evaluating one's overall impression of stuttering and wanting to stutter. Components are combined into three subscores, two for stuttering (i.e., Beliefs about—and Self Reactions to—people who stutter) and one for Obesity and Mental

Illness. The mean of the two stuttering subscores is the Overall Stuttering Score.

Respondents

The data for the present study were part of a broader study exploring test–retest reliability of the finalized *POSHA–S* and comparing the final version of the instrument using the final 1-5 or 1-3 scale with an earlier version using a 1-9 scale (St. Louis, 2012; St. Louis, Lubker, et al., 2009). In the larger investigation, respondents were asked to fill out two questionnaires, two weeks apart. The questionnaires analyzed for the present study consisted only of the first of the two *POSHA–S*s filled out and, in a few cases, the only one filled out when respondents failed to complete two.

A paper-and-pencil sample (P&P) and an online sample (OL) were compared. A research assistant distributed P&P *POSHA–S* questionnaires to a convenience sample of 120 adults in eastern West Virginia and western Maryland. Most of these were friends and family members of the research assistant or friends and acquaintances of these persons. Sixty-one respondents returned the *POSHA–S*s for a return rate of 50.8%. For the convenience OL sample, a different research assistant sent by email a link to an online version of the *POSHA–S* to 547 potential respondents via a West Virginia University custom online survey program known as SimpleForms. Potential email addresses were collected from the second research assistant, her friends, classmates, and family as well as from the author in order to attempt to acquire a sample of relatively "known" individuals. Some, but not all of these, were sent messages asking if they wished to participate beforehand. The OL return rate was 23.6%, i.e., 129 individuals filled out the questionnaire immediately or after one email reminder. The lower response rate for the OL group likely reflected non-participation due to: (a) not wanting to be bothered by filling out an online survey when the request was by email versus a face-to-face request, (b) difficulty experienced by some potential respondents getting to the survey as a result of slow, dial-up internet connections, (c) uncertainty as to whether or not the email request was "spam", and (d) lack of experience in filling out online questionnaires. Mean response time for the P&P sample to fill out the *POSHA–S* was 10.3 minutes compared to 9.2 minutes for the OL sample.

The respondents in each of two groups were equalized as follows. One of 61 P&P respondents was removed at random, and 69 of the 129 OL respondents were removed by deleting every other respondent and nine additional respondents at random. This yielded 60 respondents in each of the two samples. Evidence that the original and reduced OL samples were similar can be inferred from summary descriptive statistics. The original OL sample (n = 129) had a mean age of 50.4 years, mean education of 17.4 years, and a male:female sex ratio of .33:1 compared to respective values of 50.7 years, 17.3 years, and .30:1 for the reduced sample of 60 respondents.

Results

Respondent Similarities and Differences

Table 1 provides a summary of selected demographic characteristics of the two samples. Averaged, the OL sample was about eight years older than the P&P sample with slightly fewer females. Moreover, OL respondents were better educated and more likely to be retired. Three-fourths of both groups were or had been married, and two-thirds were parents. Nearly all were White/Caucasian Christians who spoke English as their native language, more so in the P&P sample. OL group members were nearly three times as likely to identify themselves as knowing more than one language. In terms of self-identification, the two samples were similar except that P&P respondents were less likely to regard themselves as intelligent, and the OL sample contained a notably high percentage (10%) who regarded themselves as mentally ill. The P&P respondents had lower self-ratings for health, abilities, and income relative to friends or family and everyone in their country. On average, the OL group required one minute less to fill out the *POSHA–S* than the P&P group.

Circa May 2011, the *POSHA–S* database archive (St. Louis, 2011b; 2012) consisted of 3751 respondents representing 12 countries and eight languages. The database contained means from 91 different samples. Table 1 also compares the 50th percentile, or median, of these sample means with the P&P and OL samples, both of which were older, less educated, more heavily populated by female respondents, more likely to be working, and more likely to be married. They were similar to the database median percentage for self-identification as stuttering but higher for identifying themselves as obese, no doubt reflecting higher levels of obesity in the USA than in some other sample areas represented in the database, such as Africa and the Middle East.

POSHA–S Similarities and Differences

Table 2 and Figure 1 display means for components, subscores, and Overall Stuttering Scores for the P&P and OL samples in comparison with values from the *POSHA–S* database. *POSHA–S* scores were generally quite similar, but there were three exceptions. Results of t-tests using the Bonferroni correction ($p \leq .00417$ [.05/12])

revealed only three of 60 comparisons in the general and detailed stuttering sections that were significantly different, also shown in Table 2. These related to the Belief causal component item that stuttering is caused by an act of God, with lower (or more positive) ratings by the OL sample. Ratings on the Self Reaction item relating to being accommodating or helpful, i.e., telling a person who stutters to "slow down" or "relax," were also lower (more positive) for the OL group. By contrast, the Self Reaction social distance/sympathy component item for being concerned or worried if one stuttered himself or herself was higher (more negative) for the OL sample. Overall Stuttering Scores were virtually identical, 27 for P&P and 26 for OL. The Belief Subscore was slightly more positive for the OL group (but not significantly so), i.e., 55 versus 47, while the Self Reactions Subscore was slightly higher for the P&P group, i.e., 7 versus –3. Finally, whereas obesity and mental illness items tend to be generally low, the P&P sample had more positive scores for all three components and the Mental Illness/Obesity Subscore than the OL sample (–22 versus –30).

Table 2 and Figure 1 also provide a comparison of the P&P and OL results with previously obtained results from more than 91 different sample or sample comparisons in the database. They reveal that almost all of the mean values for components, subscores, and the Overall Stuttering Score were higher and more positive for both the P&P and OL samples compared to the medians of 91 sample mean comparisons from the *POSHA–S* database.

Discussion

In spite of a few notable differences between the P&P and OL samples, e.g., the latter being older, better educated, having higher relative incomes, and having a surprisingly high number of self-identifications of mental illness, stuttering attitudes were quite similar. Some of the small differences reflected better attitudes for the P&P group, e.g., most Self Reaction components and the obesity and mental illness scores; others favored the OL group, especially Belief scores. Yet, only three item differences were statistically significant between the two groups, or only 5% of all 60 comparisons between items, components, subscores, and Overall Stuttering Scores. These results indicate that online administration of the *POSHA–S* can be carried out with reasonable confidence that the results are unlikely to be affected in any systematic way by the online survey strategy.

These results on procedural robustness are bolstered by considerable previous research indicating that the *POSHA–S* and its experimental predecessors were robust on other dimensions. Paper-and-pencil administrations have yielded similar results: (a) from different rating scales (St. Louis et al, 2008; St. Louis, Lubker, et al., 2009), (b) with the addition of a written definition of stuttering (St. Louis, et al., 2011), and (c) when translated to other languages (St. Louis, Andrade, Georgieva, & Troudt, 2005; St. Louis & Roberts, 2010). By contrast, samples from different cultures have sometimes resulted in marked differences (Al-Khaledi et al., 2009) as have probability samples compared to convenience samples (Özdemir, St. Louis, & Topbaş, 2011). Investigations currently in progress using the *POSHA–S* database to explore the effects on stuttering attitudes of socio-economic variables (i.e., education, occupation, and income), as well as the variables of familiarity with stuttering, mental illness and obesity, suggest that all of these are weak to moderate predictors (St. Louis & Rogers, 2011a, 2011b). For example, higher levels of education appear to predict better attitudes more strongly than higher relative income. As the database grows, more and more variables can be controlled and used to determine various complex combinations of influences on public attitudes toward stuttering.

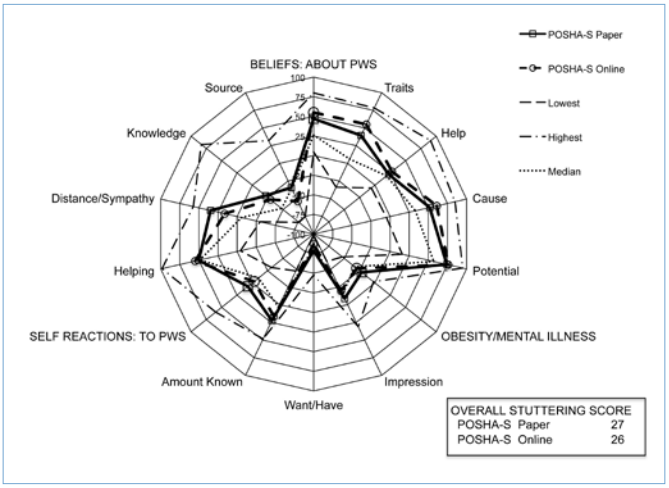

Figure 1. Summary graph for P&P and OL in comparison to lowest, highest, and median ratings for means from 91 samples available from the *POSHA–S* database circa May 2011.

Table 1. Demographic comparisons for P&P and OL samples compared to median values from the *POSHA–S* database (St. Louis, 2011b, 2012).

	P&P	OL	Database Median[a]
Number	60	60	42
Age: Mean (yr)	42.8 yr	50.9 yr	35.9 yr
Total schooling: Mean (yr)	15.8 yr	17.3 yr	15.0 yr
Sex: Males / females (% total)	19% / 81%	23% / 77%	35% / 65%
Student (% total)	12%	7%	11%
Working (% total)	95%	70%	61%
Unemployed or not working (% total)	2%	5%	12%
Retired (% total)	3%	18%	4%
Married (% of total)	73%	77%	49%
Parent (% of total)	65%	67%	65%
Race: White/Caucasian (% responding)	98%	83%	— [b]
Religion: Christian (% responding)	89%	73%	— [b]
English as native language (% responding)	100%	95%	— [b]
Know >1 language (% responding)	13%	37%	27%
Self-identification (% total)			
Stuttering	2%	0%	<1%
Mentally ill	2%	10%	1%
Obese	18%	18%	10%
Left handed	10%	10%	7%
Intelligent	35%	58%	43%
Self-rating of health and abilities; Composite income: Mean: (-100 to +100)			
Physical health	44	53	49
Mental health	58	66	63
Ability to learn	58	69	65
Speaking ability	64	71	63
Composite income	-15	24	-2
Completion time: Mean (min)	10.3 min	9.2 min	11.1 min

[a] *Based on 3751 respondents from 12 countries and eight languages in 91 sample comparisons.*
[b] *Median values for individual samples cannot be calculated since many samples were from highly diverse areas of the world and most within those samples were quite homogeneous.*

Table 2. Mean ratings for *POSHA–S* components, subscores, and Overall Stuttering Scores for the P&P and OL samples compared to median values from the *POSHA–S* database (St. Louis, 2011b; 2012).

	P&P	OL	Database Median[a]
OVERALL STUTTERING SCORE	27	26	7
Beliefs About Persons Who Stutter	47	55	26
Traits / Personality	39	55	6
Stuttering Should Be Helped by...	22	28	19
Stuttering is Caused by...	52	61	33
Stuttering is caused by an act of God[b c]	65	93	56
Potential	74	76	57
Self Reactions to People Who Stutter	7	-3	-10
Accommodating / Helping	50	55	49
If I were talking with a person who stutters, I would tell the person to "Slow down" or "Relax."[b c]	15	69	27
Social Distance / Sympathy	35	16	-6
I would be concerned if I, myself, stuttered.[b c]	15	-53	-55
Knowledge / Experience	-22	-30	-48
Knowledge Source	-34	-54	-35
Obesity / Mental Illness Subscore	-22	-30	-33
Overall Impression	-9	-19	-15
Want to be	-79	-87	-83
Amount known about	23	17	4

[a] *Based on 3751 respondents from 12 countries and eight languages in 91 sample comparisons circa May, 2011.*
[b] *Significant difference between P&P and OL ($p \leq .00417$).*
[c] *The signs of mean scores are reversed so higher scores reflect more positive attitudes and vice versa.*

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Received date: July 13, 2011

Accepted date: August 26, 2011

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Étude des valeurs normatives des tests d'écoute de parole en compétition auprès d'enfants d'âge scolaire francophones

Study of normative values for competing speech tests with school aged francophone children

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MOTS -CLÉS

PERCEPTION AUDITIVE

PERCEPTION DE LA PAROLE DANS LE BRUIT

ÉCOUTE DICHOTIQUE

EFFET DE DÉVELOPPEMENT

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Abrégé

Objectif : Le projet visait l'étude des valeurs normatives de deux tests de parole en français : le test d'écoute dichotique de mots et le test d'écoute de phrases en compétition avec une histoire.

Méthodologie : Quarante-quatre et 45 enfants sans problème d'audition de six à onze ans, répartis en cinq groupes selon l'âge, ont été soumis respectivement à deux tests de parole adaptés en français : le *Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM) et* le *Staggered Spondaic Word (SSW)*. Les performances des enfants aux tests ont été comparées à celles de 68 enfants de l'étude de Bérard (1990-1993).

Résultats : Pour le SSI-ICM, les résultats ont révélé une différence significative entre les performances des enfants des deux cohortes uniquement pour le rapport signal/bruit de 0 dB. Les résultats des analyses statistiques se rapportant au SSW n'ont montré aucune différence significative entre les performances des enfants des deux cohortes. Cependant, ils ont révélé une différence significative entre les performances des enfants plus jeunes et celles des enfants plus vieux. De plus, de manière générale, le nombre d'erreurs était significativement plus élevé dans les conditions d'écoute où les mots étaient présentés en même temps comparativement aux conditions où les mots n'étaient pas en compétition.

Conclusion : Des valeurs normatives ont été calculées pour les deux tests à partir des données des deux cohortes d'enfants. La présente étude contribue à l'établissement de normes chez un plus grand échantillon d'enfants pour ces deux tests adaptés en français.

Abstract

Goal: The project aimed at a study of the normative values of two speech tests adapted to French: A dichotic listening test with words and a test of listening to competing sentences with a story.

Methodology: Forty four and 45 children without hearing problems from six to eleven years of age, divided into five groups according to age, were submitted to two speech tests adapted to French: the Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM) and the Staggered Spondaic Word (SSW). The performance of the children in the tests was compared to those of the 68 children in the Bérard Study (1990-1993).

Results: For the SSI-ICM, the results showed a significant difference between the performances of the children of the two groups only for the signal/noise ratio of 0 dB. The results of the statistical analyses with regards to the SSW revealed no significant difference between the children of the two groups. However, they showed a significant difference between the performances of younger and older children. Furthermore, generally, the number of errors was significantly higher in listening conditions where the words were presented at the same time as opposed to when the words were not competing.

Conclusion: Normative values were calculated for both tests based on the data from both groups of children. The present study contributes to the establishment of norms in a greater selection of children for these two tests adapted to French.

Introduction

Le trouble de traitement auditif (TTA) réfère à des difficultés à traiter l'information auditive dans le système nerveux central (American Speech-Language-Hearing Association – ASHA, 2005). S'inspirant de la nomenclature de la Classification internationale du fonctionnement, du handicap et de la santé (Organisation mondiale de la santé, 2000), l'Ordre des orthophonistes et des audiologistes du Québec – O.O.A.Q. (2007) définit le TTA comme une limitation persistante des capacités altérant la performance dans le traitement du signal acoustique qui ne s'explique pas uniquement par une atteinte de la sensibilité auditive. Un trouble de traitement auditif désigne, par exemple, un ensemble de limitations de la performance au plan de la perception d'un signal dans le bruit, de la latéralisation, de la localisation, de la discrimination auditive, de l'identification de patrons auditifs et de l'organisation séquentielle (O.O.A.Q., 2007).

Il existe un bon nombre d'épreuves psychoacoustiques visant l'identification des capacités et incapacités auditives centrales. L'ASHA (2005) recommande l'utilisation d'une batterie de tests psychoacoustiques non verbaux et verbaux afin d'évaluer différentes habiletés auditives.

Cinq tests employant des stimuli non verbaux sont disponibles en clinique pour évaluer des habiletés auditives centrales. Il s'agit du Pitch Pattern Sequence Test (PPST – Musiek et Pinheiro, 1987), le Duration Pattern Test (DPT – Musiek, 1994), le Random Gap Detection Test (RGDT – Keith, 2000), le test Gaps-In-Noise (GIN – Musiek et al., 2005) et le test de démasquage binaural (DB ou *Masking Level Difference, MLD* – Hirsh, 1948). Les deux premières épreuves mesurent globalement la discrimination de fréquence ou de durée, l'organisation séquentielle auditive et la capacité de nommer dans l'ordre les sons entendus (appelé aussi étiquetage verbal). Le RGDT et le GIN évaluent la résolution temporelle tandis que le test de démasquage binaural examine l'interaction binaurale (Musiek & Chermak, 2007). Des normes sont disponibles uniquement pour les trois premiers tests (PPST, Musiek, 2002, Bellis 2003, Auditec; DPT, Bellis 2003, Auditec; RGDT, Keith, 2000). Pour les deux derniers tests, des balises sont fournies pour interpréter les résultats (GIN, Shinn, Chermak, & Musiek, 2009; DB, Lynn, Gilroy, Connely Taylor, & Leiser, 1981).

Pour ce qui est des tests verbaux, ils sont peu nombreux en français. Deux tests sont utilisés en clinique. Il s'agit de l'adaptation du *Synthetic Sentence Identification-Ipsilateral Competing Message* (SSI-ICM) de Lynch et Normandin (1983) et du *Staggered Spondaic Word* (SSW) de Rudmin et Normandin (1983).

Le SSI-ICM est constitué de dix blocs de dix phrases présentées en même temps qu'une histoire racontée dans la même oreille. Ces phrases comptent sept mots et ont été construites selon la méthode de troisième ordre. Globalement, cette méthode signifie que les phrases ne respectent pas les règles syntaxiques du français. La majorité d'entre elles ne contiennent pas d'article et certaines n'ont pas de verbe. Toutefois, elles respectent ces règles lorsque les mots sont regroupés en séquences de trois, par exemple : Travail faible de coeur dur qui rame; Tuque rouge comme lui montrer quatre leçons; Pli franc intérieur dans nos nez joli (pour plus de détails sur la procédure, consulter Keith, 1977). L'ordre des phrases est différent pour chaque bloc. Les phrases sont entendues à une intensité correspondant à 50-55 dB HL tandis que le niveau de présentation de l'histoire varie pour atteindre un rapport signal/bruit de +10, 0 et -10 dB à chaque oreille. La personne ayant été préalablement familiarisée avec les phrases doit identifier chacune d'elles à partir d'une liste qui lui est remise. Ce test d'écoute compétitive évalue la capacité de séparation figure/fond ou de suppléance auditive.

Pour ce qui est du SSW, il compte quarante séries de quatre mots différents dont les deuxième et troisième mots sont présentés simultanément à chaque oreille. Les séries débutent en alternance à l'oreille droite ou à l'oreille gauche. La personne doit répéter dans l'ordre tous les mots entendus, ce qui évalue l'intégration binaurale. Les résultats sont compilés selon le pourcentage d'erreurs (Katz, 1962) ou selon le nombre d'erreurs commises (Katz, 1996) dans les quatre conditions d'écoute relatives au test : droite et gauche non compétitives (DNC et GNC) où les mots sont présentés uniquement à une ou l'autre des oreilles, et droite et gauche compétitives (DC et GC) pour les mots envoyés simultanément à chaque oreille. Les deux dernières conditions réfèrent à de l'écoute dichotique. De plus, le nombre total d'erreurs commises à travers les quatre conditions d'écoute doit être considéré (Katz, 1996). Quatre autres données sont comptabilisées pour déterminer un profil particulier de trouble de traitement auditif selon le modèle de Buffalo (Katz, 1992). Il s'agit du biais de l'oreille, du biais du mot, du biais de Type A et des inversions. Le biais de l'oreille met en relation le nombre d'erreurs effectuées pour l'ensemble des quatre conditions d'écoute lorsque la présentation de la série de stimuli commence à l'oreille droite et celle où elle débute à l'oreille gauche. Le biais du mot se calcule en soustrayant le nombre d'erreurs obtenues pour les deux derniers mots à celui des deux premiers mots pour l'ensemble des séries. Chaque colonne de la feuille de notation du SSW est identifiée par des lettres, de A à I. Pour le biais de Type A, il faut retenir le nombre d'erreurs

le plus élevé dans la colonne B ou F. Ce nombre doit être au moins deux fois plus élevé et avoir une différence d'au moins trois erreurs par rapport au nombre d'erreurs obtenues dans l'une des sept autres colonnes (Katz, 1992). Le nombre d'inversions correspond au nombre de séries où la personne a répété au moins trois des quatre mots de chaque série, mais en omettant de respecter l'ordre dans lequel les mots ont été présentés.

