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REVUE CANADIENNE D'ORTHOPHONIE ET D'AUDIOLOGIE | RCOA

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La communication à coeur

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ELIZABETH FITZPATRICK

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The association was founded in 1964 and incorporated under federal charter in 1975. SAC'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 human communication and communication disorders 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.

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VISION

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

MISSION

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

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OBJET ET PORTÉE

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

L'association a été fondée en 1964 et incorporée en vertu de la charte fédérale en 1975. L'association a mis sur pied son programme de publications en 1973.

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

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NOTRE VISION

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

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Orthophonie et Audiologie Canada appuie et habilite ses membres en vue de maximiser le potentiel en communication et en audition de la population canadienne.

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From the Editor

SPRING ISSUE

Welcome to our first CJSLPA issue of 2015. At the start of my fourth year as editor while doing my 'year in review' of past submissions, I was delighted to see the wide range of types and topics of publications in our journal in recent years. The journal offers a forum for theoretical and clinical research articles for Canadian and international authors, and attracts a good mix of new and seasoned contributors. I would like to thank the current slate of Associate Editors, who have all agreed to continue volunteering their expertise in 2015 and who lend their critical eye to improve the quality of our publications. Our editorial assistant, Sarah Healey, has also agreed to continue with CJSLPA this year and of course, Olga Novoa at the publications office is invaluable in bringing each issue to publication.

CJSLPA's new PowerReview online submission has become increasingly operational and user-friendly in the past 6 months as we continue to work out a few early 'kinks'. Please do not hesitate to let us know when you encounter difficulties so that we can continue to improve the technical side. A special thank you to Associate Editor, Louise Duchesne who assisted with the translation of many of the automated messages in French. Many thanks to our French-speaking authors and reviewers for your understanding and patience.

This CJSLPA spring issue includes five articles. The first paper should be of interest to both our disciplines. Eaton and Regan explored the perspectives of speech-language pathologists and audiologists in Canada on interprofessional collaboration. Through a survey of 171 professionals, they provide interesting insights into barriers and facilitators related to interprofessional collaboration in clinical practice in the Canadian context. There was good agreement amongst professionals that interprofessional collaboration is in the public interest and improves quality of care and access to services. However, interesting differences in responses were noted between professionals under and over age 40 years.

In the second article, Gasseau and colleagues consider the role of speech-language pathologists in the judicial system. They discuss some of the primary issues in legal cases, in which speech-language pathologists are involved, how these professionals are involved, and how they contribute to legal decisions. Their discussions are based on an analysis of 49 legal cases in the Quebec judicial system. One important finding is that speech-language pathologists were most often involved in providing a written report rather than as expert witnesses. I am certain readers will enjoy learning some of the other key findings from this interesting analysis of cases.

The third and fourth articles involve testing of new tools. Davies and Johnston interviewed transsexual women to initiate examination of the validity of the "Transsexual Voice Questionnaire for Male-to-Female Transsexuals". In the next study, Hagerman and Hermansson were also interested in exploring the use of a new audiology tool that their team developed for assessing speech recognition in children in noise. They examined the usefulness of the test in an assessment of 20 children age 5 years with normal hearing.

The final paper is an English version of an article that was previously published in CJSLPA in French in 2013. According to the authors, the article generated widespread interest from both French and English speaking clinicians. The authors describe the construction and use of a new assessment tool for Canadian French phonology, developed for Manitoba French to evaluate the segments and word structures of Canadian French phonology.

I invite you to keep CJSLPA in mind as you prepare your papers for publication in 2015. Like me, you probably have a few good ideas languished unpublished somewhere. We encourage you to think of CJSLPA if you decide to re-invest in them or to generate new manuscripts for publication this year.