Les performances au test d'écoute dichotique de stimuli verbaux varient selon l'oreille où les mots sont présentés. Elles sont souvent supérieures lorsque les stimuli sont envoyés à l'oreille droite comparativement aux performances obtenues à l'oreille gauche. Ce phénomème, appelé dominance de l'oreille droite (DOD) (Kimura, 1961a,b), est plus évident chez les jeunes enfants que chez les plus vieux (Mukari, Keith, Tharpe, & Johnson, 2006). Il peut être associé à une immaturité neurale du corps calleux (Rauch & Junkins, 1994). Il peut également suggérer une dysfonction lorsque la différence entre les performances de l'oreille gauche et celles de l'oreille droite est d'au moins 10% (Moncrieff & Musiek, 2002). La DOD se distingue du biais de l'oreille obtenu au SSW. La DOD se calcule à partir du nombre d'erreurs commises dans les conditions où les stimuli sont en compétition tandis que le biais de l'oreille illustre la différence entre le nombre d'erreurs à l'oreille droite et celui de l'oreille gauche, indépendamment du fait que les stimuli soient ou non en compétition.

Au Québec, à ce jour, des données ont été recueillies auprès de 73 enfants francophones de six à dix ans avec le SSI-ICM et le SSW (Bérard, 1990-1993). Tels que rapportés par les parents, ces enfants n'avaient pas de problèmes d'apprentissage, avaient une acuité auditive normale et un bon fonctionnement de l'oreille moyenne (Bérard, 1990-1993). Cinq groupes ont été formés selon l'âge des participants : 19 enfants de six ans, 18 enfants de sept ans, 14 enfants de huit ans; 13 enfants de neuf ans et neuf enfants de dix ans. Un reproche fait à cette étude est le nombre limité de participants par groupe d'âge. La présente étude vise à poursuivre la normalisation du SSI-ICM et du SSW en augmentant le nombre d'enfants par groupe d'âge.

Méthodologie

Participants

Une collecte de données auprès d'enfants de six à dix ans a été effectuée de 1995 à 1999 dans plusieurs centres d'audiologie à travers la province de Québec. Cette cohorte est appelée ci-après GINA, pour indiquer que les données ont été ramassées par douze audiologistes faisant partie du Groupe d'intérêt en neuroaudiologie (GINA). Les enfants de cette cohorte ont été recrutés dans des garderies ou dans le réseau de connaissances du personnel impliqué dans la collecte de données. Le recrutement ne visait aucunement la clientèle d'enfants évalués dans les services d'audiologie. Des informations sur le développement, sur la langue et sur l'histoire auditive des enfants ont été recueillies auprès des parents à l'aide d'un questionnaire. Les participants sélectionnés avaient comme langue maternelle le français parlé au Québec. Ils ne présentaient pas de trouble de langage, pas d'histoire de difficultés scolaires, pas d'indice de problème d'attention, pas d'histoire de myringotomie, ni de pose de tubes de ventilation. Ils n'avaient pas eu plus de cinq épisodes d'otites moyennes à l'intérieur d'un an en bas âge ou une otite moyenne d'une durée de plus de trois mois. Ce critère est compatible avec les résultats de l'étude de Rosenfeld et Kay (2003).

Les candidats devaient avoir une acuité auditive normale, c'est-à-dire des seuils auditifs de 15 dB HL et moins, de 250 à 8 000 Hz aux deux oreilles. Ils devaient également obtenir un pic de pression maximale du tympanogramme (fréquence de la sonde 226 Hz) positionné entre -100 et +50 mm H2O (ou daPa), avec une amplitude se situant entre 0,2 et 0,9 mmho (ou cc) et un volume du conduit auditif externe entre 0,4 et 1,0 mmho (ou cc), de même que des réflexes stapédiens présents à 500, 1 000, 2 000 et 4 000 Hz de moins de 110 dB HL en stimulation controlatérale et de moins de 110 dB SPL en stimulation ipsilatérale. Les résultats au test d'identification de monosyllabes dans le calme devaient être excellents, c'est-à-dire des performances égales ou supérieures à 92% à 50 dB au-dessus de la moyenne des sons purs à 500, 1 000 et 2 000 Hz.

Quarante-six enfants ont ainsi été initialement sélectionnés. Toutefois, les données de deux enfants de huit ans ont été exclues pour le SSI-ICM parce que dans la condition d'écoute avec un rapport signal/bruit de -10 dB, ils ont terminé le test avec un résultat de 60% et moins, dans l'une ou l'autre des oreilles. Leurs résultats sont bien en dessous des performances des autres enfants de leur âge (i.e. : entre 80 et 100%). Les données d'un enfant de six ans ont aussi été retirées pour le SSW parce qu'il a commis 68% d'erreurs dans la condition d'écoute GC. Les autres enfants de son âge ont eu entre 11 et 52% d'erreurs dans la même condition d'écoute. Les données de ces enfants au SSI-ICM et au SSW n'ont donc pas été retenues respectivement puisqu'ils augmentaient l'écart à la moyenne, ce qui avait des conséquences directes sur les valeurs normatives. Ces dernières ont été calculées à partir de deux écarts-types de la moyenne.

Les données de la cohorte du GINA ont été comparées à celles des enfants de la cohorte de l'Hôpital Rivière-des-Prairies (HRDP). Ces données avaient été obtenues

de 1990 à 1993 (Bérard, 1990-1993) auprès d'enfants ayant une acuité auditive normale de six à dix ans. Initialement, 73 enfants faisaient partie de cette cohorte. Ces enfants avaient été recrutés dans des garderies. Les données de cinq enfants de la cohorte HRDP n'ont pas été retenues pour l'établissement des normes puisque trois avaient une histoire d'otites à répétition en bas âge avec pose de tubes transtympaniques, un avait une perte auditive conductive et une autre enfant se disait excessivement dérangée par le bruit. Les tableaux 1 et 2 présentent la distribution des participants selon le genre dans chaque cohorte pour le SSI-ICM et le SSW respectivement.

Tableau 1. Répartition du nombre de participants à l'adaptation en français du test *Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM)* par groupe d'âge et selon le genre (masculin – M et féminin – F) pour les deux cohortes, celle du groupe d'intérêt en neuroaudiologie (GINA) et celle de l'Hôpital Rivière-des-Prairies (HRDP) ainsi que le total de participants pour chaque groupe d'âge.

SSI-ICM	GINA			HRDP			Grand total
	M	F	Total	M	F	Total	
6 ans	5	7	12	9	8	17	29
7 ans	6	3	9	4	12	16	25
8 ans	2	5	7	8	6	14	21
9 ans	3	2	5	5	7	12	17
10 ans	6	5	11	4	5	9	20
Total	22	22	44	30	38	68	112

Tableau 2. Répartition du nombre de participants à l'adaptation en français du test *Staggered Spondaic Word (SSW)* par groupe d'âge et selon le genre (masculin – M et féminin – F) pour les deux cohortes, celle du groupe d'intérêt en neuroaudiologie (GINA) et celle de l'Hôpital Rivière-des-Prairies (HRDP) ainsi que le total de participants pour chaque groupe d'âge.

SSW	GINA			HRDP			Grand total
	M	F	Total	M	F	Total	
6 ans	4	7	11	9	8	17	28
7 ans	6	3	9	4	12	16	25
8 ans	2	7	9	8	6	14	23
9 ans	3	2	5	5	7	12	17
10 ans	6	5	11	4	5	9	20
Total	21	24	45	30	38	68	113

Matériel et équipement

Des bandes sonores ont été utilisées pour la passation des tests SSI-ICM (Lynch & Normandin, 1983) et SSW (Rudmin & Normandin, 1983) adaptés en français. L'alignement des stimuli du SSW en conditions droite compétitive et gauche compétitive a été fait à partir du centre des mots, en accord avec la version originale du test clinique en anglais (Katz, 1962). Les audiomètres et écouteurs utilisés pour la présentation des stimuli sont des Madsen OB822 avec des écouteurs TDH39 et Grason Stadler GSI 61 avec des écouteurs TDH49/50.

Procédure

La collecte de données a eu lieu dans douze centres d'audiologie. La procédure utilisée s'apparente à celle de Katz (1996). Chaque enfant a été évalué en deux rencontres (sauf pour quelques enfants ayant été évalués sur trois rencontres), en moins d'un mois. Lors de la première rencontre, les enfants ont été soumis aux tests évaluant l'audition périphérique. L'acuité auditive a été mesurée aux fréquences de 250, 500, 1 000, 2 000, 3 000, 4 000, 6 000 et 8 000 Hz selon la méthode Hughson-Westlake adaptée de celle de Carhart et Jerger (1959). Les seuils de réception de la parole ont été évalués à la voix nue en utilisant les listes pédiatriques de Borel-Maisonny (1954) pour les enfants âgés de six ans et le matériel franco-québécois de Picard (1984) pour les participants de sept ans et plus. La répétition de trois mots sur cinq était le critère requis pour déterminer le seuil de réception de la parole chez les enfants de six ans. La recherche du seuil minimal de réussite (50 %) dérivé de la méthode de fonction articulatoire en blocs de dix bisyllabes homogènes de Picard (1984) a été employée chez les enfants de sept ans et plus. Pour ces enfants, un écart de -7,5 dB à +2,5 dB entre le seuil vocal et le seuil tonal moyen (500, 1 000 et 2 000 Hz) a été observé, confirmant la validité du test. Pour les enfants plus jeunes, une différence maximale de 12 dB a été considérée comme la limite acceptable entre les deux mesures. Ce critère est basé sur les propos de Rintelmann (1979) et l'expérience clinique des audiologistes impliqués dans la collecte de données. L'identification de la parole dans le calme s'est faite à un niveau de 50 dB au-dessus de la moyenne des sons purs à 500, 1 000 et 2 000 Hz avec 20 dB HL de bruit de parole à l'oreille controlatérale afin d'éviter que l'oreille non testée puisse contribuer à la performance de l'oreille testée. Les mesures du tympanogramme et des réflexes stapédiens ont aussi été effectuées. Lors de la deuxième rencontre, les deux épreuves évaluant les capacités auditives centrales – SSI-ICM et SSW – ont été présentées dans un ordre aléatoire d'un enfant à l'autre. Les tests ont été effectués à 50 dB au dessus de la moyenne des seuils aux sons purs de 500, 1 000 et 2 000 Hz. Le rapport d'intensité entre les phrases et l'histoire compétitive du SSI-ICM était de +10, 0 et -10 dB. La procédure est similaire à celle décrite dans l'introduction.

Les parents et les enfants ont été informés des objectifs et du déroulement de cette étude et les parents ont signé un formulaire de consentement. Le projet respectait toutes les règles d'éthique.

Analyses des données

Les résultats obtenus auprès des enfants de la cohorte GINA ont été comparés à ceux de la cohorte HRDP pour les deux épreuves. Pour le SSI-ICM, le pourcentage des phrases correctement identifiées pour les trois conditions d'écoute à chaque oreille a été relevé. Pour le SSW, les données ont été analysées selon la nouvelle méthode proposée par Katz (1996). L'analyse est basée sur le nombre d'erreurs commises dans chacune des quatre conditions d'écoute du test et également sur le nombre total d'erreurs comptabilisé à partir des erreurs faites dans ces quatre conditions.

Résultats

SSI-ICM

Deux analyses de variance ont été effectuées puisque les enfants ayant participé aux conditions signal/bruit de +10 et 0 dB n'ont pas tous été soumis à la condition signal/bruit de -10 dB. Pour les rapports signal/bruit de +10 et de 0 dB, les résultats du test SSI-ICM ont été analysés à partir des données de 112 enfants dont 44 issues du GINA et 68 du HRDP. Pour la condition de rapport signal/bruit de -10 dB, les données de 69 enfants ont été analysées: 43 enfants du GINA et 26 du HRDP.

Rapports signal/bruit de +10 et 0 dB

Les résultats ont été transformés en arcsinus avant de procéder à l'analyse de variance puisqu'une grande partie des enfants ont obtenu le score maximal (effet plafond). Une ANOVA à quatre facteurs a été réalisée – Cohorte (deux niveaux : GINA et HRDP), Âge (cinq niveaux), Oreille (deux niveaux : oreille droite, oreille gauche) et Condition (deux niveaux : rapport signal/bruit de +10 et de 0 dB) – répétée pour les deux derniers facteurs. Les résultats ont montré une différence significative entre les deux cohortes [$F(1,102) = 4.98$, $p < .05$], les cinq groupes d'âge [$F(4,102) = 7.14$, $p < .001$], entre les deux conditions d'écoute [$F(1,102) = 159.51$, $p < .001$] et le facteur Oreille [$F(1,102) = 4.72$, $p < .05$]. Les interactions doubles Cohorte x Condition [$F(1,102) = 8.63$, $p < .01$] et Condition x Âge [$F(4,102) = 5.58$, $p < .001$] sont significatives, contrairement aux quatre autres interactions doubles soit Cohorte x Âge [$F(4,102) = .25$,

p > .05], Cohorte x Oreille [F(1,102) = .004, p > .05], Âge x Oreille [F(4,102) = .79, p > .05], Oreille x Condition [F(1,102) = .19, p > .05] et aux interactions triples, Cohorte x Âge x Oreille [F(4,102) = .79, p > .05], Cohorte x Âge x Condition [F(4,102) = .40, p > .05], Cohorte x Condition x Oreille [F(1,102) = .51, p > .05], Âge x Oreille x Condition [F(4,102) = .85, p > .05] ainsi que l'interaction quadruple Cohorte x Âge x Oreille x Condition [F(4,102) = .26, p > .05].

Des tests T (p < .03 avec correction Bonferroni) ont été effectués afin de décomposer l'interaction Cohorte x Condition. Dans la condition où le rapport signal/bruit est de +10 dB, il n'y a pas de différence significative entre les cohortes [t(110) = .06, p > .05]. Toutefois, avec un rapport signal/bruit de 0 dB, il y a une différence significative entre les deux cohortes t(110) = 3.01, p < .01] (voir Figure 1). L'interaction Condition x Âge a aussi été décomposée. Les résultats des tests T (avec correction Bonferroni, p < .01) montrent qu'il y a une différence significative entre les deux conditions d'écoute pour tous les groupes d'âge (6 ans [t(28) = 14.75, p < .001]; 7 ans [t(24) = 5.67, p < .001]; 8 ans [t(20) = 6.26, p < .001]; 9 ans [t(16) = 4.29, p = .001]; 10 ans [t(19) = 4.2, p < .001]).

Rapport signal/bruit de -10 dB

Les résultats ont été transformés en arcsinus avant de procéder à une analyse de variance puisque plusieurs résultats se situaient à 100% (effet plafond). Une ANOVA à trois facteurs – Cohorte (deux niveaux), Âge (cinq niveaux) et Oreille (deux niveaux) – répétée pour le dernier facteur, a été effectuée. Les résultats révèlent une différence significative pour deux facteurs principaux : Cohorte [F(1,59) = 11.09, p = .001] (Figure 1) et Âge [F(4,59) = 23.21, p < .001]. Le facteur Oreille [F(1,59) = 1.36, p > .05] n'est pas significatif. Les interactions doubles Cohorte x Âge [F(4,59) = 2.86, p < .05] et Âge x Oreille [F(4,59) = 2.79, p < .05] sont significatives. L'interaction double Cohorte x Oreille [F(1,59) = 3.36, p > .05] ainsi que l'interaction triple Cohorte x Âge x Oreille [F(4,59) = 1.35, p > .05] ne sont pas significatives.

La décomposition de l'interaction Cohorte x Âge montre qu'il n'y a pas de différence significative entre les cohortes pour tous les groupes d'âge lorsque qu'une correction Bonferroni (p < .01) est appliquée (six ans [t(17) = .52, p > .01]; 7 ans [t(12) = .60, p > .01]; 8 ans [t(9) = 3.16, p = .01]; 9 ans [t(7) = 1.16, p > .01] et 10 ans [t(14) = .59, p > .01]). Pour ce qui est de l'interaction Âge x Oreille, les résultats obtenus entre l'oreille droite et l'oreille gauche ne sont pas significatifs pour tous les groupes d'âge (six ans [t(18) = 1.82, p > .01]; 7 ans [t(14) = 1.50, p > .01]; 8 ans [t(10) = .16, p > .01]; 9 ans [t(8) = 1.63, p > .01] et 10 ans [t(15) = 2.36, p > .01]).

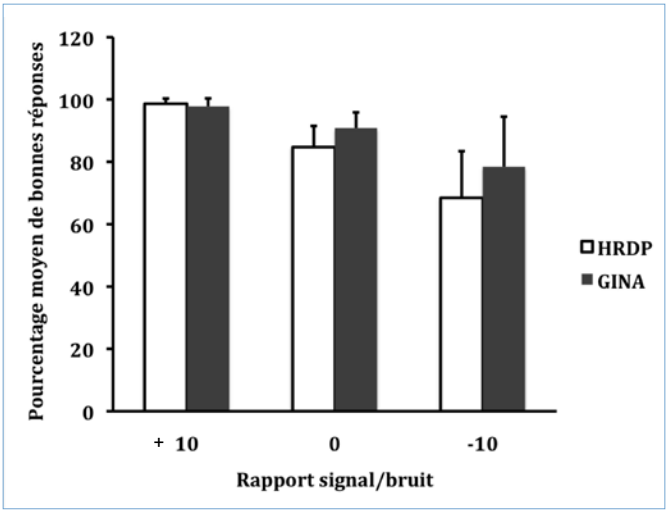

Figure 1. Pourcentage de bonnes réponses (moyenne et écart-type) obtenues avec l'adaptation en français du test *Synthetic Sentence Identification – Ipsilateral Competing Message* (SSI-ICM) aux rapports signal/bruit de +10, 0 et -10 dB par les enfants de la cohorte du Groupe d'intérêt en neuroaudiologie (GINA) et ceux de la cohorte de l'Hôpital Rivière-des-Prairies (HRDP).

Les résultats des analyses statistiques du SSI-ICM n'ont montré aucune différence significative entre les performances des enfants des deux cohortes lorsque le test a été effectué au rapport signal/bruit de +10 dB et de -10 dB. Toutefois, au rapport signal/bruit de 0 dB, les groupes d'enfants de la cohorte GINA avaient significativement de meilleurs résultats que ceux des enfants de la cohorte HRDP. Les résultats des deux cohortes ont tout de même été jumelés pour deux raisons. Premièrement, la grandeur de l'étendue des données était similaire entre les cohortes. Les performances oscillaient entre 50 et 100%, selon les conditions d'écoute. Deuxièmement, la différence entre les performances moyennes des deux cohortes se situait autour de 6%, ce qui est inférieur au 10% accordé à chaque phrase d'un bloc du SSI-ICM dans l'établissement des pourcentages d'erreurs à ce test. Le tableau 3 regroupe les valeurs normatives suggérées.

SSW

Une analyse de variance à trois facteurs – Cohorte (deux cohortes : GINA et HRDP), Âge (cinq groupes) et Condition (quatre conditions d'écoute : DNC, DC, GC et GNC) – répétée pour le dernier facteur, a été effectuée. Les résultats ont démontré une différence significative pour le facteur Âge [F(4,103) = 27.95, p < .001] et le facteur Condition [F(2.4,249.38) = 179.17, p < .001]. Il n'y a aucune différence significative dans les performances des deux cohortes [F(1,103) = 3.05, p > .05]. Les interactions doubles Âge x Condition [F(12,309) = 5.20, p < .001] et Condition x Cohorte [F(3,309) = 4.71, p < .01] sont significatives.

Tableau 3. Valeurs normatives suggérées (moyenne moins deux écarts-types) pour l'adaptation en français du test *Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM)* aux rapports signal/bruit de +10, 0 et -10 dB. Les valeurs ont été calculées à partir des données de 112 enfants de six à onze ans répartis en cinq groupes.

Âge	Oreille droite			Oreille gauche		
	S/B +10 dB	S/B 0 dB	S/B -10 dB	S/B +10 dB	S/B 0 dB	S/B -10 dB
6 ans	90 % (n = 29)	50 % (n = 29)	40 % (n = 19)	90 % (n = 29)	60 % (n = 29)	30 % (n = 19)
7 ans	90 % (n = 25)	60 % (n = 25)	50 % (n = 14)	90 % (n = 25)	60 % (n = 25)	40 % (n = 14)
8 ans	90 % (n = 21)	70 % (n = 21)	60 % (n = 11)	90 % (n = 21)	70 % (n = 21)	40 % (n = 11)
9 ans	90 % (n = 17)	80 % (n = 17)	70 % (n = 9)	100 % (n = 17)	80 % (n = 17)	60 % (n = 9)
10 ans	100 % (n = 20)	70 % (n = 20)	70 % (n = 16)	90 % (n = 20)	80 % (n = 20)	70 % (n = 16)

n = nombre d'enfants par groupe d'âge

Toutefois, l'interaction double Âge x Cohorte [$F(4,103) = .65$, $p > .05$] ainsi que l'interaction triple ne le sont pas [$F(12,309) = .66$, $p > .05$].

L'interaction double Âge x Condition a été décomposée. Les résultats montrent une différence significative entre les conditions d'écoute pour tous les groupes d'âge (6 ans [$F(3,108) = 64.25$, $p < .001$]; 7 ans [$F(3,96) = 38.29$, $p < .001$]; 8 ans [$F(3,88) = 25$, $p < .001$]; 9 ans [$F(3,64) = 17.23$, $p < .001$]; 10 ans [$F(3,76) = 22.10$, $p < .001$]).