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Mot de la Rédactrice en Chef

NUMÉRO DU PRINTEMPS

C'est avec plaisir que nous vous présentons notre premier numéro de la RCOA de 2015. Au début de ma quatrième année comme rédactrice, alors que je repensais aux soumissions de l'année, j'ai été ravie de constater la diversité du type et des sujets de publications de notre revue au cours des dernières années. La revue offre aux auteurs canadiens et internationaux un forum pouvant accueillir des articles de recherche fondamentale et clinique, produits par de nombreux nouveaux et anciens collaborateurs. J'aimerais remercier les rédacteurs associés qui ont tous accepté de poursuivre leur collaboration bénévole en 2015. Par leur regard critique, ils contribueront à l'amélioration de la qualité de notre revue. Notre rédactrice adjointe, Sarah Healey, a aussi accepté de continuer avec nous ainsi que Olga Novoa, du bureau de publication, dont l'aide nous est indispensable pour la publication de chaque numéro.

Au cours des six derniers mois, le nouveau **PowerReview de la RCOA pour les soumissions en ligne** est devenu de plus en plus opérationnel et facile à utiliser et nous continuons à éliminer les faux-plis initiaux. N'hésitez pas à nous contacter si vous éprouvez des problèmes lors de la soumission de vos documents afin que nous puissions régler ces problèmes techniques. Un remerciement tout particulier à notre rédactrice associée, Louise Duchesne, qui nous a aidés en traduisant plusieurs messages automatiques en français. Nous remercions aussi nos auteurs et critiques francophones pour leur compréhension et leur patience.

Cette publication du printemps contient cinq articles. Le premier sera d'intérêt pour nos deux disciplines. Eaton et Regan ont sondé l'opinion d'audiologistes et d'orthophonistes du Canada sur la collaboration interprofessionnelle. À partir des réponses à un sondage de 171 professionnels, ils ont offert un aperçu intéressant des avantages et des obstacles relatifs à la collaboration interprofessionnelle pour des pratiques cliniques dans le contexte canadien. Ces professionnels s'entendent pour dire que la collaboration interprofessionnelle est dans l'intérêt du grand public et améliore la qualité des soins et l'accès aux services. Toutefois, des différences importantes dans les réponses ont été notées entre les professionnels de moins de 40 ans et ceux de plus de 40 ans.

Dans un deuxième article, Gasseau et ses collègues examinent le rôle des orthophonistes dans le système judiciaire. Ils discutent quelques sujets fréquents dans des cas juridiques, dans lesquels des orthophonistes ont été impliqués et comment ces professionnels sont impliqués et comment ils contribuent aux décisions juridiques. Leurs discussions sont basées sur une analyse de 49 cas dans le système juridique du Québec. Une conclusion importante est que les orthophonistes étaient le plus souvent impliqués en produisant un rapport écrit plutôt qu'à titre de témoins experts. Je suis convaincue que les lecteurs voudront en apprendre davantage sur d'autres constatations clés présentées dans cette intéressante analyse de cas .

Les troisième et quatrième articles portent sur de la création de nouveaux outils. Davies et Johnston ont interviewé des femmes transsexuelles pour commencer une étude de validité du questionnaire « *Transsexual Voice Questionnaire for Male-to-Female Transsexuals* ». Dans l'étude suivante, Hagerman et Hermansson se sont penchés sur l'exploration de nouveaux outils en audiologie que leur équipe a développés pour évaluer la reconnaissance de la parole par des enfants dans des milieux bruyants. Ils ont examiné l'utilité des tests dans l'évaluation de 20 enfants de cinq ans qui ont une acuité auditive normale.

Le dernier article est une version anglaise d'un article qui a déjà été publié en français dans RCOA, en 2013. Selon les auteurs, l'article a suscité l'intérêt de cliniciens francophones et anglophones. Les auteurs décrivent le développement et l'utilisation d'un nouvel outil d'évaluation de la phonologie franco-canadienne, développé pour les francophones du Manitoba afin d'évaluer les segments et les structures de mots en phonologie canadienne-française.

Je vous invite à penser à la RCOA quand vous préparerez vos articles pour publication en 2015. Comme moi, vous avez probablement quelques bonnes idées qui ne cherchent qu'à être publiées quelque part. Nous vous encourageons à penser à la RCOA si vous décidez de vous y replonger ou de créer de nouveaux articles pour publication en 2015.

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Perspectives of Speech-Language Pathologists and Audiologists on Interprofessional Collaboration

Points de vue d'orthophonistes et d'audiologistes sur la collaboration interprofessionnelle

KEY WORDS

INTERPROFESSIONAL COLLABORATION

SPEECH-LANGUAGE PATHOLOGISTS

AUDIOLOGISTS

PERSPECTIVES

LEGISLATION

Bracia Eaton
Sandra Regan

Abstract

Background/Rationale: Recent legislative amendments to Ontario's health professional regulatory system require regulated health professionals, including speech-language pathologists and audiologists (S-LP&As), to collaborate interprofessionally where they share controlled acts. These changes have implications on the interprofessional collaboration (IPC) of regulated health professionals and the delivery of client care. The purpose of the analysis was to examine the perspectives of S-LP&As on IPC.

Methods: A mixed methods design and secondary analysis of a subset of data from a larger study was conducted with statistical analysis of survey data (n=171) and a content analysis of comments made by S-LP&As pertaining to factors that enable or impede IPC (n=78 individual comments).

Results: Respondents had high agreement with statements that IPC is in the public interest (95.9%), improves quality of care (91.8%), and increases access to health services (87.1%). There were statistically significant differences in responses to the IPC statements for those under 40 years compared to those over 40 years related to comfort participating in IPC, IPC emphasized in education programs, experiences of teamwork among colleagues, exposure to IPC in workplace orientation, and the belief that IPC was in the public interest. Facilitators to IPC identified by respondents include positive personalities, openness to IPC, trust, respect for others' perspectives, problem-solving collaboratively, and formal team meetings. However, respondents identified more barriers that impede IPC in professional practice including regulatory guidelines and "piecemeal" policies, limited physician involvement, heavy workloads, "turf" issues, and lack of understanding of other health professionals' roles and expertise.

Conclusions: This analysis provides preliminary findings on perspectives of S-LP&As on IPC within a Canadian context. In particular, these findings provide insight into facilitators that promote and barriers that impede IPC for S-LP&As in clinical practice. Work environments that foster and support collaboration, communication, trust, and mutual respect for all team members' roles, expertise, and contributions within their scope of practice can improve health care providers' satisfaction and optimize client care. Although S-LP&A respondents support the ideal of IPC, barriers exist that impede their ability to fully implement IPC in clinical practice. Given that S-LP&As work in a variety of settings with diverse populations, future changes to ministerial, regulatory, and administrative policies are needed to facilitate IPC in multidisciplinary practice environments.

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CANADA

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CANADA

Abrégé

Contexte/Fondement : Des amendements récents à la législation de l'Ontario sur le système de réglementation applicable aux professionnels de la santé, dont font partie les orthophonistes et les audiologistes, exigent une collaboration interprofessionnelle là où ces derniers partagent des actes contrôlés. Ces changements ont des conséquences pour la collaboration interprofessionnelle des professionnels de santé réglementés et pour la prestation de soins. Le but de l'analyse était d'examiner le point de vue des orthophonistes et des audiologistes sur cette collaboration.

Méthodes : Une recherche employant des méthodes mixtes et une analyse secondaire d'un sous ensemble de données tirées d'une étude plus large a été effectuée, incluant une analyse statistique des données du sondage (n=171) et une analyse de contenu des commentaires faits par les orthophonistes et les audiologistes relativement aux facteurs qui facilitent la collaboration interprofessionnelle (CIP) ou lui nuisent (n=78 commentaires d'individus).

Résultats : Les répondants étaient largement d'accord sur l'idée que la collaboration interprofessionnelle est dans l'intérêt public (95,9 %), améliore la qualité des soins (91,8 %), et augmente l'accès aux services de santé (87,1 %). Il y avait des différences statistiquement significatives entre les réponses données aux énoncés touchant la CIP chez les personnes de plus de 40 ans et chez celles de moins de 40 ans relativement à leur niveau de confort quant à leur participation à la CIP, quant à la CIP accentuée dans les programmes éducatifs, et quant à l'expérience du travail d'équipe entre collègues, à l'exposition à la CIP et à la conviction que la CIP est dans l'intérêt public. Les éléments facilitateurs de la CIP identifiés par les répondants sont notamment les personnalités positives, une ouverture envers la CIP, la confiance, le respect du point de vue des autres, la résolution de problèmes menée en collaboration et les rencontres formelles d'équipes. Toutefois, les répondants ont identifié plus d'obstacles qui entravent la CIP dans les pratiques professionnelles, comme les directives réglementaires et les politiques « à court terme », l'implication limitée des médecins, la lourdeur des charges de travail, les problèmes de « territorialisme », et le manque de compréhension du rôle et de l'expertise des autres professionnels de la santé.