Pour chaque groupe d'âge, des tests T ont été effectués en appliquant une correction Bonferroni ($p < .008$). Les résultats sont présentés dans le tableau 4. Les résultats ne montrent aucune différence significative entre les deux conditions non compétitives (i.e. DNC et GNC) et entre les deux conditions compétitives (i.e. DC et GC) pour tous les groupes d'âge, sauf pour les enfants de sept ans où il y a une différence significative entre la condition DC et GC.

Tableau 4. Résultats des tests T entre les quatre conditions d'écoute de l'adaptation en français du test *Staggered Spondaic Word (SSW)* : Droite non compétitive (DNC), Droite compétitive (DC), Gauche compétitive (GC) et Gauche non compétitive (GNC), obtenus à partir des performances de 113 enfants de six à onze ans.

Conditions d'écoute	6 ans (n = 28)			7 ans (n = 25)			8 ans (n = 23)			9 ans (n = 17)			10 ans (n = 20)		
	dl	t	p	dl	t	p	dl	t	p	dl	t	p	dl	t	p
DNC-DC	27	9.6	<.001*	24	7.3	<.001*	22	6.2	<.001*	16	5.3	<.001*	19	5.5	<.001*
DNC-GC	27	13	<.001*	24	7.6	<.001*	22	7.2	<.001*	16	5.7	<.001*	19	5.2	<.001*
DNC-GNC	27	.2	>.05	24	.5	>.05	22	.19	>.05	16	1.5	>.05	19	.9	>.05
DC-GC	27	1.9	>.05	24	3.2	<.004*	22	1.9	>.05	16	2.2	.04	19	1.9	>.05
DC-GNC	27	8.7	<.001*	24	8.1	<.001*	22	5.9	<.001*	16	6	<.001*	19	7.6	<.001*
GC-GNC	27	13.4	<.001*	24	8.6	<.001*	22	7.9	<.001*	16	7.1	<.001*	19	7.3	<.001*

Nombre d'enfants (n); Degré de liberté (dl); valeur du test T (t); degré de signification (p); * significatif, $p < .008$ avec l'application de la correction Bonferroni

L'interaction Condition x Cohorte a été décomposée en effectuant des tests T pour chaque condition d'écoute du SSW en apportant une correction Bonferroni à la valeur d'alpha ($p < .01$). Les résultats ne montrent aucune différence significative entre les deux cohortes pour chaque condition d'écoute (voir Tableau 5).

Tableau 5. Résultats d'analyses statistiques univariées pour chaque condition d'écoute de l'adaptation en français du test *Staggered Spondaic Word (SSW)*. Les analyses ont été effectuées à partir des performances des 113 enfants de six à onze ans des deux cohortes.

Condition du SSW	dl	t	p
Droite non compétitive	(1,111)	.8	> .01
Droite compétitive	(1,111)	.5	> .01
Gauche compétitive	(1,111)	2.5	= .014
Gauche non compétitive	(1,111)	1.9	> .01

Degré de liberté (dl); valeur du test T (t); degré de signification (p); significatif, $p < .01$ avec l'application de la correction Bonferroni

Afin de vérifier si les performances des participants étaient similaires au début et à la fin de l'épreuve, un test T a été mené en retenant comme variable dépendante le nombre moyen d'erreurs commises pour les vingt premières séquences du test en comparaison avec le nombre d'erreurs commises pour les vingt dernières séquences. Les résultats ont montré une différence significative [$t(112) = -4.61$, $p < .001$] entre ces performances, où le nombre d'erreurs était moins élevé dans la première que dans la deuxième partie du test (moyenne de 10 versus 12 erreurs respectivement).

De façon générale, les résultats du SSW pour le nombre d'erreurs n'ont pas montré de différence significative entre les cohortes. Leurs données ont été jumelées afin de déterminer des valeurs normatives pour les quatre conditions d'écoute et pour le nombre total d'erreurs. Elles ont été calculées pour les quarante séquences du test (voir Tableau 6 A et B) et pour les vingt premières séquences (voir Tableau 7 A et B).

Les tableaux 8 A et B et 9 A et B regroupent les valeurs normatives suggérées pour les biais du mot, de l'oreille et de Type A ainsi que pour le nombre d'inversions, calculées à partir des performances des enfants pour les quarante séquences du test ainsi que pour les vingt premières séquences. Le calcul de ces biais a aussi été simplifié dans la procédure proposée par

Tableau 6. A) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du nombre d'erreurs commises dans les conditions Droite non compétitive (DNC), Droite compétitive (DC), Gauche compétitive (GC) et Gauche non compétitive (GNC) de l'adaptation en français du test *Staggered Spondaic Word* pour les quarante séquences du test.

Âge		Nombre d'erreurs pour chaque condition d'écoute du SSW pour les quarante séquences											
		DNC			DC			GC			GNC		
	n	M	ÉT	M+2ÉT	M	ÉT	M+2ÉT	M	ÉT	M+2ÉT	M	ÉT	M+2ÉT
6 ans	28	4,3	2,2	9	12,1	4,3	21	13,8	3,9	22	4,4	2,4	9
7 ans	25	2,8	2	7	7,7	3,2	14	10,2	4,3	19	2,6	2,1	7
8 ans	23	1,9	1,9	6	7,3	4,5	16	8,8	4,8	18	1,8	1,2	4
9 ans	17	1,9	1	4	4,9	2,5	10	6,4	3,5	13	1,4	1,6	5
10 ans	20	1,5	1,3	4	4,2	2	8	5,4	3	11	1,1	1	3

n = nombre d'enfants par groupe d'âge

Tableau 6. B) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du total du nombre d'erreurs, correspondant à la somme des erreurs trouvées dans les quatre conditions d'écoute du SSW. Les valeurs ont été calculées à partir des données de 113 enfants de six à onze ans répartis en cinq groupes sur les quarante séquences du test.

Groupe d'âge	n	Nombre total d'erreurs pour les quarante séquences		
		M	ÉT	M+2ÉT
6 ans	28	34,6	8,7	52
7 ans	25	23,5	8	40
8 ans	23	20,2	10	40
9 ans	17	14,6	7	29
10 ans	20	12,1	5,2	22

n = nombre d'enfants par groupe d'âge

Katz (1996). Pour le biais de l'oreille, le nombre d'erreurs lorsque la série de mots commençait à l'oreille gauche a été soustrait du nombre d'erreurs commises lorsque la série débutait à l'oreille droite. Par exemple, si le nombre d'erreurs pour la série commençant à droite était de 8 et celui pour la série commençant à gauche était de 11, la différence devenait -3 (8-11). Il était important de conserver la polarité du résultat. Pour calculer le biais du mot, il fallait soustraire le nombre d'erreurs pour les deux derniers mots du nombre d'erreurs obtenues pour les deux premiers mots de chaque série. Pour les deux biais, une différence résultant en un chiffre positif

Tableau 7. A) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du nombre d'erreurs commises dans les conditions Droite non compétitive (DNC), Droite compétitive (DC), Gauche compétitive (GC) et Gauche non compétitive (GNC) de l'adaptation en français du test *Staggered Spondaic Word* pour les vingt premières séquences du test.

Âge	n	Nombre d'erreurs pour chaque condition d'écoute du SSW pour les vingt premières séquences											
		DNC			DC			GC			GNC		
		M	ÉT	M+2ÉT	M	ÉT	M+2ÉT	M	ÉT	M+2ÉT	M	ÉT	M+2ÉT
6 ans	28	2,3	1,5	5	5,7	2,7	11	5,9	1,8	10	2	1,5	5
7 ans	25	1,8	1,3	4	3,8	2,2	8	4,4	2,1	9	1,4	1,3	4
8 ans	23	1,1	1,4	4	3,4	2,3	8	3,7	2,9	9	1	0,8	3
9 ans	17	1,2	1,1	4	2,2	1,8	6	2,7	2,1	7	0,6	0,9	3
10 ans	20	1,1	1,3	4	1,7	1,4	4	1,9	1,5	5	0,3	0,4	1

n = nombre d'enfants par groupe d'âge

Tableau 7. B) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du total du nombre d'erreurs, correspondant à la somme des erreurs trouvées dans les quatre conditions d'écoute du SSW. Les valeurs ont été calculées à partir des données de 113 enfants de six à onze ans répartis en cinq groupes sur les vingt premières séquences du test.

Groupe d'âge	n	Nombre total d'erreurs pour les vingt premières séquences		
		M	ÉT	M+2ÉT
6 ans	28	15,8	4,3	25
7 ans	25	11,3	4,1	20
8 ans	23	9,2	5,3	20
9 ans	17	6,8	4	15
10 ans	20	4,9	2,8	10

n = nombre d'enfants par groupe d'âge

indique un plus grand nombre d'erreurs faites à droite qu'à gauche ou sur les premiers que sur les derniers mots. Cette différence donnait un biais de l'oreille ou du mot Haut/Bas (H/B). Pour une différence dont le résultat était négatif, le biais était Bas/Haut (B/H). Le calcul du biais de Type A a été effectué en prenant le nombre d'erreurs le plus élevé dans la colonne B ou F et en y soustrayant le chiffre le plus élevé se trouvant dans l'une des sept autres colonnes.

Pour la DOD, les données ont été transformées en pourcentage de bonnes réponses, tel que proposé dans la littérature (Moncrieff & Wertz, 2008). La figure 2 illustre

Tableau 8. A) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du nombre d'erreurs commises selon le biais de l'oreille ou le biais du mot de l'adaptation en français du test *Staggered Spondaic Word* pour les quarante séquences du test. Les biais peuvent être Bas/Haut (B/H) ou Haut/Bas (H/B).

Âge	n	Biais de l'oreille				Biais du mot			
				B/H	H/B			B/H	H/B
		M	ÉT	M-2ÉT	M+2ÉT	M	ÉT	M-2ÉT	M+2ÉT
6 ans	28	-1,3	4,2	-10	7	-1,1	5,6	-15	7
7 ans	25	-0,2	5,2	-11	10	-3,1	3,7	-10	4
8 ans	23	-0,1	3,3	-7	6	-2,5	4,6	-12	7
9 ans	17	-2	4,1	-10	6	-2,5	3,2	-9	4
10 ans	20	-0,2	0,9	-2	2	-0,5	3,8	-8	7

n = nombre d'enfants par groupe d'âge

Tableau 8. B) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du nombre d'erreurs commises pour le biais de Type A et pour le nombre d'inversions commises dans le test *Staggered Spondaic Word* pour les quarante séquences. Les valeurs ont été calculées à partir des données de 113 enfants de six à onze ans répartis en cinq groupes.

Âge	n	Type A			Inversions		
		M	ÉT	M+2ÉT	M	ÉT	M+2ÉT
6 ans	28	-1,8	3,1	4	1,2	1,8	5
7 ans	25	-1,5	2,4	3	0,8	1,5	4
8 ans	23	-1,3	2,4	3	1,1	1,7	4
9 ans	17	-0,5	1,2	2	0,7	1,4	4
10 ans	20	-0,4	1,5	3	0,6	1,4	3

n = nombre d'enfants par groupe d'âge

Tableau 9. A) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du nombre d'erreurs commises selon le biais de l'oreille ou le biais du mot de l'adaptation en français du test *Staggered Spondaic Word* pour les vingt premières séquences du test. Les biais peuvent être Bas/Haut (B/H) ou Haut/Bas (H/B).

Âge	n	Biais de l'oreille				Biais du mot			
				B/H	H/B			B/H	H/B
		M	ÉT	M-2ÉT	M+2ÉT	M	ÉT	M-2ÉT	M+2ÉT
6 ans	28	-1,3	3,2	-8	5	-2,7	4	-11	5
7 ans	25	0	3,2	-6	6	-1,6	2,9	-7	4
8 ans	23	-0,1	2,6	-5	5	-1	3,3	-7	6
9 ans	17	-1,1	2	-5	3	-1,7	2,8	-7	4
10 ans	20	-0,3	1,8	-4	3	0,1	2,4	-5	5

n = nombre d'enfants par groupe d'âge

Tableau 9. B) Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) du nombre d'erreurs commises pour le biais de Type A et pour le nombre d'inversions commises dans le test *Staggered Spondaic Word* pour les vingt premières séquences. Les valeurs ont été calculées à partir des données de 113 enfants de six à onze ans répartis en cinq groupes.

Âge	n	Type A			Inversions		
		M	ÉT	M+2ÉT	M	ÉT	M+2ÉT
6 ans	28	-1	1,8	3	0,6	1,1	3
7 ans	25	-0,8	1,4	2	0,4	1,1	3
8 ans	23	-0,5	1,6	3	0,5	1	3
9 ans	17	-1	1,2	2	0,6	1,2	3
10 ans	20	-0,3	0,6	1	0,3	0,6	1

n = nombre d'enfants par groupe d'âge

ce pourcentage dans la condition droite compétitive et gauche compétitive pour les quarante séquences du SSW. Les valeurs normatives suggérées se trouvent dans les tableaux 10 et 11.

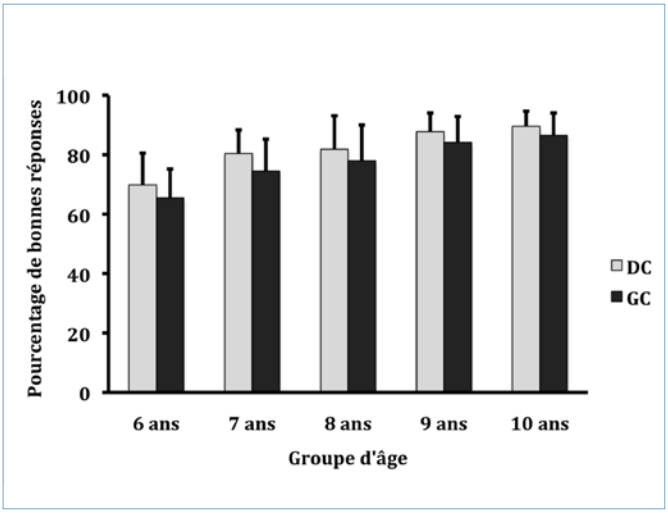

Figure 2. Pourcentage de bonnes réponses (moyenne et écart-type) obtenues avec l'adaptation en français du test *Staggered Spondaic Word* par les enfants de chaque groupe d'âge pour la condition Droite compétitive (DC) et la condition Gauche compétitive (GC).

Discussion

L'étude visait la proposition de valeurs normatives pour les tests SSI-ICM et SSW en français. Pour ce faire, 44 et 45 enfants de six à dix ans ont été respectivement soumis aux deux tests. Leurs données ont été comparées à celles de 68 enfants faisant partie de l'étude normative HRDP (Bérard, 1990-1993). Les résultats ont montré une différence significative entre les deux cohortes au SSI-ICM uniquement dans une des trois conditions d'écoute, notamment celle où le rapport signal/bruit était de 0 dB. Bien que cette différence soit statistiquement significative, sur le plan clinique, elle semble peu importante. De fait, la différence entre la moyenne de bonnes réponses des deux groupes (6 %) n'atteignait pas le pourcentage attribué à chaque phrase d'un bloc (i.e. : 10 %). Les résultats des deux cohortes ont alors été jumelés afin de fournir des balises cliniques à l'interprétation des résultats (voir Tableau 3).

De plus, les données provenant du SSI-ICM révèlent un effet de développement où le pourcentage de bonnes réponses augmente avec l'âge, à l'exception de deux conditions d'écoute chez les enfants de dix ans. À l'oreille droite au rapport signal/bruit de 0 dB et à l'oreille gauche au rapport signal/bruit de +10 dB, les performances sont moins bonnes que celles des enfants de neuf ans. Comme illustré dans le tableau 12 de l'annexe 1, l'écart-type, légèrement plus grand chez les enfants de dix ans comparativement à celui des

Tableau 10. Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) de la différence des performances des quarante séquences du test obtenues dans la condition Droite compétitive (DC) et celles obtenues dans la condition Gauche compétitive (GC), correspondant à la dominance de l'oreille droite (DOD), pour l'adaptation en français du test *Staggered Spondaic Word*, calculée à partir des données de 113 enfants de six à onze ans répartis en cinq groupes.

Âge	n	Différence entre DC et GC pour le pourcentage de bonnes réponses calculé à partir des quarante séquences		
		M	ÉT	M+2ÉT
6 ans	28	4,4 %	12,2 %	29 %
7 ans	25	5,9 %	9,3 %	24 %
8 ans	23	3,9 %	9,5 %	23 %
9 ans	17	3,7 %	6,9 %	17 %
10 ans	20	3,1 %	7,2 %	18 %

n = nombre d'enfants par groupe d'âge

Tableau 11. Moyenne (M), écart-type (ÉT) et norme suggérée (M+2ÉT) de la différence des performances des vingt premières séquences du test obtenues dans la condition Droite compétitive (DC) et celles obtenues dans la condition Gauche compétitive (GC), correspondant à la dominance de l'oreille droite (DOD), pour l'adaptation en français du test *Staggered Spondaic Word,* calculée à partir des données de 113 enfants de six à onze ans répartis en cinq groupes.

Âge	n	Différence entre DC et GC pour le pourcentage de bonnes réponses calculé à partir des vingt premières séquences		
		M	ÉT	M+2ÉT
6 ans	28	1,1 %	15,4 %	32 %
7 ans	25	3 %	13 %	29 %
8 ans	23	1,5 %	13,9 %	29 %
9 ans	17	2,6 %	13 %	29 %
10 ans	20	0,8 %	9,6 %	20 %

n = nombre d'enfants par groupe d'âge

enfants de neuf ans, contribue à l'obtention de normes où le pourcentage de bonnes réponses est moins élevé chez les enfants de dix ans que chez les neuf ans, ce qui tend à enfreindre la trajectoire développementale attendue. Les données du test SSI-ICM révèlent aussi que le pourcentage de bonnes réponses diminue en fonction du degré de difficulté de la tâche. En effet, les valeurs normatives suggérées sont meilleures pour un rapport entre les phrases et le bruit favorable (rapport signal/bruit de +10 dB) comparativement à la condition où ce rapport est moins favorable (rapports signal/bruit de 0 et -10 dB) (voir le tableau 12 dans l'annexe 1 pour la moyenne et l'écart-type). Ces résultats sont compatibles avec ceux de l'étude de Decker et Nelson (1981) menées auprès d'enfants de huit ans et plus de même qu'auprès d'adultes. Les résultats ont révélé une différence significative entre les performances à l'oreille gauche et celles de l'oreille droite pour les conditions d'écoute où le rapport signal/bruit était de +10 ou 0 dB. Toutefois, cette différence est en moyenne de 1% en faveur des performances à l'oreille gauche. Elle n'a pas été démontrée entre les performances de chaque oreille avec un rapport signal/bruit de -10 dB. Bien que les résultats soient peu différents à chaque oreille, il est toutefois recommandé d'effectuer en clinique le test à chaque oreille pour deux raisons. Les indices d'une dysfonction peuvent parfois n'apparaître que d'un seul côté. De plus, des résultats anormaux à une oreille pour l'ensemble (ou presque) des tests auditifs centraux sélectionnés par le clinicien, incluant le SSI-ICM, devraient montrer une cohérence dans les résultats aux épreuves. Ils pourraient, dans certains cas, écarter la possibilité que les performances soient principalement contaminées par des erreurs associées à un problème d'attention.

Pour ce qui est des résultats obtenus au SSW, ils n'ont montré aucune différence significative entre les performances des enfants de la cohorte GINA et celles des enfants de la cohorte initiale (HRDP). Les données des deux cohortes d'enfants ont été unifiées en cinq groupes d'enfants, déterminés d'après l'âge, afin de calculer des valeurs normatives pour le nombre d'erreurs commises à chaque condition d'écoute du SSW ainsi que pour le nombre total d'erreurs (voir Tableau 6). Ces valeurs sont légèrement plus élevées que les normes de Katz (1996) obtenues avec la version originale du SSW en anglais (Figure 3). Au moins deux raisons pourraient expliquer cette différence entre les valeurs normatives. La première serait reliée à la composition des items du test. Il est possible que certains mots du test en français soient plus difficiles à reconnaître à cause de leur fréquence d'utilisation par les enfants (exemple : fée, lin formant félin et dé, daim formant dédain) que ceux retrouvés dans la version en anglais. La deuxième raison pourrait être due à une plus grande variabilité dans les résultats de la présente étude comparativement aux données de Katz (1996). L'échantillon de la présente étude comprenait 113 enfants. Ce nombre est au moins deux fois plus petit que celui ayant servi à établir les normes de Katz (1996), soit 287 enfants. Un petit échantillon augmente les risques d'avoir une moins bonne fiabilité dans les résultats qu'un grand échantillon (McCauley & Swisher, 1984).