Conclusions : Cette analyse dévoile des résultats préliminaires sur les points de vue des orthophonistes et des audiologistes concernant la CIP dans le contexte canadien. En particulier, ces conclusions donnent un aperçu des éléments facilitateurs qui favorisent la CIP et des obstacles qui l'entravent pour les orthophonistes et les audiologistes dans leur pratique clinique. Les milieux de travail qui facilitent et appuient la collaboration, la communication, la confiance et le respect mutuel à l'égard des rôles de tous les membres de l'équipe, de leur expertise et de leurs contributions dans leur champ de travail peuvent améliorer la satisfaction des fournisseurs de soins de santé et optimiser les soins dispensés aux clients. Quoique les répondants orthophonistes et audiologistes appuient la cause de la CIP, il existe des obstacles qui entravent leur habilité à pleinement mettre en œuvre la CIP dans leur pratique. Compte tenu que les orthophonistes et les audiologistes travaillent dans différents environnements avec des populations diverses, il faudrait des changements dans les politiques ministérielles, réglementaires et administratives afin de faciliter la CIP dans des contextes de pratiques multidisciplinaires.

Introduction and Background

Interprofessional collaboration (IPC) involves "a partnership between a team of health professionals and a client in a participatory, collaborative, and coordinated approach to shared decision-making around health and social issues" (Orchard, Curran, & Kabene, 2005, p. 1). The successful establishment and implementation of IPC are dependent on the collaborative efforts of various individuals and organizations, including but not limited to, regulatory bodies, government, policy-makers, health care professional organizations, health and social care professionals, educators, researchers, clients, and families (Health Force Ontario, 2010). A growing interest in IPC is evident from research and policy commitments to multidisciplinary, client-centered care (Barrett, Curran, Glynn, & Godwin, 2007; Ministry of Health and Long-Term Care [MOHLTC], 2009; Nolte, 2005; Reeves et al., 2008; World Health Organization, 2012; Zwarenstein et al., 2006). However, little is known about the perspectives of speech-language pathologists and audiologists on IPC. The purpose of this paper is to present findings from a study of perspectives of speech-language pathologists and audiologists regarding IPC within a Canadian context.

Legislative Changes

Recently, the government of Ontario, Canada, initiated various legislative amendments to Bill 171, *the Health Systems Improvements Act, 2007 and Bill 179, Regulated Health Professions Statue Law Amendment Act, 2009* including requirements for IPC. These amendments are intended to impact the practice of regulated health professionals, the delivery of client care, and improve the effectiveness and efficiency of the regulatory health system (MOHLTC, 2010). Amendments to the Regulated Health Profession Act (RHPA) of Bill 179 require IPC among regulated health professionals. The following excerpt from the amended legislation outlines the current obligations of Ontario health regulatory Colleges:

> To develop, in collaboration and consultation with other Colleges, standards of knowledge, skill, and judgment relating to the performance of controlled acts common among health professions to enhance interprofessional collaboration, while respecting the unique character of individual health professions and their members (MOHLTC, 2009).

The objectives of these legislative amendments were to improve access to health services by enabling better usage of multidisciplinary health professionals and to ensure client safety and quality assurance by strengthening Ontario's health professional regulatory system (MOHLTC, 2010).

Speech-Language Pathologists and Audiologists and IPC

A review of the literature revealed only a few articles regarding speech-language pathologists and audiologists (S-LP&As) and IPC. These articles related to collaboration between specific professionals (i.e., neuropsychologists and speech-language pathologists (S-LPs)) (Constantinidou, Wertheimer, Tsanadis, Evans, & Paul, 2012); teachers and S-LPs (Bauer, Iyer, Boon, & Fore, 2010; McEwen, 2007; Pena & Quinn, 2003; Ritzman, Sanger, & Coufal, 2006); student occupational therapists (OTs) and student S-LPs (Insalaco, Ozkurt, & Santiago, 2006); audiologists and otolaryngologists (Sattinger, 2007); and S-LPs and audiologists (McNamara & Richard, 2012). In a reflective article by Crukley and colleagues (2012), the authors acknowledge the need for IPC particularly in the field of audiology (Crukley, Dundas, McCreery, Meston, & Ng, 2012). Furthermore, these articles were not based on the Canadian context. No studies were found specifically pertaining to the perspectives of S-LP&As on IPC. As barriers can impede effective IPC where professionals share overlapping scopes of practice (Chung et al., 2012; Insalaco et al., 2006), it is imperative to examine the beliefs and attitudes of S-LP&As on IPC. The purpose of this paper is to present findings from a study of perspectives of S-LP&As regarding IPC within a Canadian context.

Facilitators to IPC

Drawing upon the literature, a number of factors have been identified that facilitate IPC at the individual and organizational level between various health and social care professions (See Table 1). Interprofessional education (IPE) has been defined as situations when "two or more professions [or students] learn with, from, and about each other to improve collaboration and the quality of care" (Centre for the Advancement of Interprofessional Education (CAIPE), 2002). Barr and colleagues (2005) argue that IPE creates positive interaction and encourages collaboration between interdisciplinary professions and improves client care. In order for IPC to be effective and efficient, an integral educational progression is required between the preparation of students in health professional programs and the actual professional practice in health care settings (Health Force Ontario, 2010).

Enhancing effective communication has been cited as a significant enabler to IPC. Improved communication

can facilitate collaboration and consultation among health providers and clients (Nolte, 2005). Mutual respect, consensus, and understanding between professionals can also be achieved (Prada et al., n. d.). Sharing information through meetings, communication technology, and electronic systems have been identified as important mechanisms for effective and efficient IPC among professionals (Stonebridge, 2005). Moreover, all health providers need to clearly define their roles, responsibilities, and expertise (Nolte, 2005). Zwarenstein and colleagues (2006) suggest that "key core elements of collaborative communication such as self-introduction, description of professional role, and solicitation of other professional perspectives" (p. 2) are essential to create a culture for IPC. This culture can only flourish with teamwork and leadership around common goals and values that encourage new ways and perspectives of learning and working together and that provide the most thorough and appropriate client-centered care (Nolte, 2005). Strong relationships built on trust, cooperation, and respect for other team members' contributions and areas of expertise are essential for effective IPC (Martin-Rodriguez, Beaulieu, D'Amour, & Ferrada-Videla, 2005; Nolte, 2005). Furthermore, effective client-centered care requires continuous communication and collaborative work between health care professionals and their clients (Casmiro et al., 2011). These various facilitators need to be implemented simultaneously to achieve effective IPC. In addition to factors that enable IPC, a number of barriers exist to implementing and practicing IPC in professional practice.

Barriers to IPC

Although IPC is not a new phenomenon in the delivery of health care (Prada et al., n.d), numerous implicit and explicit barriers exist that impede the ability to achieve IPC in clinical settings. Barrett and colleagues (2007) argue that "although multidisciplinary teams are widely lauded, collaborative team approaches are difficult to achieve and require changes to underlying structures, values, power relations, and roles" (p. 11). Studies have shown that IPC can be compromised by a variety of challenges (See Table 1). Although a significant amount of research has indicated the need for professions to collaborate in the evolving health care environment (Health Force Ontario, 2010; Prada et al., n. d; WHO, 2012), professional and cultural impediments can constrain the interprofessional collaborative process (Chung et al., 2012). "Turf" issues or professional territoriality or boundary infringements can hinder IPC when professionals share overlapping scopes of practice (Axelsson & Axelsson, 2009; Chung et al., 2012; Reeves et al., 2008). Currently, with changing roles and settings, there is considerable overlap in the roles of different health care professionals (WHO, 2011). These changing roles can present challenges in terms of professional responsibilities, autonomy, and acknowledgement (Barrett et al., 2007; WHO, 2011). "Turf" issues can lead to interprofessional disputes and territorial and competitive behaviour that may hinder the ability to integrate knowledge and can negatively impact client-centered care (Chung et al., 2012).