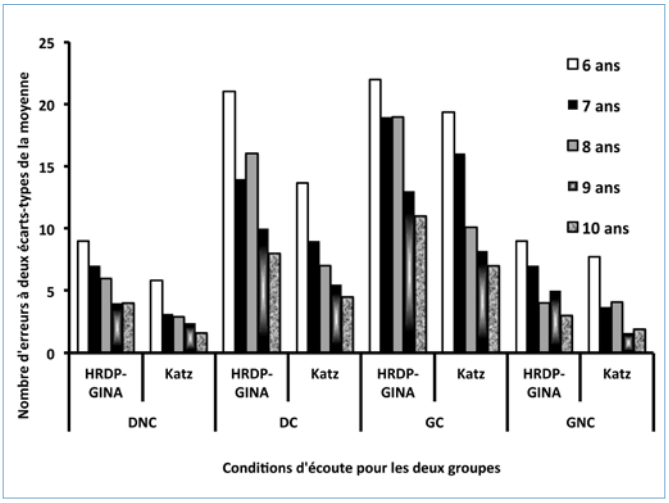

Figure 3. Valeurs normatives du nombre d'erreurs de l'adaptation en français du test d'écoute dichotique de mots *Staggered Spondaic Word – SSW* et de la version en anglais du SSW. Ces valeurs se trouvent à deux écarts-types de la moyenne établies à partir des données d'enfants de six à dix ans pour les quatre conditions d'écoute : Droite non compétitive (DNC), Droite compétitive (DC), Gauche compétitive (GC) et Gauche non compétitive (GNC). Elles proviennent de la cohorte de l'Hôpital Rivière-des-Prairies (HRDP) et du Groupe d'intérêt en neuroaudiologie (GINA) ainsi que de la cohorte de Katz.

En ce qui a trait aux biais de l'oreille et du mot du SSW, les résultats sont incohérents lorsque les données sont comparées à travers les cinq groupes d'âge. En effet, les valeurs calculées à deux écarts-types de la moyenne d'enfants de sept ans sont parfois meilleures que celles d'enfants de huit ou de dix ans (voir biais du mot H/B, Tableau 8). Ces données vont à l'encontre des normes obtenues en anglais (Katz, 1996) en montrant des résultats similaires pour des enfants de groupes d'âge adjacent ou meilleurs chez les enfants plus vieux que ceux d'enfants plus jeunes. Une fois de plus, la variabilité dans les données a probablement contribué à cette incohérence. Les résultats du biais Type A sont un peu plus congruents que les précédents puisqu'ils se trouvent à peu près dans le même intervalle d'erreurs avec une légère amélioration à travers les groupes d'âge (Tableau 8).

Quant aux performances des participants lorsque les stimuli étaient présentés dans les conditions DC et GC du SSW, elles s'améliorent en fonction de l'âge (voir Tableau 10). On observe une DOD chez tous les groupes d'âge et l'effet s'amenuise au fur et à mesure que les enfants vieillissent. La moyenne de la DOD de chaque groupe d'enfants se situe à l'intérieur des balises proposées par Moncrieff et Wertz (2008). Dans leur étude, ils définissent une DOD anormale pour un test d'écoute dichotique de chiffres lorsque la différence entre les performances à chaque oreille (performances plus pauvres à gauche qu'à droite) dépasse 20% chez les enfants de moins de huit ans, 15% chez les huit et neuf ans et 10% chez les dix ans et plus. Les valeurs normatives à deux écarts-types de la moyenne dans la présente étude vont bien au-delà de ces balises. Toutefois, chaque essai est composé de quatre mots dont deux sont en écoute dichotique. La demande plus grande au plan de la mémoire de travail et au plan du traitement linguistique pourrait expliquer en partie l'écart entre les balises suggérées par Moncrieff et Wertz (2008) et les valeurs retrouvées à la figure 2 et au tableau 10.

Par ailleurs, les résultats des analyses statistiques suggèrent que les performances des participants soumis à l'adaptation en français du SSW ne sont pas empreintes d'un effet de pratique, ce qui est compatible avec les résultats de l'étude de Young et Tracy (1976). Par contre, dans la présente étude, un nombre plus élevé d'erreurs dans la deuxième partie du test comparativement à celles retrouvées dans la première partie peut laisser croire que les performances ont été influencées par des facteurs non reliés au traitement auditif, tels que la fatigue, l'attention soutenue et la motivation. En clinique, les audiologistes peuvent utiliser les valeurs suggérées dans les tableaux 6 et 7 (valeurs des 40 et 20 séquences respectivement) pour déterminer si les performances d'un enfant sont potentiellement marquées par de tels facteurs. Si c'est le cas, il est alors suggéré d'utiliser les valeurs de la première partie du test.

Une limite de la présente étude est reliée à la fiabilité des données obtenues aux deux tests. À ce jour, aucune mesure test-retest n'a été effectuée avec ces épreuves en français. Le test SSI-ICM serait fiable lorsque le seuil de réception de la parole est mesuré avec ce test (coefficient de corrélation de ,97 avec un bruit de babillage et de ,98 avec l'histoire de Davy Crockett) (Pugh, Crandell, & Griffiths, 1998). De plus, des études ont montré que le SSW en anglais est assez fiable chez des enfants ayant un trouble d'apprentissage (coefficient de corrélation étant de ,76 et de ,88 pour les conditions d'écoute à l'oreille droite et à l'oreille gauche, respectivement) (Katz & Kram, 1993) et auprès d'adultes ayant une surdité (coefficient de corrélation variant entre ,72 et ,86 pour les conditions en compétition) (Zalewski, 2005).

Une autre limite de l'étude est reliée à l'effet de pratique. Cet effet n'a pas été mesuré pour le test SSI-ICM. Les résultats de l'étude de Feeney et Hallowell (2000) suggèrent que le SSI-ICM serait sensible à cet effet. Ils ont soumis des adultes sans problème auditif au test à un rapport signal/bruit de -20 dB et des personnes âgées ayant une perte auditive légère (en moyenne) à partir de 4 000 Hz au rapport signal/bruit de -10 dB. Les performances s'amélioraient respectivement de façon significative entre les deux et les trois premiers essais. Ils ont recommandé qu'une liste de pratique soit effectivement utilisée pour les adultes et trois listes de pratique pour les personnes âgées. Il est souhaitable que l'effet de pratique relatif au test SSI-ICM en français soit examiné, surtout chez les enfants pour qui le test est actuellement le plus utilisé. Entre temps, il est suggéré de se servir en clinique de la condition du test la plus favorable, celle où le rapport signal/bruit est de +10 dB, afin de s'assurer que la personne comprenne et exécute la tâche tout en réduisant un effet potentiel de pratique. Si les résultats sont en deçà de 90% dans cette condition d'écoute, il faut vérifier la compréhension de la personne et reprendre une liste à ce rapport signal/bruit, jusqu'à ce que les valeurs soient de 90% et plus. Cette condition pourrait donc familiariser la personne à la tâche et la performance obtenue à cette condition d'écoute ne devrait pas être comparée aux valeurs normatives.

Conclusion

La présente étude a contribué à établir des normes chez un plus grand échantillon d'enfants pour le test d'écoute de phrases en compétition avec une histoire – *Synthetic Sentence Identification-Ipsilateral Competing Message* et pour le test d'écoute dichotique de mots en français – le *Staggered Spondaic Word*.

À la lumière des résultats obtenus au SSI-ICM, les valeurs normatives peuvent déterminer si un enfant éprouve des problèmes de séparation figure/fond. Toutefois, ces valeurs doivent aussi être interprétées avec prudence chez les enfants de dix ans pour les conditions où le rapport signal/bruit est de 0 dB à l'oreille droite. Il est suggéré d'appliquer les valeurs obtenues auprès des enfants de neuf ans à celles des enfants de dix ans.

Pour ce qui est du SSW, il est suggéré d'utiliser en clinique les valeurs normatives à partir du nombre d'erreurs commises pour chaque condition d'écoute de même que pour le total du nombre d'erreurs. Il est peu

recommandé de calculer les biais de l'oreille, du mot ou de Type A pour établir un profil du modèle de Buffalo, développé par Katz (1992), à cause des incohérences soulevées ci-haut. Ainsi, les audiologistes voulant utiliser les valeurs présentées dans le tableau 8 comme balises doivent être prudents dans l'interprétation des résultats. Le calcul de la DOD peut également renseigner sur les capacités d'un enfant à traiter adéquatement l'information auditive. Des résultats se situant au-delà des valeurs normatives peuvent suggérer une dysfonction ou une immaturité dans les structures dédiées au traitement auditif, entre autres dans le corps calleux. La mise en commun des résultats avec ceux des autres tests auditifs centraux sélectionnés par l'audiologiste peut aider à élucider cette question. Dans le cas où un enfant a obtenu des valeurs hors-normes pour la DOD et à d'autres tests, des évaluations subséquentes avec les mêmes outils de mesure aideront, entre autres, à préciser s'il s'agit d'un trouble de traitement auditif ou d'une immaturité dans le fonctionnement du système auditif central.

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Remerciements

Nous remercions grandement les parents et les enfants ayant participé à l'étude. Un énorme merci aux audiologistes qui ont contribué à l'élaboration du protocole ou à la cueillette de données : Éric Bégin, Christiane Bérard, Diane Boudreault, Isabelle Haman, Danielle Laforest, Nicole Lalande, Maude Leblanc, Susan Plante et Christine Roberge. Finalement, sincère reconnaissance à Claude Berthiaume pour son implication dans les analyses statistiques effectuées dans la version préliminaire de l'article.

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Received date: November 30, 2010
Accepted date: November 30, 2011

APPENDIX A

Tableau 12. Moyenne (M) et écart-type (ÉT) du pourcentage de bonnes réponses obtenu au test *Synthetic Sentence Identification – Ipsilateral Competing Message (SSI-ICM)* adapté en français aux rapports signal/bruit de +10, 0 et -10 dB. Les valeurs ont été calculées à partir des données de 112 enfants de six à onze ans répartis en cinq groupes.

Âge	n	+ 10 dB				0 dB				- 10 dB			
		OD (%)		OG (%)		OD (%)		OG (%)		OD (%)		OG (%)	
		M	ÉT	M	ÉT	M	ÉT	M	ÉT	M	ÉT	M	ÉT
6 ans	29	98,3	4,9	98,7	3,4	78,7	15,2	84,3	12,7	76,9	19,7	66,9	19,3
7 ans	25	96,5	5,6	98,1	4	84,2	4	85,8	11,4	72,1	11,9	68,6	11,7
8 ans	21	99,5	2,2	99	4,4	88,6	10,1	89,5	8,6	80,9	11,4	77,3	19,5
9 ans	17	98,2	5,3	100	0	92,9	6,9	93,5	7,9	90	8,7	83,3	11,2
10 ans	20	100	0	99	3,1	92	8,9	94,5	7,6	85,6	7,3	91,3	10,9

n = nombre d'enfants par groupe d'âge

The Effect of Chin Down Position on Penetration-Aspiration in Adults with Dysphagia

L'effet de la position du menton rentré pour la pénétration-aspiration chez les adultes souffrant de dysphagie

Stephen Fraser
Catriona M. Steele

Abstract

The chin down position is a commonly used compensatory maneuver for aspiration in patients with dysphagia. Prior literature has not specifically explored the benefits of this technique for resolving penetration and aspiration in the general medical population without structurally related dysphagia, such as that seen typically in acute care hospitals. In this study, the chin down position was routinely included in videofluoroscopy as a follow-up to the observation of penetration or aspiration with thin liquid barium, in 16 stroke and 26 general internal medicine patients. The technique was employed either with teaspoon bolus administration and/or with cup drinking. Chin angle was measured during both head neutral and chin down position swallows, revealing typical flexion of 76-77° when using the chin down maneuver. Blinded ratings of the depth of airway invasion using a 4-point scale (1 = no airway invasion; 2 = transient penetration of the supraglottic space; 3 = penetration of the supraglottic space, down to the level of the vocal folds, without clearance; 4 = aspiration below the level of the true vocal folds) revealed positive results when using the chin down maneuver during cup drinking; the depth of airway invasion improved by an average of 1 level on the depth of invasion scale, with complete resolution of penetration and aspiration in 11 cases. By contrast, with teaspoon administration of the bolus, the chin down position did not lead to improved airway protection, but rather to a worsening of swallowing safety. These results show that the chin down position improved airway protection in patients with impaired swallowing safety during cup drinking with thin liquid barium in the upright position. However the chin down maneuver did not lead to improved airway protection with teaspoon-sized thin liquid bolus volumes. We conclude that clinicians should not recommend the chin down maneuver without first ruling out detrimental effects and seeing evidence of its benefit in videofluoroscopy.

KEY WORDS

DEGLUTITION
SWALLOWING
DYSPHAGIA
ASPIRATION
CHIN-DOWN POSTURE

Abrégé

La position du menton rentré est une manœuvre compensatoire couramment utilisée pour l'aspiration chez les patients présentant une dysphagie. La littérature scientifique n'a pas exploré spécifiquement les avantages de cette technique pour résoudre les problèmes de pénétration et d'aspiration parmi la population de personnes malades sans dysphagie, comme on en trouve généralement dans les hôpitaux de soins aigus. Dans cette étude, la position du menton rentré a été automatiquement incluse dans la vidéofluoroscopie comme suivi de l'observation de la pénétration ou de l'aspiration avec un baryum liquide, chez 16 patients ayant subi un accident vasculaire cérébral (AVC) et chez 26 patients en médecine interne générale. La technique a été employée avec l'administration d'un bolus à la cuillerée ou par ingurgitation à la tasse ou selon les deux méthodes à la fois. On a mesuré l'angle du menton durant une déglutition avec une position neutre de la tête et avec une position du menton rentré, des mesures révélant une flexion typique de 76 à 77 degrés lors de la manœuvre du menton rentré. Des mesures à l'aveugle de la profondeur de l'invasion des voies respiratoires au moyen d'un barème en quatre points (1 = aucune invasion des voies respiratoires; 2 = pénétration transitoire de l'espace supraglottique; 3 = pénétration de l'espace supraglottique, jusqu'aux cordes vocales, sans dégagement; 4 = aspiration sous le niveau des vraies cordes vocales) ont révélé des résultats positifs lors de l'utilisation de la manœuvre du menton rentré durant l'ingurgitation à la tasse; la profondeur de l'invasion des voies respiratoires s'est améliorée en moyenne d'un échelon du barème de la profondeur de l'invasion, avec une résolution complète des problèmes de pénétration et d'aspiration dans 11 cas. En comparaison, avec l'administration du bolus à la cuillerée, la position du menton rentré n'a pas mené à une protection accrue des voies respiratoires, mais plutôt à une diminution de la protection lors de la déglutition. Ces résultats montrent que la position du menton rentré a amélioré la protection des voies respiratoires chez les patients présentant un trouble de l'efficacité de la déglutition durant l'ingurgitation à la tasse d'un baryum liquide dans la position verticale. Cependant, la manœuvre du menton rentré n'a pas mené à une protection accrue des voies respiratoires dans le cas de volumes de bolus de liquide servi à la cuillerée. Nous en concluons que les cliniciens ne devraient pas recommander la manœuvre du menton rentré sans d'abord éliminer les effets nuisibles et sans avoir vu des preuves de son avantage en vidéofluoroscopie.

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A chin down position is commonly used as a postural compensation when aspiration is seen during a Videofluoroscopic Swallow Study (VFSS) or is suspected based on a clinical assessment of swallowing. To date, the literature contains limited information regarding the effectiveness of the chin down maneuver for improving airway protection in swallowing. Rasley et al. (1993) studied the effectiveness of a variety of postures in preventing aspiration for 165 consecutively referred patients for whom aspiration occurred on thin fluids. The chin down position was reported to be successful in eliminating aspiration for all volumes (1 ml – up to cup drinking) for 25% of participants. However, it should be noted that the etiology of the dysphagia in this study was heterogeneous, with 65% of participants being individuals with dysphagia secondary to head and neck cancer or stroke. Bülow, Olsson, and Ekberg (2001) also studied the effectiveness of various swallowing techniques in a small sample of six CVA and two head and neck cancer patients. They found that a chin down position did not reduce penetration/aspiration for thin fluids. Shanahan, Logemann, Rademaker, Pauloski, and Kahrilas (1993) studied pharyngeal dimensions during implementation of the chin down position in 30 patients with a variety of neurological deficits (ex., CVA, Multiple Sclerosis, head injury). The only difference in pharyngeal dimensions observed between patients for whom the chin down was effective in limiting aspirationand those for whom it was not effective was in epiglottic angle, which was reduced in those who benefited but increased in those who continued to aspirate. Finally, Logemann et al. (2008) studied the relative effectiveness of three interventions for aspiration (chin down, nectar thick liquids and honey thick liquids) in a large sample of adults with Parkinson's disease and/or dementia. Participants in that study expressed a preference for the chin down maneuver compared to thickened liquids, although it was found to be the least effective approach for limiting aspiration, eliminating the problem in only 32% of participants.

The prior literature on the effectiveness of the chin down maneuver typically includes participant groups with heterogeneous etiologies, including both structural/mechanical dysphagia secondary to head and neck cancer and neurogenic dysphagia, without reporting specific details about response in the different etiological subgroups. This makes it questionably appropriate to generalize findings to other diagnostic groups in which dysphagia may be present. Furthermore, Okada et al. (2007) showed that terminological confusion exists among speech-language pathologists (S-LPs) between the terms "chin down" and "chin tuck" procedures. Postural compensatory maneuvers, including the chin down position, are reported to be the most frequently utilized form of dysphagia intervention by S-LPs across Canada (Steele et al., 2007). Further, in our anecdotal experience, the chin down maneuver is also frequently recommended as a good idea by nursing staff, without any assessment of its benefit. The College of Audiologists and Speech-Language Pathologists of Ontario has, in fact, recommended in its Practice Standards and Guidelines for Dysphagia that postural modifications not be recommended without videofluoroscopic evidence of their benefit, recognizing the fact that prior literature shows that some patients do not benefit from the chin down maneuver, and may, in some circumstances experience greater risk of aspiration (College of Audiologists and Speech-Language Pathologists of Ontario, 2007, p. 16; Shanahan et al., 1993). It is therefore important to further study the safety and effectiveness of chin down positioning, using clear instructions regarding maneuver execution (Steele, Hung, Sejdić, Chau, & Fraser, 2011).

In this study, we wanted to determine whether broad implementation of a chin down maneuver is advisable and effective for managing aspiration risk in a general acute care patient population. We chose to use the term chin down to describe the maneuver of interest, referring to flexion of both the head and neck in the anterior direction (Okada et al., 2007). We undertook to study the impact of the maneuver on swallowing safety (penetration and aspiration) in a sample of adults with dysphagia drawn from the stroke and general internal medicine programs of a community acute care hospital. The study was approved by the institutional review board of the hospital.

Methods

Participants

We recruited 42 consenting adult inpatient participants from the acute care and rehabilitation units, who showed aspiration during thin liquid swallowing tasks during a VFSS. Sixteen patients (9 male; 7 female; mean age of 73 years, range of 49 to 87) had a primary diagnosis of stroke. Time since stroke onset ranged from two weeks to 18 months. Twenty-six patients (14 male; 12 female; mean age of 77 years, range 39 to 92) were recruited from the General Internal Medicine (GIM) program, and represented the highly diversified patient mix that is typically found on acute care hospital units. The GIM subgroup included participants with the following major medical diagnoses: multiple sclerosis, chronic obstructive pulmonary disease (COPD), kidney disease, fractures, congestive heart failure, diabetes, sepsis, Wilson's

disease, and gastrointestinal disease. Exclusion criteria for the study were: 1) absence of any available chin down maneuver examples on the videofluoroscopy; 2) history of head and neck cancer; 3) tracheostomy tube in place; 4) inability to follow instructions for the chin down maneuver and 5) physical limitations for sitting upright or flexing the neck.

Procedures

All apparently eligible patients who were referred to speech-language pathology for an evaluation of swallowing, and who were considered to need VFSS were approached to consent to the study prior to their x-ray. The S-LPs at the hospital were asked to begin their VFSS protocol with a standardized set of thin liquid swallowing tasks, including routine exploration of the chin down maneuver following any observation of laryngeal penetration or aspiration. The study procedure was as follows:

Step 1: A teaspoon-sized volume of thin liquid barium was administered and swallowed in a head neutral position.

Step 2: If penetration or aspiration was observed in Step 1, a teaspoon-sized volume of thin liquid barium was administered and swallowed using a chin down position, otherwise the clinician proceeded to Step 3.

Step 3: If comfortable to proceed, a cup-drinking task was performed with thin liquid barium in a head neutral position, otherwise the clinician proceeded directly to Step 5.

Step 4: If penetration or aspiration was observed in Step 3, the cup-drinking task was repeated using a chin down position.

Step 5: The research portion of the VFSS was complete. The VFSS then continued as needed for clinical purposes.