Professional cultures and attitudes are deeply rooted in the traditional approach to teaching professionals in silos (Margalit et al., 2009). Hall (2005) argues that the "educational experiences and the socialization process that occur during the training of each health professional reinforce the common values, problem solving approaches, and language/jargon of each profession" (p. 188). The powerful influence of the hidden curriculum (i.e., unwritten norms, values, and beliefs transmitted to learners through their immersion in the clinical environment and mainly by their observation of role models) on professional students should not be underestimated (Thistlethwaite, Jackson, & Moran, 2013). Consequently, these professional cultures and attitudes may differ from other professionals' ideologies and world views causing conflicts that impede effective IPC (Hall, 2005). Increased specialization and regulatory bodies has further immersed professions into their own professional culture, and as a result, professional roles and boundaries become difficult to define (Hall, 2005).

Medical hierarchies and authority can challenge collaboration and teamwork. Increased specialization and regulatory bodies have provided greater patient choice and access to regulated health professionals and have provided health professionals more responsibility and autonomy for their own acts within their scope of practice (College of Audiologists and Speech-Language Pathologists of Ontario [CAS-LPO], 2008a; 2008b). However, changing views and roles can "challenge the authority and boundaries of medicine" (Hall, 2005, p. 189), when interprofessional collaborative teams are not always led by physicians (WHO, 2011). Furthermore, facilitators to IPC can pose as significant challenges to IPC if not implemented in clinical practice. Poor communication and lack of understanding of other health professionals' knowledge, skills, roles, and expertise can impose boundary infringements and "turf" issues (Barrett et al., 2007). Implementing, practicing, and sustaining IPC requires a firm commitment and a

shared responsibility of a range of stakeholders, including regulatory bodies, health care professionals, academic institutions, health care professional organizations, government, policy-makers, administrators, clients, and families (Health Force Ontario, 2010).

Table 1. Facilitators and Barriers to IPC

Facilitators	Barriers
Interprofessional education in higher education institutions and professional settings[1]	"Turf wars"[7], "professional territoriality"[8], or "boundary infringements"[9]
Interprofessional collaborative communication[2]	Professional cultures[10] ,attitudes[7], and negative stereotypes[7]
Accountability mechanisms[3]	Lack of understanding of other health professionals' knowledge, skills, roles, and expertise[9]
Teamwork4 and leadership skills[5]	Poor communication[11]
Client engagement[6]	Medical hierarchies[12]
Professional autonomy, trust, and work satisfaction[3]	

Sources: [1] Oandasan, Nasmith, Soklaridis, & Kimpton, 2004; [2]Zwarenstein et al., 2006; [3] Barrett et al., 2007; [4]Nolte, 2005; [5] Freeth, Hammick, Reeves, Koppel, & Barr, 2005; [6] Prada et al., n.d.[7]Chung et al, 2012, p. 32; [8]Axelsson & Axelsson, 2009; [9]Reeves et al., 2008, p. 2; [10]Hall, 2005; [11]Zwarenstein et al., 2006; [12]WHO, 2011.

As barriers can impede effective IPC where professionals share overlapping scopes of practice (Chung et al., 2012), it is imperative to examine the beliefs and attitudes of S-LP&As on IPC. The purpose of this paper is to discuss the results of a study of perspectives of S-LP&As regarding IPC.