A standardized thin liquid barium preparation (a 40% w/v solution of Bracco Liquid Polibar barium suspension and water) was used for all VFSS examinations. Where the chin down maneuver was explored, the task was conducted using the same thin liquid bolus administration method (either teaspoon or cup) used in the prior trials on which penetration or aspiration had been observed. Teaspoon (tsp) boluses were administered by the clinician, while cup sips were taken from a cup held by the patient. Participants were instructed to perform the maneuver by tucking their head downwards by "looking down at their knees". Videofluoroscopy recordings were captured in the lateral view at 30 frames per second, with the image field including the lips anteriorly, the hard palate superiorly, the cervical spine posteriorly and the upper esophagus inferiorly.

Data Processing and Analysis

From the 42 videofluoroscopies that were captured for this study, the available data included 19 recordings showing penetration-aspiration on teaspoon-sized thin liquid boluses in the head neutral position and 30 recordings showing penetration-aspiration during cup drinking in the head neutral position. From each of these recordings, both the head neutral swallow exhibiting penetration-aspiration, and the subsequent chin down swallow were spliced from the original VFSS recording into individual task "clips". The 38 clips of teaspoon-sized thin liquid boluses (19 in head neutral and 19 in chin down position) were de-identified an organized in a random sequence for rating. Similarly, the 60 clips of cup drinking (30 in head neutral and 30 in chin down position) were de-identified and organized in a random sequence for rating.

Figure 1. Image showing how chin angle was measured versus the cervical spine.

Two different types of analysis were conducted. First, the frame at which the bolus passed the lower margin of the shadow of the mandibular ramus was clipped from each recording as a still image. Using this image, the extent of head flexion adopted by the participant was measured by tracing the angle (in degrees) made by a line running along the lower margin of the mandibular ramus and a vertical line running through the anterior

inferior corners of the C2 and C4 cervical vertebrae. These measurements were made using Image J software (Version 1.42, http://rsbweb.nih.gov/ij/download.html), as illustrated in Figure 1. Second, the randomly ordered swallow clips were reviewed by three experienced S-LPs who had undergone previous training using a training set, and had established inter-rater agreement of 93% regarding the depth of airway invasion. These raters independently scored each video clip for the depth of airway invasion using levels 1 (normal), 2 (high penetration), 3-5 (penetration) and 6-8 (aspiration) of the 8-point Penetration-Aspiration Scale (Rosenbek, Roecker, Robbins, Coyle & Wood, 1996). Ejection of material from its deepest position to a higher level (i.e., penetration-aspiration scale scores of 4 and 6) was not distinguished from adjacent scores (i.e., 5 and 7/8) registering the same depth of airway invasion without ejection in this study. Raters were blinded to the other S-LP's results, but could not be blinded to the head position used by the participant. Since all clips were rated by all 3 raters, if a lack of unanimity occurred, the majority decision (i.e., consensus of two raters) was taken as the score for subsequent analysis. Chi-square analyses were used to compare the frequencies of the different depths of airway invasion observed in the head neutral versus chin down positions within bolus administration condition (cup or teaspoon).

Results

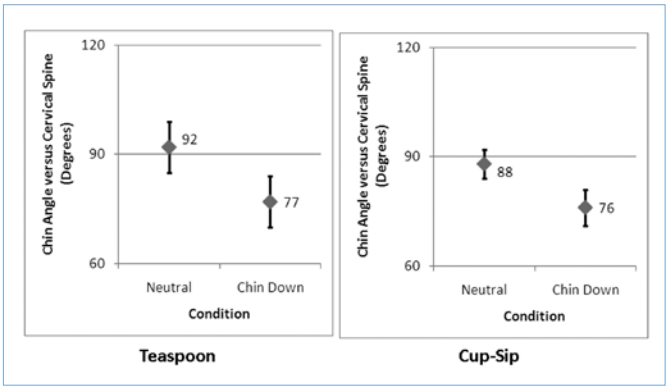

Figure 2. 95% confidence intervals for chin angle (in degrees) during head neutral and chin down swallows, by bolus administration condition (teaspoon, sip from cup).

Chin Angle

Figure 2 illustrates 95% confidence intervals for chin angle in the head neutral and chin down positions observed for the teaspoon and cup-drinking conditions. It can be noted that practically identical degrees of flexion were seen for both bolus administration conditions, at 77˚ (95% confidence interval: 70˚ to 84˚) and 76˚ (95% confidence interval: 71˚ to 80˚), respectively. In the head neutral condition, slightly greater extension was observed in the teaspoon administration condition (mean 92˚, 95% confidence interval: 85˚ to 98˚) compared to that seen during cup drinking (mean 88˚, 95% confidence interval: 84˚ to 93˚).

Frequency of Airway Invasion Scores by Etiology

As shown in Table 1, the distribution of airway invasion scores in the head neutral position did not differ significantly between the stroke and general internal medicine subgroups in this study (teaspoon administration: X^2 (df 3) = 5.115 p =.164; cup-drinking: X^2 (df 5) = 3.142 p =.678). Similarly, no significant differences in the frequency of different degrees of penetration-aspiration were observed between the stroke and general internal medicine subgroups for the chin down data (teaspoon administration: X^2 (df 2) = 5.115 p =.077; cup-drinking: X^2 (df 2) = 2.075 p =.354. On this basis, it was decided to remove the etiology factor from all subsequent analyses.

Frequency of Airway Invasion by Bolus Administration Method

Greater frequencies of penetration (30% versus 26.3%) and aspiration (23.3% versus 5.3%) were seen with cup drinking compared to teaspoon administration of the bolus in the head neutral position (see Table 1). High penetration was more frequent in the teaspoon-administration condition (68.4%) compared to cup drinking (46.7%). These differences in the distribution of airway invasion scores by bolus administration method failed to achieve statistical significance (X^2 (df 2) = 3.381 p =.184).

In the chin down position, however, a clearer pattern of airway invasion score distribution emerged (see Table 1). Here, there were no instances of normal airway protection in the teaspoon administration condition, while 36.7% of cases were found to have normal airway protection during cup drinking. High penetration was more common in the cup drinking condition (50% versus 31.6%), while penetration and aspiration were more common in the teaspoon-administration condition (42.1% and 26.3%, respectively) than in the cup drinking condition (10% and 3.3%). Thus, the distribution pattern for airway invasion scores differed significantly as a function of bolus administration method (X^2 (df 3) = 18.347, p =.000), with a greater tendency towards worse airway invasion scores seen in the teaspoon-administration condition.

Table 1. Frequencies of airway invasion scores by bolus delivery method and head position.

Bolus Delivery Method	Head Position	Depth of Airway Invasion	Stroke		General Internal Medicine		Total	% of Total
			n	*% within group*	*n*	*% within group*		
Teaspoon	Neutral	Normal	0	0%	0	0%	0	0%
		High Penetration	6	86%	7	58%	13	68%
		Penetration	0	0%	5	42%	5	26%
		Aspiration	1	14%	0	0%	1	5%
		Total	7	100%	12	100%	19	100%
	Chin down	Normal	0	0%	0	0%	0	0%
		High Penetration	1	14%	5	42%	6	32%
		Penetration	3	43%	5	42%	8	42%
		Aspiration	3	43%	2	17%	5	26%
		Total	7	100%	12	100%	19	100%
Cup-sip	Neutral	Normal	0	0%	0	0%	0	0%
		High Penetration	8	62%	6	35%	14	47%
		Penetration	3	23%	6	35%	9	30%
		Aspiration	2	15%	5	29%	7	23%
		Total	13	100%	17	100%	30	100%
	Chin down	Normal	6	46%	5	29%	11	37%
		High Penetration	5	38%	10	59%	15	50%
		Penetration	1	8%	2	12%	3	10%
		Aspiration	1	8%	0	0%	1	3%
		Total	13	100%	17	100%	30	100%

Discussion

This study was designed to study the effectiveness of the Chin Down posture on aspiration and penetration in two groups. One group was comprised of stroke and the other was a very heterogeneous group of acute hospital inpatients, hereafter referred to as GIM – General Internal Medicine. The distribution of airway invasion scores, for both head neutral and chin down, did not differ significantly between the stroke and GIM groups for either teaspoon or cup drinking. This suggests that we may view the data as representing one heterogeneous group, and demonstrating how effective the chin down position is for a mixed population, such as that typically seen on hospital medical wards. Furthermore, this suggests that it may be reasonable to extrapolate previously reported findings regarding the chin down position in stroke patients to a more heterogeneous general medicine caseload.

The observed pattern of response to the chin down position differed substantially between the teaspoon and the cup drinking conditions. Although we were not able to directly compare these conditions within patients, due to the protocol, which allowed clinician discretion in deciding whether or not to pursue cup drinking during the VFSS, clearly different patterns of chin down effect were observed within condition. During cup drinking, all seven cases of aspiration were successfully eliminated with the use of the chin down position. Three of these cases displayed normal airway protection without any airway invasion and three resolved to high penetration. Of the nine cases displaying deep penetration in the head neutral position, only two remained unchanged in the chin down position. Five cases improved to high penetration while two resolved to show no airway invasion. Overall, eleven cases resolved completely to display normal airway protection without any penetration or aspiration during cup drinking using the chin down maneuver. These results demonstrate the benefit of a chin down position for cup drinking in a heterogeneous inpatient medical population with dysphagia.

The pattern of response to the chin down position was decidedly different for boluses administered by teaspoon. In the head neutral position only one instance of aspiration was observed, while five cases of deep and thirteen of high penetration were observed, respectively. However, when the chin down position was used with teaspoon administration, the number of cases of aspiration increased to five. In addition, the incidence of deep penetration (i.e., to the level of the vocal cords) increased from five to eight cases. There were no instances in which penetration or aspiration observed with teaspoon administration in the head neutral position resolved to normal airway protection and absent airway invasion with the chin down posture. Thus, there was actually a trend for swallowing safety to worsen when the chin down position was used in conjunction with bolus administration by teaspoon. The reason for this alarming finding is unknown. One issue to note is that the cup drinking condition in this study involved the subject holding the cup themselves, while the teaspoon administration condition involved the S-LP holding the spoon. This difference in the patient's opportunity to control bolus administration themselves may be relevant, since self-feeding involves activation of a variety of sensory and motor processes even before the bolus arrives in the mouth. Further study is required to examine the impact of self-feeding versus being fed on swallowing safety.

For the purposes of this research the 8-point Penetration-Aspiration Scale (Rosenbek et al., 1996) was condensed to four points, reflecting depth of airway invasion without consideration of subsequent clearance or ejection (i.e., normal airway protection, 0; high penetration, 1; penetration down to the level of the vocal cords, 2; and aspiration, 3). The average impact of the chin down position on depth of airway invasion during cup drinking was an improvement of 1 level on this 4-point scale, a change of notable clinical importance. When advising patients about the risk they may incur when drinking thin liquids, it is clearly important to know whether the use of a chin down position can lessen risk to a degree that will permit safe thin liquid intake. Although penetration and high penetration may still pose risks, it may be that this risk is considered an acceptable one for certain populations (such as palliative patients), both by clinicians and by the patients themselves. Certainly, an improvement of one level of airway invasion depth from high penetration to normal airway protection would allow more patients to remain on thin fluids through use of the chin down position.

With teaspoon administration, the average change in depth of airway invasion was a deterioration of one level on the 4-point scale. This observation demands further study to determine why the chin down this finding stands as further evidence that the chin down should not be automatically recommended for anyone showing signs of aspiration. The fact that deterioration in swallowing safety was observed in this study to a substantial degree with teaspoon administration, and also in one case during cup drinking, provides evidence to support the current practice guidelines for S-LPs in Ontario, which state that postural modifications should not be prescribed without visual evidence of their benefit (College of Audiologists and Speech-Language Pathologists of Ontario, 2007).

Conclusions

This study confirms that the chin down posture can have a positive effect on swallowing safety and reduce the incidence of aspiration and the depth of penetration, in the context of cup drinking with thin liquids. However, the results also concur with previous studies in showing that the maneuver is not always beneficial (Shanahan et al., 1993). In particular, our results suggest that the use of a chin down position during teaspoon administration of a bolus by a feeder should be avoided unless it has been clearly demonstrated to be of benefit using videofluoroscopy. Furthermore, this study suggests that the absence of observed benefit with the chin down maneuver on small volume swallows does not mean that the maneuver will prove ineffective during larger volume cup drinking tasks.

Acknowledgments

This study was supported by a Canadian Association of Speech-Language Pathologists and Audiologists Clinical Research Grant to the first author and by an Ontario Ministry of Research and Innovation Early Researcher Award to the second author. The authors would like to acknowledge assistance from Ashley Waito, Becky Hedges, Heather Connors and Bonnie Reaburn-Jones with data collection, processing and analysis.

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Received date: November 18, 2011

Accepted date: January 18, 2012

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The FM Benefit Counseling Tool (FM-BCT): Initial Stages of the Development of a Tool for Assessing the Benefit of FM Amplification from the Perspective of Adult Cochlear Implant Users

L'outil de consultation sur les avantages du système MF (FM-BCT) : Les étapes initiales de mise au point d'un outil pour évaluer les avantages d'un système MF selon le point de vue des adultes munis d'un implant cochléaire

KEY WORDS

COCHLEAR IMPLANT

ASSISTIVE TECHNOLOGY

SPEECH PERCEPTION

NOISE

QUESTIONNAIRE

FM SYSTEM

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Abstract

Purpose: The purpose of this study was to undertake the first phase of the development of a clinical tool (questionnaire), the FM Benefit Counseling Tool (FM-BCT) to address both the perceived benefits associated with the use of a frequency modulated (FM) system and the factors affecting use.

Research Design: Twelve adults who used a unilateral cochlear implant participated in this phase of the study. This research involved a descriptive analysis using cross-sectional and qualitative data collected during a previous study (Fitzpatrick et al., 2010). Participants recorded their experiences using a personal FM system in a journal during a two-month trial period and responded to a questionnaire at the end of the trial.

Data Analysis: Comparisons were made between the journal entries and the questionnaire responses by examining data in all situations to assess the reliability of using a questionnaire to evaluate benefit. The questions included in the first section of the FM-BCT aim to consider clients' perception of benefit of an FM system. The content validity of this section was assessed by refining the most common situations from the journal entries and by evaluating the helpfulness rating for each of these situations. The second section addresses the factors that may influence the user's perceived benefit and is grounded in a thorough literature review.

Results: The assessment of the most common situations in the journal entries confirmed that the items presented in the questionnaire were the most relevant for cochlear implant users. Helpfulness ratings collected through the questionnaire at the end of the trial period compared favorably with the journal entries logged during the entire trial period. Analysis of the data showed no evidence of discrepancies between the journal entries and the questionnaire responses.

Conclusions: These results suggest that the new FM-BCT captures the most relevant listening situations for FM system use and can reliably assess client perception of benefit of FM system use in everyday life. The tool can also assist clinicians in identifying the factors that impact clients' willingness to use an FM system. Although a comprehensive and systematic validation needs to be carried out, this research is the first step in the validation of this new tool.

Abrégé

Objectif : Cette étude avait pour but de réaliser la première phase de la mise au point d'un outil clinique (questionnaire), l'outil de consultation sur les avantages du système MF (FM-BCT), pour résoudre à la fois les avantages perçus liés à l'utilisation d'un système de modulation de fréquence (MF) et les facteurs touchant son utilisation.

Conception de la recherche : Douze adultes porteurs d'un implant cochléaire unilatéral ont participé à cette phase de l'étude. La recherche consistait en une analyse descriptive à partir de données transversales et qualitatives recueillies au cours d'une étude antérieure (Fitzpatrick et coll., 2010). Les participants ont consigné leurs impressions sur l'utilisation d'un système MF personnel dans un carnet durant une période d'essai de deux mois et ils ont répondu à un questionnaire à la fin de l'essai.

Analyse des données : Nous avons effectué des comparaisons entre les entrées du carnet et les réponses au questionnaire, en examinant les données issues de toutes les situations afin de déterminer la fiabilité d'utiliser un questionnaire pour évaluer les avantages. Les questions comprises dans la première section du FM-BCT visaient à étudier les perceptions des clients face aux avantages de l'utilisation d'un système MF. Nous avons évalué la validité du contenu de cette section en raffinant les situations les plus courantes extraites des entrées du carnet et en établissant la cote d'utilité de chacune de ces situations. La deuxième section traitait des facteurs pouvant influer sur les avantages perçus des utilisateurs et elle repose sur un examen approfondi de la littérature.

Résultats : L'évaluation des situations les plus courantes se trouvant dans les entrées du carnet a confirmé que les aspects présentés dans le questionnaire étaient les plus pertinents pour les utilisateurs de l'implant cochléaire. Les cotes d'utilité recueillies grâce au questionnaire à la fin de la période d'essai se comparaient favorablement aux entrées consignées dans le carnet durant toute la période d'essai. Une analyse des données n'a montré aucune différence entre les entrées du carnet et les réponses au questionnaire.

Conclusions : Ces résultats laissent entendre que le nouveau FM-BCT saisit les situations d'écoute les plus pertinentes pour l'utilisation d'un système MF et peut évaluer en toute fiabilité la perception des clients face aux avantages d'utiliser un système MF au quotidien. L'outil peut également aider les cliniciens à déterminer les facteurs influant sur la disposition des clients à utiliser un système MF. Bien qu'on doive mener un exercice de validation vaste et systématique, cette recherche constitue la première étape d'un processus de validation de ce nouvel outil.

Individuals with hearing loss experience considerable difficulty with speech understanding in suboptimal listening environments such as background noise and group interactions (Bronkhorst, 2000). A remote microphone system such as a frequency modulated (FM) system is one of the many assistive listening technologies that can be offered to individuals with hearing loss. These devices, which include both sound field and personal FM systems, have been recommended for children with hearing loss in educational settings for many years (Anderson, Goldstein, Colodzin, & Inglehart, 2005; Flexer, 2004). A personal FM system (individually worn FM device) consists of a wireless microphone worn by the speaker and a receiver worn by the listener. The microphone captures the speaker's voice and the signal is transmitted directly to the listener via the FM system. The speaker's voice is the predominant signal captured by the microphone, thereby reducing the effect of distance between the speaker and the listener and decreasing the negative effects of background noise. These systems increase the signal-to-noise ratio and the signal-to-reverberation ratio to enhance the overall listening conditions for the user.

The benefits of these remote microphone systems have been documented for adults with hearing aids (Boothroyd, 2004; Chisolm, Noe, McArdle, & Abrams, 2007; Jerger, Chmiel, Florin, Pirozzolo, & Wilson, 1996). Even though these studies reported significant benefits related to the use of FM systems, investigators also highlighted that several non-audiologic factors contributed to the decision to use an FM system in everyday life situations. Jerger et al. (1996) reported that even though many individuals preferred the sound quality of the FM system, 175 of 180 participants indicated that they preferred to use hearing aids alone in their daily life. The study concluded that factors particularly associated with individuals' perceptions of the inconveniences of using an FM system with relatively large transmitting/receiver components and wired connections might have accounted for the lack of adoption of FM systems. Similarly, Boothroyd (2004), found that despite measurable improvements on phoneme recognition in noise using an FM system in a laboratory setting, adult hearing aid users did not indicate an intention to acquire the device at the end of a two-week trial period. The author suggested that factors such as cost, esthetics and the lack of counseling might have interfered with the final decision to acquire the device.

A recent study conducted by Chisolm et al. (2007) attempted to control some of the factors such as costs and counseling, that potentially interfere with FM system use in everyday life. Thirty-five adult hearing aid users recruited through the National Veteran's program were provided with considerable counseling, instruction and coaching throughout an extended six-week trial period. All participants continued using the FM system after the trial period. Communication using the FM system coupled to hearing aids was reported to be superior to hearing aids alone. However, the study was unable to identify differences in users' self-perception of quality of life when using a hearing aid alone versus with an FM system. The authors concluded that despite the benefits of the FM system, equipment-related aspects including battery charging and connecting units to hearing aids might have partially offset the perceived benefits.

Benefits related to FM system use have also been reported for cochlear implant users both in children (Davies, Yellon, & Purdy, 2001; Schafer & Thibodeau, 2006) and in adults (Fitzpatrick, Seguin, Schramm, Armstrong, & Chenier, 2009; Schafer & Thibodeau, 2004; Schafer, Wolfe, Lawless, & Stout, 2009; Wolfe & Schafer, 2008). In a laboratory setting, Shafer and Thibodeau (2004) documented improvements in speech recognition in quiet for eight adults in the FM versus no-FM condition. Fitzpatrick et al. (2009) recently reported significant improvements for adults who used an FM system coupled to their implant both for open-set sentence recognition in noise and for television listening. Two studies that investigated the benefits of FM systems for adult clients in order to make recommendations for optimization with a cochlear implant (Schafer et al. 2009; Wolfe & Schafer, 2008), concluded that FM technology offers significant advantages over the cochlear implant alone in noisy listening environments. In addition to improvements in speech understanding, positive attitudes toward the everyday benefits of FM systems for adults were also documented through questionnaires (Wolfe & Schafer, 2008) and via both questionnaire and journal entries during a trial period (Fitzpatrick et al., 2010). Although these questionnaires were not validated or standardized, the information collected complemented other measures in documenting the subjective benefits of FM systems. While the results obtained from these questionnaires seemed to corroborate other measure of improvements documented in the studies, the lack of standardization and validation limit their clinical application. It is also important to note that the principal focus for hearing aid benefit questionnaires has been the assessment of benefits with little attention accorded to the influencing factors. Fitzpatrick et al. (2010) documented a spectrum of perceived advantages such as ease of listening and reduction of background noise related to use of the FM systems in everyday life situations in an adult

cochlear implanted population. However, this study also found that several factors identified as environmental, technical, social and individual characteristics may interfere with the implant user's decision to wear an FM system in everyday life. These findings highlight the importance of assessing not only the benefits of FM system use but also the factors which may influence the individual user's experience.

Taken together, these studies provide evidence from laboratory and real-world settings that coupling an FM system provide advantages over the use of hearing aids or cochlear implants alone for adult users. Despite the documented benefits, there appears to be low penetration of FM systems among the adult population of cochlear implant users. Fitzpatrick et al. (2009) reported that less than 10% of implant recipients from a clinical population of 300 adults used FM systems. It is unclear to what extent these results are due to users' reluctance to use additional devices with their cochlear implants or from lack of recommendations from audiologists. Schafer and Thibodeau (2004) have suggested that this situation may be due to the lack of information available for audiologists regarding the use and benefits of FM systems or other remote microphone technologies. Another possible explanation may be the limited availability of outcome measures that are specific to the assessment of FM systems. Audiologists may be reluctant to recommend a system in the absence of suitable tools to assess client benefits. To our knowledge there are no available validated and standardized questionnaires to assess the benefit of FM systems. In contrast, several self-report outcome questionnaires addressing benefit, satisfaction and quality of life, are widely available for the assessment of hearing aid fitting outcomes in real-world situations. Examples of such questionnaires for hearing aid users include the Client Oriented Scale of Improvement (COSI) (Dillon, James, & Ginis, 1997), the Abbreviated Profile of Hearing Aid Benefit (APHAB) (Cox & Alexander, 1995), the Hearing Handicap Inventory for the Elderly (HHIE) (Ventry & Weinstein, 1982), and the Glasgow Hearing Aid Benefit Profile (GHABP) (Gatehouse, 2000). Although some of these instruments may be useful for the assessment of a personal FM system fitting, they were not specifically designed for that purpose and therefore the situations presented are not sufficiently sensitive to capture the benefits of an FM system. Moreover, these questionnaires provide a measure of outcome on topics such as benefits and satisfaction from hearing aids without probing the factors influencing the users' perceptions. Consequently, a positive outcome on a questionnaire may provide insight on the success of the fitting while a more negative result does not provide the practitioner with any information that might enhance the fitting process for the specific individual.

The use of self-report measures of real-world outcome has gained importance in the audiology field for at least three main reasons (Cox, 2003). First, health care services have evolved to become more consumer-driven, that is, the client's point of view has become recognized as an important indicator of the outcome of intervention. Second, there is an understanding that many real-world experiences cannot be translated or simulated efficiently in a laboratory setting. The use of any amplification system/auditory implant in everyday life is a complex and dynamic process involving more factors than those that can be measured in the laboratory. Finally, the client's own impressions of actual real-life experiences cannot be documented in a laboratory setting even if acoustic conditions are close to the real-life listening situation.

There is a need for an outcome measure specific to the FM system, one that includes the assessment of the different factors influencing use. Such an instrument can help provide an evidence base for FM system recommendations and practices. Self-reported measures are becoming a gold standard measure as it is well recognized that client perception of benefit determines the success or failure of treatment (Taylor, 2007). The overall purpose of this research was to create a clinical evaluation tool specific to the FM system for the adult cochlear implant population. The intent was to develop a client-directed tool to address both the perceived benefits associated with the use of an FM system and the factors affecting those benefits. A model of FM system use (see figure 1.) generated from a previous study (Fitzpatrick et al., 2010) provided the starting point for the new questionnaire (FM-BCT). Based on further review of the literature, we refined the model initially proposed to include two additional components; outcome measures and counselling (Cox, 2003; Taylor, 2007). In this phase, we assessed the reliability and the content validity of a research questionnaire (adapted from Boothroyd, 2004) in order to design the new clinical questionnaire (FM-BCT).

Methods

Settings and Participants

Details of the settings and participants are reported in a previous paper (Fitzpatrick et al., 2010) and are summarized briefly here. As part of a study investigating several aspects of FM and cochlear implant use, 14 adults with postlinguistic deafness were recruited through the University of Ottawa Auditory Implant Program. The 10 women and four men were between the ages of 48 and

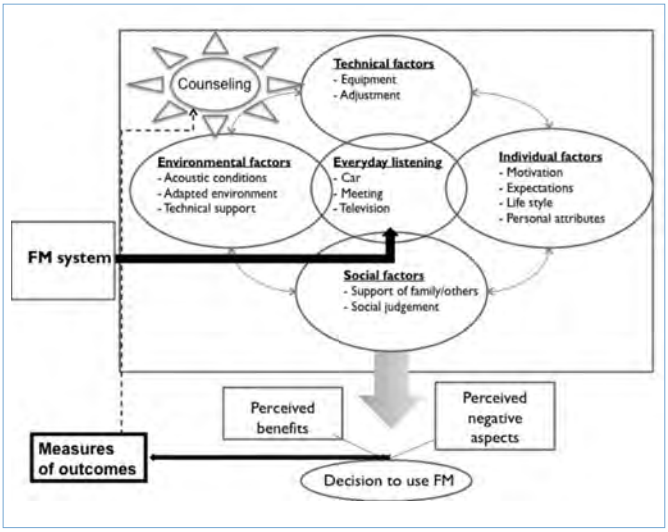

Figure 1. Revised Model of FM use. (From Fitzpatrick, E. M. et al. (2010). Users' perspectives on the benefits of FM systems with cochlear implants. *International Journal of Audiology, 49*(1), 44-53. Reprinted with permission).

71 years and duration of cochlear implant use ranged between 1.0 and 6.4 years. All participants used an Advanced Bionics speech processor (Auria or Harmony) with the exception of one participant who used a Nucleus Freedom speech processor. Only 12 participants were retained for the analysis of the current study as two of them did not submit a completed journal at the end of the two-month field trial (Table 1).

Procedures and equipment

As described in detail in our previous work (Fitzpatrick et al., 2010), all participants were seen individually for fitting and counseling during a one-hour session, in which they were provided with a Sennheiser Mikroport FM system 2015 for a period of two months. The Sennheiser system consists of a transmitter (SK 2015) and body-worn receiver unit (EK 2015). Participants were encouraged to explore all possible opportunities to use their FM system. They were asked to complete a journal entry each time the FM system was worn and to record the following information: (1) listening environment and activity; (2) amount of time worn during each activity; (3) a rating of the utility of the system ranging from not helpful at all to very helpful; and (4) their qualitative comments on speech understanding, benefits and limitations of the system and other related observations. At the end of the trial period, the participants also completed a brief questionnaire from a published study that examined the benefits of FM systems for adult hearing aid users (Boothroyd, 2004). The first section of the questionnaire consisted of 15 items designed to probe users' perceptions of FM system benefit in common listening situations: quiet, noise, church, television viewing, and restaurant (adaptation from Boothroyd, see Fitzpatrick et al., 2010). The second section included three open-ended questions: (1) What did you like about this equipment? (2) What problems did you encounter? and (3) Is this something you might wish to acquire? A fourth question was added to document previous experience with FM systems (with hearing aids or cochlear implants).

Current Study

The principal purpose of this study was to validate the first section (assessment of perceived benefits) of the research questionnaire (Boothroyd, 2004) in order to create the new questionnaire (FM-BCT). One focus of this phase was the analysis of the data from the journal entries. A total of 169 journal entries were collected from 12 participants who used an FM system coupled to a unilateral cochlear implant during an approximate two-month period resulting in an accumulated total of at least 230 hours. This first step aimed to assess the content validity of the first section. The content validity refers to the degree to which a measure covers the full range of behaviours of the ability being measured (Clark-Carter, 1997). In this study, the content validity involves the most common situations in which individuals experienced benefit from the FM system. We first assessed the most common everyday situations in which the FM system was reported to be beneficial, based on the 169 journal entries to ensure that the new questionnaire (FM-BCT) included these situations. We also assessed the situations where the FM system was reported to be the most helpful in the journal to again ensure that these were included in the questionnaire. In addition, we conducted a careful analysis of participants' comments to detail the various situations in which the FM system was used.

The second step of the analysis involved an assessment of the reliability of section one of the research questionnaire (Boothroyd, 2004) in order to create the new questionnaire (FM-BCT). Specifically, we wanted to examine whether a questionnaire such as the one developed by Boothroyd (2004) and used in our past study (Fitzpatrick et al., 2010) could adequately capture the overall experience of adult cochlear implant users during an FM trial period. Comparisons were made between the most common situations extracted from the journal entries and the situations that were included in the completed Boothroyd (2004) questionnaires following the FM trial period. Two participants were excluded from the comparison analysis because they did not complete the entire Boothroyd questionnaire, leaving information from 10 participants available for

Table 1. Description of 12 participants

Participant Number #	Sex	Age at CI (yr)	Duration of severe loss (yr)	Duration CI use (yr)	PTA Implant ear (dB HL)	PTA Contralateral ear (dB HL)	Pre-study HINT-Q (%correct)[1]	Pre-study HINT+10 (% correct)[1]
1	M	48	28.4	4.7	115	113	97	69
2	F	59	1.1	3.2	87	75	97	45
3	M	55	6	2.4	100	112	100	99
4	F	71	20.8	4.7	100	88	77.5	34.5
5	F	51	15.7	3.4	98	103	100	97
6	F	51	11	6.4	97	97	100	90
7	F	47	6	3.7	90	132	99.1	87.6
8	M	51	1.4	1	98	103	94	82
9	F	65	0.5	4.2	83	102	98.2	79
10	F	40	1.8	4.5	100	103	95	67.5
11	F	60	4.3	4.1	115	125	76.5	56
12	F	52	3.5	5.5	102	98	79	28

CI: cochlear implant; PTA: pure-tone average (500, 1000, 2000 Hz); HINT-Q: Hearing in Noise Test administered in quiet; HINT+10: HINT administered at signal-noise ratio of +10 dB. 1Tests administered at 60 dB SPL except for Participants 1 and 15 (70 dB SPL).

this analysis. The comparison of the journal entries and the questionnaire responses involved an examination of both individual and group data in all listening situations. All analysis involved descriptive statistics of proportion and frequency and were carried out using SPSS 16.

The second purpose of this study was to generate questions for the FM-BCT to assess the factors influencing clients' perceptions of benefit. The content of the questions were anchored within the model (Figure 1) from our previous study (Fitzpatrick et al., 2010) and from a thorough literature review (Table 2).

Results

Journal Results

Figure 2 presents, in order of frequency of use, a summary of the situations in which the FM system was worn with the implant throughout the two-month trial period. The pattern of utilization is shown as the total number of times the FM system was used in a particular situation, the total number of hours of FM use and the number of different participants reporting use for the listening situation. As shown, the most frequently occurring single activity was television

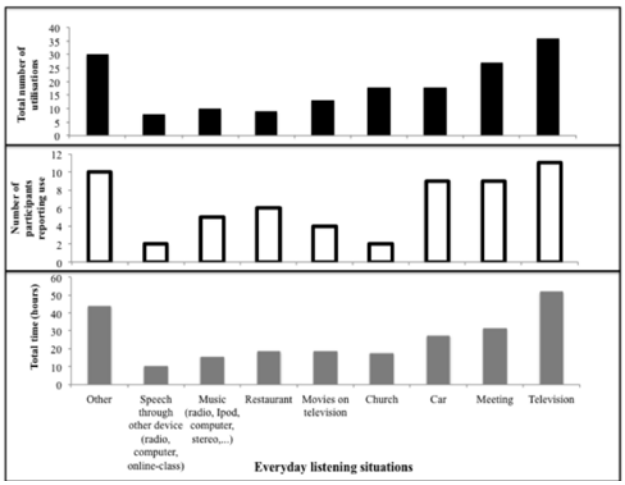

Figure 2. Frequency, hours and number of different participants reporting use of the FM system in everyday listening situations (12 adults, 169 journal entries) over a two month trial period.

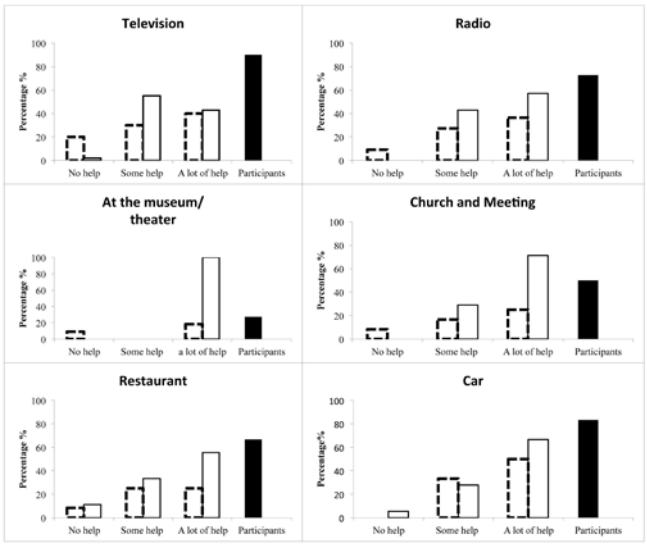

Figure 3. Overall percentage for each helpfulness rating for the Boothroyd questionnaire (dashed line) and for journal entries (continuous line) in each listening situation. The black column represents the percentage of participants who reported the particular situation.

watching where the FM device was used 36 times for a total of 51.7 hours. Other common listening situations with high FM use included meetings, car travel, and church. During the trial period, 11 of 12 participants tested the FM system with the television, making it the most common situation for FM use. Nine participants reported use during car travel and during meetings. As shown in Figure 2, the device was used less frequently for movies and restaurants with a total of 13 (18.5 hours) and 9 (18.5 hours) events respectively. The section entitled "other" in Figure 2 groups all of the less common situations of use and included several diverse activities such as shopping and horseback riding. Figure 3 presents the helpfulness rating of the journal entries and the Boothroyd questionnaire for the most common situations. The number of participants reporting use was also added to the graph. As shown in Figure 3, the helpfulness rating in all situations except "museum/ theatre" was similar between the journal entries and the Boothroyd questionnaire. For the "museum/theatre" situation, all participants reported the FM to be very helpful in the journal entries but one participant reported this situation as not helpful in the Boothroyd questionnaire.

Comparison of Overall Journal and Questionnaire Responses

Figure 4 presents the comparison in percentage of responses between the 169 journal entries and the overall helpfulness item of the Boothroyd questionnaire. For each journal entry describing a listening situation during the FM trial period such as watching television, the participants provided a rating of helpfulness (not helpful at all, a little helpful, somewhat helpful, very helpful). The ratings for all listening situations reported in the journals were combined across all participants to yield a percentage of responses for each of the four rating categories. Figure 4 shows a comparison between these journal results and participants' rating of overall helpfulness (worse, a little help, some help, a lot of help) on the Boothroyd (2004) questionnaire. To facilitate comparison, the questionnaire categories labelled as "some help" and "a lot of help" were reclassified as somewhat helpful and very helpful. A comparison was then made between the percentage of responses of overall helpfulness on the questionnaire and the percentage of helpfulness for all situations in which the FM system was used during the trial period for all participants. As shown in Figure 4, 8 of 10 (80%) participants rated the FM system as very helpful when rating overall helpfulness on the Boothroyd (2004) questionnaire, and 2 of 10 (20%) found it somewhat helpful. No participants at the end of the trial period reported that the system was of little help or interfered with understanding. Results of the journal entries showed that participants rated the FM system to be very helpful 58% of the time used, somewhat helpful 30% of the time, a little helpful 8% of the time, and not helpful at all 4% of the time. Overall, based on their experiences during a two-month trial

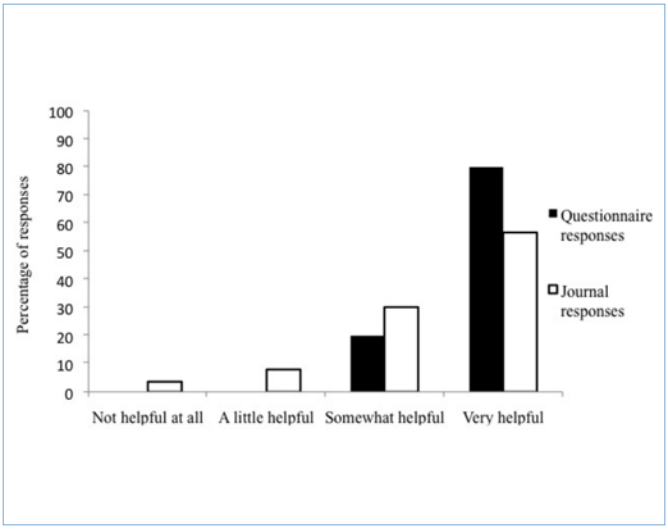

Figure 4. Comparison between the overall helpfulness rating from the entire journal entries for all participants and the rating of overall helpfulness of the FM system on the Boothroyd (2004) questionnaire (10 participants).

period, participants rated the FM system to be very or somewhat helpful 88% of the time.

Comparison of Individual Journal and Questionnaire Responses

Figure 5 displays a comparison of individual participants rating of overall helpfulness on the Boothroyd (2004) questionnaire and their ratings of helpfulness in the journal entries. This individual comparison permitted an examination of whether the global helpfulness rating of all the journal entries collected over a two-month period for a specific individual was consistent with the overall helpfulness rating from the participant's questionnaire at the end of the trial period. As shown in Figure 5, 8 of 10 participants provided a helpfulness rating for the questionnaire that corresponded to the most frequently occurring rating of their experience in various listening situations during the trial period (sum of the helpfulness of all journal entries for a given individual). For example, participant #1 rated the FM system as very helpful on the questionnaire and also rated their journal-documented experiences as very helpful 21 out of 28 times used. Participant #7 provided a "somewhat helpful" rating on the questionnaire and also rated the FM as somewhat helpful for 9 of a total of 11 listening experiences logged in the journal. Two of 10 participants (#2, #10) rated the FM system as more helpful in the questionnaire than in their overall rating of situations in the journal. Participant #2 judged the FM device to be very helpful when completing the questionnaire but rated the FM as very helpful only 1 of 11 times in the journal.

The FM Benefit Counseling Tool (FM-BCT):

The new questionnaire, the FM Benefit Counseling Tool (FM-BCT) (Appendix 1) resulting from our research is comprised of two sections. The aim of section one of the FM-BCT is to evaluate cochlear implant users' perceived benefit of the use of an FM system in real-world difficult listening situations. The items of this section are primarily based on the Boothroyd (2004) questionnaire that was administered during the previous study. However, the 10 common listening situations in the original Boothroyd questionnaire were expanded to include 12 situations based on our analysis. In the FM-BCT, the meeting and church situations were divided into two distinct items as all participants who reported FM use during these two situations described them as very different listening activities. As illustrated by the following participant comments, a meeting was described as a discussion with a large number of speakers while church was described as a single speaker at a distance, a listening experience that is very similar to a lecture.

Meeting

Meeting 10 people: « Very good, simply put the transmitter on the table – All went well except for one person who was very soft spoken. » (Participant #7)

Church

Church: « I had our priest Father X wear the transmitter during Sunday a.m. mass. It's a Catholic mass with a small chair and a half-full church. The entire mass was wonderful. I don't think it could have been any better. Father is from Nigeria and has an accent but I've known him for several years. I've never fully understood him doing the mass. Today, he was crystal clear and his voice was very distinct. …» (Participant #5)

Lecture

Did a presentation for a group of 15 people: « Small room [with] conference table for my microphone. Worked well enough, used as a tracking tool to group I was presenting to. Most of them were hard of hearing. Wires seem to intimidate them a bit (me too!) but [they] were impressed with my ability to hear so well. Quality of sound - excellent. » (Participant #7)

Listening to music and listening to speech were also described as very different from listening to the radio. This may be because, as technology evolves, music and speech are not only radio-based activities but are also provided by devices such as computers, MP3 players and other electronic devices. As indicated in the examples below, individuals with cochlear implants may also

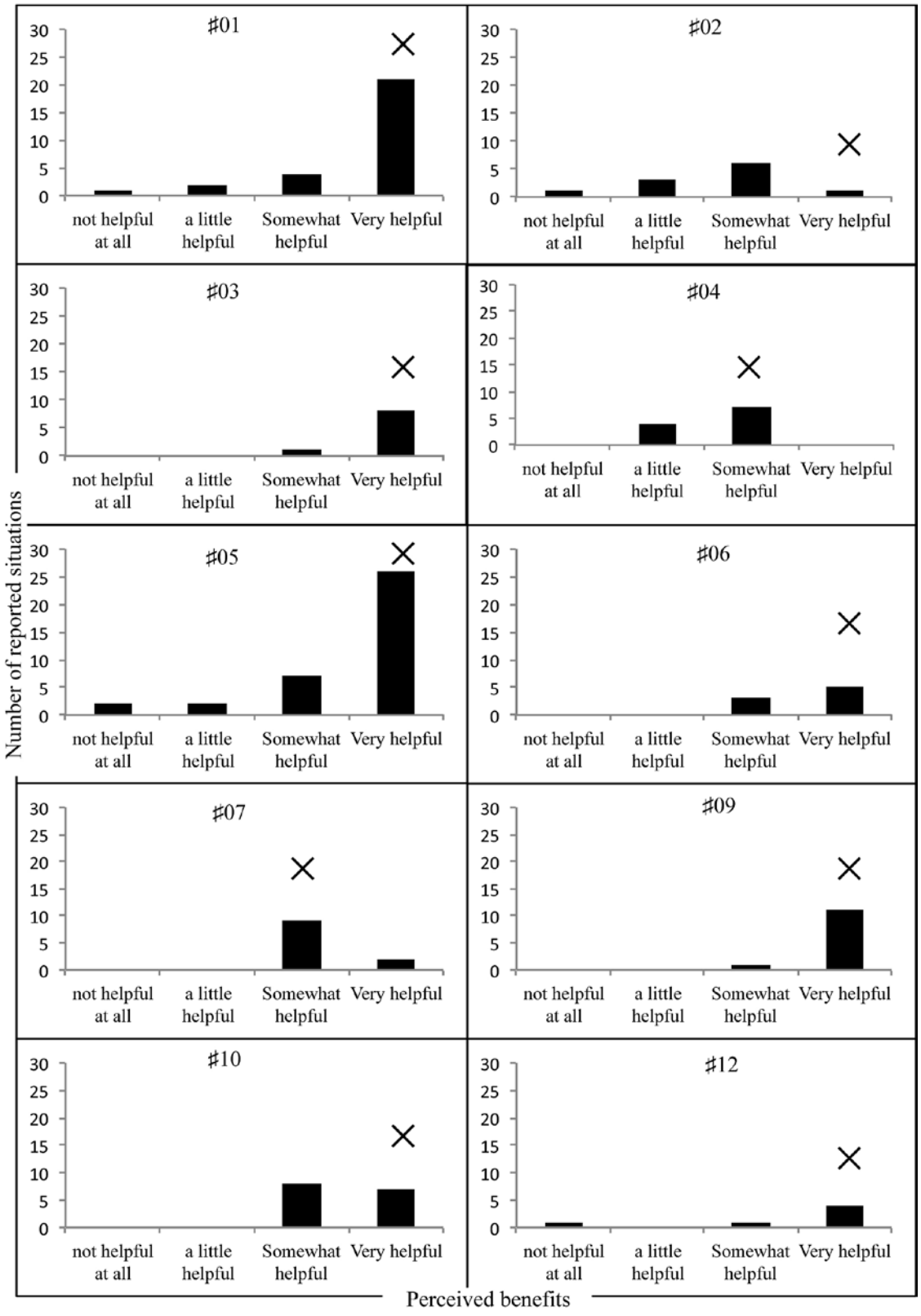

Figure 5. Comparison between overall helpfulness rating from the entire journal entries and overall helpfulness rating on the Boothroyd (2004) perceived benefit questionnaire for 10 participants. The X refers to the questionnaire rating of "Overall" helpfulness.

differentiate these two listening situations based on the need to directly couple their speech processor to electronic devices whereas this does not typically apply to listening to speech, for example on the radio.

Music

Listening to music on computer: « This is great! Allows a wireless direct hook up to music + video stored on my computer. CI direct input (I was told) should never be used with non-battery, AC powered devices. But, with the FM system I can plug FM transmitter into headphone output on computer and listen to music anywhere in my apartment and still talk to my wife… » (Participant #3)

Speech

Listening to an on-line class: « I attached the speaker on the FM system close to the computer. I listened to an on-line course that we had at work. The quality of speech was very good and I was able to understand all but one of the speakers who talked very quickly. » (Participant #10)

All other situations from the Boothroyd (2004) were retained as they were consistent with the most common situations reported in the journal entries and with those reported as most helpful in both the journal entries and the Boothroyd questionnaire.

In the new questionnaire, using Likert-scaled items, participants will rate their perception of the benefit of the FM system in each of the 12 listening environments. In the original Boothroyd questionnaire, a choice of five ratings is available for each situation: Not used, Made things worse, No help, Some help, and A lot of help. These were retained for the FM-BCT and one additional label was added: Not required in that situation. This new response option was added based on our analysis of all participants' journal entries. Most participants made a clear distinction between a situation where they perceived that the FM system was not required and a situation where they judged the FM system might have been helpful but they opted to not use it for various reasons that fell into the categories of environmental, technical, social or individual factors. This is potentially an important distinction and counseling may differ depending on which of these factors apply to the listening situation.

The purpose of section two of the FM-BCT is to assess the factors that may influence the implant user's perceived benefit of the FM system and consequently the final decision to use an FM system in everyday life situations. The questions are based on a literature review of studies that have addressed factors affecting FM use (Table 2). The most recurrent factors identified were technical factors, individual factors, environmental factors and social factors which are probed in the questionnaire. As shown in the questionnaire (Appendix 1), this section consists of a total of 13 questions, 11 that are related to the four categories of factors that potentially affect FM use. The impact of the factor is rated on a five-point scale ranging from 1 (never) to 5 (always). In addition, users are given the opportunity of providing descriptive comments related to their experience. Two additional questions that were included from Boothroyd (2004) questionnaire probe previous FM system experience and users' intention to acquire an FM system following the initial trial period.

Discussion

Investigation of the benefits and difficulties associated with FM systems for cochlear implant users' has received little attention in the literature. While a few published studies suggest that FM systems can enhance listening opportunities for individuals with cochlear implants (Fitzpatrick et al., 2009, 2010; Schafer et al., 2009; Wolfe & Schafer, 2008), little guidance has been available for clinicians to evaluate their FM system fittings with these clients and to assist in counseling them as they adapt to the additional technology. The findings from a previous study (Fitzpatrick et al., 2010) pointed to the influence of multiple factors that impact FM system use for adults with a cochlear implant. It was therefore considered important that a clinical tool be developed to not only assess functioning but also factors that facilitate or hinder positive outcomes in everyday life with an FM system.

The present study was designed to create a clinical tool to assess the adult cochlear implant users' perceived benefit from an FM system as well as the factors influencing the users' experience with an FM system. A review of the literature and further analysis of findings from our previous research (Fitzpatrick et al., 2010) provided the foundation for a new questionnaire. The first section of the FM-BCT was based on a modified version of the Boothroyd Perceived Benefit questionnaire (2004). The new questionnaire includes the more relevant difficult listening situations identified in the literature (Boothroyd, 2004; Fitzpatrick et al., 2010; Wolfe & Schafer, 2008). These situations were also consistent with those reported in the journal entries in our previous research. In this subsequent research, we conducted further analysis of 169 detailed journal entries and responses to the Boothroyd questionnaire. Using group analysis, the results showed that generally adult cochlear implant users' ratings of overall FM system helpfulness in the Boothroyd questionnaire were comparable to their ratings of individual listening

Table 2. Published papers on FM system utility and factors influencing FM use

Authors, year	Boothroyd, 2004	Wolfe and Schafer, 2008	Fitzpatrick et al., 2010
Device	Hearing aids	Cochlear implants	Cochlear implants
Most beneficial situations	One person at distance, in noise or in quiet One person close by, in noise Watching TV Meetings	Listening in the car Listening to the television Listening in a large group Listening in a small group	One person at a distance, in noise or in quiet One person close by, in noise or in quiet Watching TV In car Listening to radio
	All participants perceived some or considerable overall benefit	All but one participant perceived some or considerable overall benefit	All but one participant perceived some or considerable overall benefit
Least beneficial situations	Restaurant One person close by in quiet	Not reported	Restaurant Meetings
Method of data collection	Qualitative data-quotes from participants	Participant comments and a questionnaire	Qualitative analysis of participant journal entries
Factors affecting perceived benefit	Several participants experienced occasional, but annoying, interrupted FM reception.	Not comfortable to wear with certain items (e.g. hats, eyewear)	Technical factors (equipment, adjustment)
	Participants reported the least amount of benefit during group interaction (problem of passing the microphone when eating with many friends)	Several users commented on the complexity of the FM transmitter	Individual factors (lifestyle, expectations)
	Other examples of difficulties: intrusiveness of technology: participant was uncomfortable asking a friend to wear the microphone	Several users reported interference with the FM system on some channels	Social factors (social judgments)
	Lack of improvement in noise (it is still a problem in a noisy room)	Most of the participants continued to experience difficulty in high levels of noise.	Environmental factors (acoustic conditions)
	Difficulty with localization (One participant liked to be able to hear when his wife called but didn't know where she was.)	One participant reported static on several FM system channels, had difficulty learning to use the Smartlink transmitter and was hesitant to use the FM system.	

situations as documented in their journals during a two-month trial period. Since group analysis tends to emphasize the results of the individuals who use the device more often and who therefore may have experienced more benefit, an individual analysis was performed which yielded similar results. The results support the notion that a questionnaire administered at the end of a brief two-month trial period reflects users' judgment of FM system benefit in a variety of useful listening situations even if the information is collected at a single point in time rather than in an ongoing manner during the trial period. These findings provide preliminary support for a clinical tool such as the FM-BCT proposed in this paper, suggesting that it can be a reliable method of collecting client information in an efficient manner. This constitutes the preliminary step in the validation of this questionnaire but further testing is required with a larger population.

The second part of the FM-BCT was grounded within the literature review and the conceptual framework from Fitzpatrick et al. (2010). The findings from this previous study enabled us to develop questions to assess the factors that may influence the users' perceived benefit. The four factors of the conceptual framework assessed in this part of the questionnaire include: technical factors, individual factors, social factors and environmental factors. These aspects are essential components of the clinical tool as they have been documented in the literature and emerged in the previous research as having a major impact on the perceived benefit of FM system use. Consequently, these factors can be expected to have a significant effect on the decision to use an FM system in various listening environments. By gleaning an understanding of how these factors can influence clients' experiences and decisions, clinicians can become better aware of their clients needs when fitting FM systems to cochlear implant recipients.

Although the data underlying the development of the FM-BCT were based on a relatively small number of participants, a rich dataset of 169 journal entries collected over a two-month period provided ratings of helpfulness during a large number of diverse situations for this analysis. Furthermore, the analysis revealed that situations in which the FM system was documented as helpful were consistent with those reported in the literature on FM systems and hearing aids (Boothroyd, 2004; Chisolm et al. 2007; Jerger et al. 1996). These findings suggest considerable similarity between the difficult listening situations reported by adult cochlear implants and adult hearing aid users'. Comparisons of questionnaire and journal data were based on a two-month trial period; it is important to evaluate the utility of this type of questionnaire after longer-term FM system use. The development of the tool was undertaken with a specific subset of adults with hearing loss, primarily because no similar tools exist for cochlear implant users and to keep the sample as homogeneous as possible. However, there is no evidence in the literature that hearing aids users are not affected by the same factors. Additional research should be conducted with a larger and more diverse population of adult cochlear implant users as well as hearing aids users in different clinical programs in order to further refine the questionnaire. The next step in the validation of the questionnaire will need to assess the convergent validity of the questionnaire by comparing the score obtained from this new questionnaire (FM-BCT) to existing benefit questionnaires. As there are no existing validated questionnaires on FM system benefit, we will need to rely on hearing aid benefit questionnaires (e.g. HHIE, APHAB). Furthermore, in Fitzpatrick et al. (2010) study, the interest was focused on identifying the factors that affect users' perceptions of benefit and not on quantifying the impact of these factors. Further research is required to evaluate the potential predictors of self-perceived benefits of FM system use; the predictive value of each question should be assessed to determine which factors have the largest impact on the perception of benefit score and to eliminate the questions that have no impact on the score.

Although the FM-BCT has not yet been validated with a large clinical population and rigorous psychometric analyses are required, it represents a useful contribution as, to our knowledge, no other FM-cochlear implant specific questionnaires have been published. Using this tool to help evaluate the impact of the four factors on users' perceived benefits can help the clinician discern which issues negatively and positively impact the users' FM system experience. This information may enable clinicians to better tailor FM system selection and adjustment, and target counseling to the individual client. This will in turn provide clients with a better opportunity to derive maximum benefit from the FM system.

Acknowledgements

The participation of the adults from the University of Ottawa Auditory Implant Program (Ottawa Hospital) is gratefully acknowledged. The research was supported through the Faculty of Health Sciences, University of Ottawa. Sennheiser (Canada) Inc. provided the FM technology as well as partial funding for the study. The comments from two anonymous reviewers which helped to improve the manuscript are greatly appreciated.

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Received date: September 15, 2010

Accepted date: June 27, 2011

APPENDIX A

FM Benefit Counseling Tool (FM-BCT) questionnaire

Name: _____ Date: _____

Duration of the trial period: _____

(Section one from Boothroyd, A. (2004). Hearing aid accessories for adults: The remote FM microphone. Ear and Hearing, 25, 22-23. (Adapted and reprinted with permission.)

How helpful was the FM microphone:	Not applicable/ necessary	Not used	Made things worse	No help	Some help	A lot of help
Overall?						
Listening to one person in quiet at a few feet?						
Listening to one person in quiet at several yards?						
Listening to one person in noise at a few feet?						
Listening to one person in noise at several yards?						
Watching TV?						
Listening to speech through a device						
(Radio, Computer, Online class, etc.)?						
At the museum/theater?						
In a meeting?						
A lecture, a presentation?						
(e.g., a place of worship)						
In a restaurant?						
In a car?						
Listening to music						
(Radio, Music player, Computer, Stereo, etc.)?						
Other?						

1. Did you encounter problems with the equipment itself? (e.g., set-up, cables, battery, size, etc.)
   - ☐ 0% of the time (never)
   - ☐ < 25% of the time (rarely)
   - ☐ 25-50% of the time (sometimes)
   - ☐ 50-75% of the time (often)
   - ☐ 75-100% of the time (almost always)

Please describe the problem(s): _____

_____

_____

_____

2. Was the « esthetic » aspect of the equipment (e.g., visibility of cables) a concern?
   - ☐ 0% of the time (never)
   - ☐ < 25% of the time (rarely)
   - ☐ 25-50% of the time (sometimes)
   - ☐ 50-75% of the time (often)
   - ☐ 75-100% of the time (almost always)

3. Did you encounter problems with the adjustment of the equipment (volume control, programs, sensitivity, etc.)?

a. FM system?
   - ☐ 0% of the time (never)
   - ☐ < 25% of the time (rarely)
   - ☐ 25-50% of the time (sometimes)
   - ☐ 50-75% of the time (often)
   - ☐ 75-100% of the time (almost always)

b. Cochlear implant speech processor?
   - ☐ 0% of the time (never)
   - ☐ < 25% of the time (rarely)
   - ☐ 25-50% of the time (sometimes)
   - ☐ 50-75% of the time (often)
   - ☐ 75-100% of the time (almost always)

Please describe the problem(s): _____

_____

_____

_____

4. Did you receive support from others? (family, friends, coworkers, etc.)

- ☐ 0% of the time (never)
- ☐ < 25% of the time (rarely)
- ☐ 25-50% of the time (sometimes)
- ☐ 50-75% of the time (often)
- ☐ 75-100% of the time (almost always)

Please describe situations where you were not supported in using the FM, (e.g., refusal to use the microphone, improper use of microphone by the speaker; microphone not passed around in group situation).

_____

_____

_____

_____

5. Overall, what percentage of the time did you try the equipment in difficult listening situations (e.g., restaurant, car,etc.)?

- ☐ 0% of the time (never)
- ☐ < 25% of the time (rarely)
- ☐ 25-50% of the time (sometimes)
- ☐ 50-75% of the time (often)
- ☐ 75-100% of the time (almost always)

Please indicate reasons for not using the equipment? _____

_____

_____

6. How effective was the FM system in difficult listening situations (e.g., restaurant, car, television)?

- ☐ 0% of the time (never)
- ☐ < 25% of the time (rarely)
- ☐ 25-50% of the time (sometimes)
- ☐ 50-75% of the time (often)
- ☐ 75-100% of the time (almost always)

If yes, please describe the environments and the difficulties encountered: _____

_____

_____

_____

7. Did the FM system meet your expectations in difficult listening situations?
   - ☐ 0% of the time (never)
   - ☐ < 25% of the time (rarely)
   - ☐ 25-50% of the time (sometimes)
   - ☐ 50-75% of the time (often)
   - ☐ 75-100% of the time (almost always)

Describe situations that remained difficult despite using an FM system: _____

_____

_____

_____

_____

8. What improvements or supports would make the FM system easier to use? (check all that apply)
   - ☐ Wireless device
   - ☐ Simpler device (easier adjustment, etc.)
   - ☐ Multiple FM transmitters (remote microphones) for multi-listener talker situations
   - ☐ More counseling on how to use the FM
   - ☐ Other: _____

     _____

     _____

     _____

9. Which of these elements would lead to more FM use? (check all that apply)
   - ☐ More practice
   - ☐ More counseling
   - ☐ More activities requiring FM use
   - ☐ More cooperation from family and friends
   - ☐ Help from technician (during talks, meetings, …)
   - ☐ Lip reading
   - ☐ Other: _____

     _____

     _____

     _____

10. What others factors may have influenced your experience during the trial period?

- ☐ Equipment was difficult to use
- ☐ Size of equipment
- ☐ Personal problems
- ☐ Lifestyle limited opportunities to use FM
- ☐ Travel limited opportunities to use FM
- ☐ No motivation to use FM
- ☐ Other: _____

_____

_____

_____

11. How was the length of the trial period?

- ☐ Too short
- ☐ A little short
- ☐ Just right
- ☐ A little long
- ☐ Too long

12. Did you have any previous experience using FM systems with hearing aid(s) or cochlear implant(s)?

- ☐ None
- ☐ A little (< than 6 months)
- ☐ Some (6 months to 2 yrs)
- ☐ Quite a bit (2 yrs to 5 yrs)
- ☐ A lot (more than 5 years)

13. Would you be interested in using an FM system device long-term?

- ☐ Definitely not
- ☐ Not likely
- ☐ Maybe
- ☐ Very likely
- ☐ Definitely yes

CLINICIAN NOTES

_____

_____

_____

CASLPA 2013 CONFERENCE

April 24-27, Victoria, BC

CALL FOR PAPERS

Deadline for receipt of all program submissions:

September 30, 2012

Visit the CASLPA website for the complete call for papers including conditions for acceptance and instructions for how to submit.

CASLPA's 2013 conference will be held in Victoria, British Columbia. We invite you to make a submission to the annual conference.

Clinicians from all practice settings are encouraged to share their insight, experience, methods and research. CASLPA invites submissions of papers, poster sessions, scientific exhibits and mini-seminars. Multidisciplinary presentations are also welcome. Sessions will be scheduled daily from April 25-27, 2013.

SESSION TYPES

Paper Presentations: A paper presentation should be based on current research that has not been published, clinical experience or case studies (45 minutes in duration).

Mini-seminars: These sessions are designed to provide opportunity for interactive discussion of clinical practice and professional issues (90 minutes in duration).

Poster Sessions: Poster presentations should stand alone in conveying information. Each display should contain title and author(s), statement of purpose, methodology, results and conclusions. Posters must be in landscape format, no larger than 2.4 m x 1.2 m. Authors will be required to be present at designated times to respond to questions and discussion.

Scientific Exhibits: These sessions will be held in conjunction with the poster presentations.

Exhibitors are required to be present at designated times to describe and discuss the exhibit. A table of approximately 1.8 m x .75 m and a poster board of approximately 2.4 m x 1.2 m will be available. Exhibitors are responsible for providing all required equipment.

Join us!

The Fairmont Empress Victoria

April 24-27, 2013

CASLPA 2013 VICTORIA

Visit **CASLPA.ca** for more details over the coming months

CONGRÈS 2013 DE L'ACOA

Du 24 au 27 avril, à Victoria (C.-B.)

APPEL DE COMMUNICATIONS

La date limite de réception de toutes les participations au programme :

le 30 septembre 2012

Visitez le site Web de l'ACOA pour l'appel de communications intégral, y compris les conditions d'acceptation et les modalités de participation.

Le congrès 2013 de l'ACOA aura lieu à Victoria (Colombie-Britannique). Nous vous invitons à présenter une communication au congrès annuel.

Les cliniciens de tous les cadres de pratique sont invités à partager leurs intuitions, leurs expériences, leurs méthodes et leurs recherches. L'ACOA invite les participations sous forme de mémoires, de séances d'affichage, d'expositions scientifiques et de mini-séminaires. Les présentations multidisciplinaires sont également les bienvenues. Les sessions seront prévues au calendrier tous les jours du 25 au 27 avril 2013.

TYPES DE SESSIONS

Présentations de communications : Une présentation de communication doit reposer sur une recherche actuelle qui n'a pas été publiée, une expérience clinique ou des études de cas (durée : 45 minutes).

Mini-séminaires : Ces sessions sont conçues pour offrir une possibilité de discussion interactive de la pratique clinique et des aspects professionnels (durée : 90 minutes).

Séances d'affichage : Les présentations d'affiches doivent contribuer des renseignements de manière autonome. Chaque affichage doit contenir le titre et l'auteur ou les auteurs, l'énoncé de l'objet, la méthodologie, les résultats et les conclusions. Les affiches doivent être en mode paysage et d'au plus 2,4 m sur 1,2 m. Les auteurs devront être présents aux heures désignées pour répondre aux questions et participer à la discussion.

Expositions scientifiques : Ces sessions seront organisées de concert avec les présentations d'affiches.

Les exposants doivent être présents aux heures désignées pour décrire l'exposition et en discuter. Une table d'environ 1,8 m sur 0,75 m et un babillard d'environ 2,4 m x 1,2 m seront disponibles. Les exposants sont chargés de fournir tout le matériel requis.

Joignez-VOUS à NOUS !

Hôtel Fairmont Empress Victoria

Du 24 au 27 avril 2013

ACOA 2013 VICTORIA

Visitez CASLPA.ca pour de plus amples renseignements au cours des prochains mois.

Information for Contributors

The Canadian Journal of Speech-Language Pathology and Audiology (CJSLPA) welcomes submissions of scholarly manuscripts related to human communication and its disorders broadly defined. This includes submissions relating to normal and disordered processes of speech, language, and hearing. Manuscripts that have not been published previously are invited in English and French. Manuscripts may be tutorial, theoretical, integrative, practical, pedagogic, or empirical. All manuscripts will be evaluated on the basis of the timeliness, importance, and applicability of the submission to the interests of speech–language pathology and audiology as professions, and to communication sciences and disorders as a discipline. Consequently, all manuscripts are assessed in relation to the potential impact of the work on improving our understanding of human communication and its disorders. All categories of manuscripts submitted will undergo peer-review to determine the suitability of the submission for publication in CJSLPA. The Journal has established multiple categories of manuscript submission that will permit the broadest opportunity for dissemination of information related to human communication and its disorders. The categories for manuscript submission include:

Tutorials: Review articles, treatises, or position papers that address a specific topic within either a theoretical or clinical framework.

Articles: Traditional manuscripts addressing applied or basic experimental research on issues related to speech, language, and/or hearing with human participants or animals.

Clinical Reports: Reports of new clinical procedures, protocols, or methods with specific focus on direct application to identification, assessment and/or treatment concerns in speech, language, and/or hearing.

Brief Reports: Similar to research notes, brief communications concerning preliminary findings, either clinical or experimental (applied or basic), that may lead to additional and more comprehensive study in the future. These reports are typically based on small "n" or pilot studies and must address disordered participant populations.

Research Notes: Brief communications that focus on experimental work conducted in laboratory settings. These reports will typically address methodological concerns and/or modifications of existing tools or instruments with either normal or disordered populations.

Field Reports: Reports that outline the provision of services that are conducted in unique, atypical, or nonstandard settings; manuscripts in this category may include screening, assessment, and/or treatment reports.

Letters to the Editor: A forum for presentation of scholarly/clinical differences of opinion concerning work previously published in the Journal. Letters to the Editor may influence our thinking about design considerations, methodological confounds, data analysis, and/or data interpretation, etc. As with other categories of submissions, this communication forum is contingent upon peer-review. However, in contrast to other categories of submission, rebuttal from the author(s) will be solicited upon acceptance of a letter to the editor.

Submission of Manuscripts

Contributors should use the electronic CJSLPA manuscript submission system at http://cjslpa.coverpage.ca to submit articles. If you are unable to use the electronic system, please send a file containing the manuscript, including all tables, figures or illustrations, and references in Word via e-mail to the editor at elizabeth.fitzpatrick@uottawa.ca.

Along with copies of the manuscript, a cover letter indicating that the manuscript is being submitted for publication consideration should be included. The cover letter must explicitly state that the manuscript is original work, that it has not been published previously, and that it is not currently under review elsewhere. Manuscripts are received and peer-reviewed contingent upon this understanding.

The author(s) must also provide appropriate confirmation that work conducted with humans or animals has received ethical review and approval. Failure to provide information on ethical approval will delay the review process. Finally, the cover letter should also indicate the category of submission (i.e., tutorial, clinical report, etc.). If the editorial staff determines that the manuscript should be considered within another category, the contact author will be notified.

All submissions should conform to the publication guidelines of the Publication Manual of the American Psychological Association (APA), 6th Edition. A confirmation of receipt for all manuscripts will be provided to the contact author prior to distribution for peer review. CJSLPA seeks to conduct the review process and respond to authors regarding the outcome of the review within 90 days of receipt. If a manuscript is judged as suitable for publication in CJSLPA, authors will have 30 days to make necessary revisions prior to a secondary review.

The author is responsible for all statements made in his or her manuscript, including changes made by the editorial and/or production staff. Upon final acceptance of a manuscript and immediately prior to publication, the contact author will be permitted to review galley proofs and verify its content to the publication office within 72 hours of receipt of galley proofs.

Organization of the Manuscript

All copies should be typed, double-spaced, with a standard typeface (12 point, non-compressed font) on 8 ½ x 11 paper size. All margins should be at least one (1) inch. An electronic copy of the manuscript should be submitted directly to the editor. Author identification for the review process is optional; if blind-review is desired, the documents should be prepared accordingly (cover page and acknowledgments blinded). Responsibility for removing all potential identifying information rests solely with the author(s). All submissions should conform to the publication guidelines of the most current edition of the Publication Manual of the American Psychological Association (APA. The APA manual is available from most university and commercial bookstores. Generally, the following sections should be submitted in the order specified.

Title Page: This page should include the full title of the manuscript, the full names of the author(s) with academic degrees, each author's affiliation, and a complete mailing address for the contact author. An electronic mail address also is recommended.

Abstract: On a separate sheet of paper, a brief yet informative abstract that does not exceed one page is required. The abstract should include the purpose of the work along with pertinent information relative to the specific manuscript category for which it was submitted.

Key Words: Following the abstract and on the same page, the author(s) should supply a list of key words for indexing purposes.

Tables: Each table included in the manuscript must typedwritten double-spaced and placed at the end of the document. Tables should be numbered consecutively beginning with Table 1. Each table must have a descriptive caption. Tables should serve to expand the information provided in the text of the manuscript, not to duplicate information.

Illustrations: All illustrations to be included as part of the manuscript must also be submitted in their original file format separate from the manuscipt. High resolution (at least 300 dpi) files in any of the following formats must be submitted for each graphic and image: JPEG, TIFF, AI, PSD, GIF, EPS or PDF. For other types of computerized illustrations, it is recommended that CJSLPA production staff be consulted prior to preparation and submission of the manuscript and associated figures/illustrations.

Legends for Illustrations: Legends for all figures and illustrations should be typewritten (double-spaced) on a separate page with numbers corresponding to the order in which figures/illustrations appear in the manuscript.

Page Numbering and Running Head: The text of the manuscript should be prepared with each page numbered, including tables, figures/illustrations, references, and appendices. A short (30 characters or less) descriptive running title should appear at the top right hand margin of each page of the manuscript.

Acknowledgments: Acknowledgments should be typewritten (double-spaced) on a separate page. Appropriate acknowledgment for any type of sponsorship, donations, grants, technical assistance, and to professional colleagues who contributed to the work, but are not listed as authors, should be noted.

References: References are to be listed consecutively in alphabetical order, then chronologically for each author. Authors should consult the most current edition of the APA publication manual for methods of citing varied sources of information. Journal names and appropriate volume number should be spelled out and italicized. All literature, tests and assessment tools, and standards (ANSI and ISO) must be listed in the references. All references should be double-spaced.

Potential Conflicts of Interest and Dual Commitment

As part of the submission process, the author(s) must explicitly identify if any potential conflict of interest or dual commitment exists relative to the manuscript and its author(s). Such disclosure is requested so as to inform CJSLPA that the author or authors have the potential to benefit from publication of the manuscript. Such benefits may be either direct or indirect and may involve financial and/or other nonfinancial benefit(s) to the author(s). Disclosure of potential conflicts of interest or dual commitment may be provided to editorial consultants if it is believed that such a conflict of interest or dual commitment may have had the potential to influence the information provided in the submission or compromise the design, conduct, data collection or analysis, and/or interpretation of the data obtained and reported in the manuscript submitted for review. If the manuscript is accepted for publication, editorial acknowledgement of such potential conflict of interest or dual commitment may occur within the publication.

Participants in Research Humans and Animals

Each manuscript submitted to CJSLPA for peer-review that is based on work conducted with humans or animals must acknowledge appropriate ethical approval. In instances where humans or animals have been used for research, a statement indicating that the research was approved by an institutional review board or other appropriate ethical evaluation body or agency must clearly appear along with the name and affiliation of the research ethics and the ethical approval number. The review process will not begin until this information is formally provided to the Editor.

Similar to research involving human participants, CJSLPA requires that work conducted with animals state that such work has met with ethical evaluation and approval. This includes identification of the name and affiliation of the research ethics evaluation body or agency and the ethical approval number. A statement that all research animals were used and cared for in an established and ethically approved manner is also required. The review process will not begin until this information is formally provided to the Editor.

Renseignements à l'intention des collaborateurs

La Revue canadienne d'orthophonie et d'audiologie (RCOA) est heureuse de se voir soumettre des manuscrits de recherche portant sur la communication humaine et sur les troubles qui s'y rapportent, dans leur sens large. Cela comprend les manuscrits portant sur les processus normaux et désordonnés de la parole, du langage et de l'audition. Nous recherchons des manuscrits qui n'ont jamais été publiés, en français ou en anglais. Les manuscrits peuvent être tutoriels, théoriques, synthétiques, pratiques, pédagogiques ou empiriques. Tous les manuscrits seront évalués en fonction de leur signification, de leur opportunité et de leur applicabilité aux intérêts de l'orthophonie et de l'audiologie comme professions, et aux sciences et aux troubles de la communication en tant que disciplines. Par conséquent, tous les manuscrits sont évalués en fonction de leur incidence possible sur l'amélioration de notre compréhension de la communication humaine et des troubles qui s'y rapportent. Peu importe la catégorie, tous les manuscrits présentés seront soumis à une révision par des collègues afin de déterminer s'ils peuvent être publiés dans la RCOA. La Revue a établi plusieurs catégories de manuscrits afin de permettre la meilleure diffusion possible de l'information portant sur la communication humaine et les troubles s'y rapportant. Les catégories de manuscrits comprennent :

Tutoriels : Rapports de synthèse, traités ou exposés de position portant sur un sujet particulier dans un cadre théorique ou clinique.

Articles : Manuscrits conventionnels traitant de recherche appliquée ou expérimentale de base sur les questions se rapportant à la parole, au langage ou à l'audition et faisant intervenir des participants humains ou animaux.

Comptes rendus cliniques : Comptes rendus de nouvelles procédures ou méthodes ou de nouveaux protocoles cliniques portant particulièrement sur une application directe par rapport aux questions d'identification, d'évaluation et de traitement relativement à la parole, au langage et à l'audition.

Comptes rendus sommaires : Semblables aux notes de recherche, brèves communications portant sur des conclusions préliminaires, soit cliniques soit expérimentales (appliquées ou fondamentales), pouvant mener à une étude plus poussée dans l'avenir. Ces comptes rendus se fondent typiquement sur des études à petit « n » ou pilotes et doivent traiter de populations désordonnées.

Notes de recherche : Brèves communications traitant spécifiquement de travaux expérimentaux menés en laboratoire. Ces comptes rendus portent typiquement sur des questions de méthodologie ou des modifications apportées à des outils existants utilisés auprès de populations normales ou désordonnées.

Comptes rendus d'expérience : Comptes rendus décrivant sommairement la prestation de services offerts en situations uniques, atypiques ou particulières; les manuscrits de cette catégorie peuvent comprendre des comptes rendus de dépistage, d'évaluation ou de traitement.

Courrier des lecteurs : Forum de présentation de divergences de vues scientifiques ou cliniques concernant des ouvrages déjà publiés dans la Revue. Le courrier des lecteurs peut avoir un effet sur notre façon de penser par rapport aux facteurs de conception, aux confusions méthodologiques, à l'analyse ou l'interprétation des données, etc. Comme c'est le cas pour d'autres catégories de présentation, ce forum de 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://cjslpa.coverpage.ca. Si vous ne pouvez pas utiliser le système électronique, veuillez envoyer par courriel un fichier Word ou WordPerfect contenant le manuscrit, y compris tous les tableaux, les figures ou illustrations et la bibliographie. Adressez le courriel au rédacteur en chef à l'adresse elizabeth.fitzpatrick@uottawa.ca.

On doit joindre aux exemplaires du manuscrit une lettre d'envoi qui indiquera que le manuscrit est présenté en vue de sa publication. La lettre d'envoi doit préciser que le manuscrit est une œuvre originale, qu'il n'a pas déjà été publié et qu'il ne fait pas actuellement l'objet d'un autre examen en vue d'être publié. Les manuscrits sont reçus et examinés sur acceptation de ces conditions. L'auteur (les auteurs) doit (doivent) aussi fournir une attestation en bonne et due forme que toute recherche impliquant des êtres humains ou des animaux a fait l'objet de l'agrément d'un comité de révision déontologique. L'absence d'un tel agrément retardera le processus de révision. Enfin, la lettre d'envoi doit également préciser la catégorie de la présentation (i.e. tutoriel, rapport clinique, etc.). Si l'équipe d'examen juge que le manuscrit devrait passer sous une autre catégorie, l'auteur-contact en sera avisé.

Toutes les présentations doivent se conformer aux lignes de conduite présentées dans le publication Manual of the American Psychological Association (APA), 6e Édition. Un accusé de réception de chaque manuscrit sera envoyé à l'auteur-contact avant la distribution des exemplaires en vue de la révision. La RCOA cherche à effectuer cette révision et à informer les auteurs des résultats de cette révision dans les 90 jours de la réception. Lorsqu'on juge que le manuscrit convient à la RCOA, on donnera 30 jours aux auteurs pour effectuer les changements nécessaires avant l'examen secondaire.

L'auteur est responsable de toutes les affirmations formulées dans son manuscrit, y compris toutes les modifications effectuées par les rédacteurs et réviseurs. Sur acceptation définitive du manuscrit et immédiatement avant sa publication, on donnera l'occasion à l'auteur-contact de revoir les épreuves et il devra signifier la vérification du contenu dans les 72 heures suivant réception de ces épreuves.

Organisation du manuscrit

Tous les textes doivent être écrits à double interligne, en caractère standard (police de caractères 12 points, non comprimée) et sur papier 8 ½" X 11" de qualité. Toutes les marges doivent être d'au moins un (1) pouce. Un fichier électonique du manuscrit doit être présenté directement au rédacteur en chef. L'identification de l'auteur est facultative pour le processus d'examen : si l'auteur souhaite ne pas être identifié à ce stade, il devra préparer un fichier électronique dont la page couverture et les remerciements seront voilés. Seuls les auteurs sont responsables de retirer toute information identificatrice éventuelle. Tous les manuscrits doivent être rédigés en conformité aux lignes de conduite les plus récentes de l'APA. Ce manuel est disponible dans la plupart des librairies universitaires et commerciaux. En général, les sections qui suivent doivent être présentées dans l'ordre chronologique précisé.

Page titre : Cette page doit contenir le titre complet du manuscrit, les noms complets des auteurs, y compris les diplômes et affiliations, l'adresse complète de l'auteur-contact et l'adresse de courriel de l'auteur contact.

Abrégé : Sur une page distincte, produire un abrégé bref mais informateur ne dépassant pas une page. L'abrégé doit indiquer l'objet du travail ainsi que toute information pertinente portant sur la catégorie du manuscrit.

Mots clés : Immédiatement suivant l'abrégé et sur la même page, les auteurs doivent présenter une liste de mots clés aux fins de constitution d'un index.

Tableaux : Tous les tableaux compris dans un même manuscrit doivent être écrits à double interligne sur une page distincte. Les tableaux doivent être numérotés consécutivement, en commençant par le Tableau 1. Chaque tableau doit être accompagné d'une légende et doit servir à compléter les renseignements fournis dans le texte du manuscrit plutôt
qu'à reprendre l'information contenue dans le texte ou dans les tableaux.

Illustrations : Toutes les illustrations faisant partie du manuscrit doivent être annexer avec chaque exemplaire du manuscrit. Chaque manuscrit doit être accompagné d'un fichier électronique pour chaque image et graphique en format JPEG, TIFF, AI, PSD, GIF, EPS ou PDF, compression minimale 300 ppp. Pour les autres types d'illustrations informatisées, il est recommandé de consulter le personnel de production de la RCOA avant la préparation et la présentation du manuscrit et des figures et illustrations s'y rattachant.

Légendes des illustrations : Les légendes accompagnant chaque figure et illustration doivent être écrits à double interligne sur une page distincte et identifiées à l'aide d'un numéro qui correspond à la séquence de parution des figures et illustrations dans le manuscrit.

Numérotation des pages et titre courant : Chaque page du manuscrit doit être numérotée, y compris les tableaux, figures, illustrations, références et, le cas échéant, les annexes. Un bref (30 caractères ou moins) titre courant descriptif doit apparaître dans la marge supérieure droite de chaque page du manuscrit.

Remerciements : Les remerciements doivent être écrits à double interligne sur une page distincte. L'auteur doit reconnaître toute forme de parrainage, don, bourse ou d'aide technique, ainsi que tout collègue professionnel qui ont contribué à l'ouvrage mais qui n'est pas cité à titre d'auteur.

Références : Les références sont énumérées les unes après les autres, en ordre alphabétique, suivi de l'ordre chronologique sous le nom de chaque auteur. Les auteurs doivent consulter le manuel de l'APA le plus récent pour obtenir la façon exacte de rédiger une citation. Les noms de revues scientifiques et autres doivent être rédigés au long et imprimés en italiques. Tous les ouvrages, outils d'essais et d'évaluation ainsi que les normes (ANSI et ISO) doivent figurer dans la liste de références. Les références doivent être écrits à double interligne.

Conflits d'intérêts possibles et engagement double

Dans le processus de présentation, les auteurs doivent déclarer clairement l'existence de tout conflit d'intérêts possibles ou engagement double relativement au manuscrit et de ses auteurs. Cette déclaration est nécessaire afin d'informer la RCOA que l'auteur ou les auteurs peuvent tirer avantage de la publication du manuscrit. Ces avantages pour les auteurs, directs ou indirects, peuvent être de nature financière ou non financière. La déclaration de conflit d'intérêts possibles ou d'engagement double peut être transmise à des conseillers en matière de publication lorsqu'on estime qu'un tel conflit d'intérêts ou engagement double aurait pu influencer l'information fournie dans la présentation ou compromettre la conception, la conduite, la collecte ou l'analyse des données, ou l'interprétation des données recueillies et présentées dans le manuscrit soumis à l'examen. Si le manuscrit est accepté en vue de sa publication, la rédaction se réserve le droit de reconnaître l'existence possible d'un tel conflit d'intérêts ou engagement double.

Participants à la recherche – êtres humains et animaux

Chaque manuscrit présenté à la RCOA en vue d'un examen par des pairs et qui se fonde sur une recherche effectuée avec la participation d'être humains ou d'animaux doit faire état d'un agrément déontologique approprié. Dans les cas où des êtres humains ou des animaux ont servi à des fins de recherche, on doit joindre une attestation indiquant que la recherche a été approuvée par un comité d'examen reconnu ou par tout autre organisme d'évaluation déontologique, comportant le nom et l'affiliation de l'éthique de recherche ainsi que le numéro de l'approbation. Le processus d'examen ne sera pas amorcé avant que cette information ne soit formellement fournie au rédacteur en chef.

Tout comme pour la recherche effectuée avec la participation d'êtres humains, la RCOA exige que toute recherche effectuée avec des animaux soit accompagnée d'une attestation à l'effet que cette recherche a été évaluée et approuvée par les autorités déontologiques compétentes. Cela comporte le nom et l'affiliation de l'organisme d'évaluation de l'éthique en recherche ainsi que le numéro de l'approbation correspondante. On exige également une attestation à l'effet que tous les animaux de recherche ont été utilisés et soignés d'une manière reconnue et éthique. Le processus d'examen ne sera pas amorcé avant que cette information ne soit formellement fournie au rédacteur en chef.

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