Methods

A mixed methods design analyzing qualitative and quantitative data was conducted to examine the perspectives of S-LP&As on IPC (Axinn & Pearce, 2006). This study is a secondary analysis of data from a larger study investigating implementation of legislative changes requiring promotion of interprofessional collaboration (IPC) by health regulatory Colleges. The purpose of the larger study was to examine the readiness of various health professional regulatory Colleges in Ontario for legislative changes; one component of this larger study was a survey of practicing health professionals from these Colleges regarding their awareness of recent legislative changes in Ontario, knowledge of controlled acts, and perspectives on IPC (Regan, Orchard, Khalili, Brunton, & Leslie, 2013). This paper focuses on the perspectives of S-LP&As on IPC. Ethical approval for the larger study was obtained from the University of Ottawa and Western University Research Ethics Boards.

Data Collection and Sample

Members of CASPLO were sent an email by the College with a link to an online survey. Information about the purpose of the survey and inclusion criteria were provided in the email. Participants were eligible to participate if they had practiced in a clinical position in Ontario at least 50% of their time in the 12 months. The survey was offered in both English and French; no French responses were received for S-LP&As. Participants indicated consent to participate in the study by answering yes to the following question: Do you agree to the terms and conditions outlined in the Letter of Information and give your consent to participate in this survey?

The survey consisted of basic demographic questions (e.g. age, sex, education), scaled questions, and open-ended questions. Among the questions, respondents were asked their perspectives on 22 items related to IPC based on a 4-point likert scale: 1-(Strongly Disagree); 2-(Disagree); 3-(Agree); and 4-(Strongly Agree). The IPC

items were developed based on a review of the literature and aims of the study. In addition, participants were asked the following open-ended statement: *Please tell us what factors enable or impede your ability to collaborate with other health professionals in general and to carry out shared controlled acts specifically.*

Analysis

SPSS 21 (IBM Corp., 2012) was used to analyze survey responses. Statistical analysis included calculating the frequency participants agreed or strongly agreed with each item. Participant responses were also grouped based on age, those 40 years and under and those 41 years and older, with mean group differences on each of the 22 items examined using the t-test.

S-LP&A participants provided 78 relevant responses to the open-ended statement: *Please tell us what factors enable or impede your ability to collaborate with other health professionals in general and to carry out shared controlled acts specifically.* A qualitative content analysis was conducted to examine these responses and group responses into categories (Krippendorff, 2013; Schreier, 2012).

Results

Of the 171 S-LP&As who participated in the survey, 11 of the participants were male (6%) and 160 were female (94%). S-LP&A participants ranged in age from 27 to 71 years and the average age was 44.6 years. A total of 60 participants were under 40 years of age (35%) and 111 participants were 40 years of age or older (65%). All participants were English speaking and had University level education.

Based on the content analysis of the qualitative comments and the IPC survey items, we grouped the findings by broad themes to report the results: IPC and health care services, IPC and the workplace, IPC and colleagues, and IPC and the profession. See Table 2 for additional details regarding S-LP&A responses to the 22 survey items on IPC.

IPC and Health Care Services

Respondents had high agreement among items 1, 3, 7, 9, 10, 12 and 15 reflecting support for the importance of IPC for improved access to health care services and quality of patient care. There was high agreement among S-LP&As with statements that IPC improves quality of

Table 2. Perspectives of Speech-Language Pathologists and Audiologists Regarding

	How strongly do you agree or disagree with the following statements?	% Agree / Strongly Agree - All participants	Means (SD) ≤ 40 years/ > 40 years4
1.	When all health professionals can practice to their fullest extent of their knowledge, skills, and expertise, patient access to care is improved.	97.1	3.64 (.57)/ 3.58 (.53)
2.	I am comfortable participating in interprofessional collaborative practice.	97.1	3.52 (.61)/ 3.33 (57)*
3.	Greater interprofessional collaboration is in the public interest.	95.9	3.64 (.57)/ 3.42 (.57)*
4.	My workplace supports interprofessional collaboration.	93.0	3.36 (.62)/ 3.29 (.68)
5.	In my workplace, my colleagues and I share similar ideas about patient care.	92.4	3.40 (.60)/ 3.19 (.67)*
6.	My colleagues value each team member's expertise.	92.4	3.30 (.74)/ 3.26 (56)

7.	Interprofessional collaboration on shared controlled acts will improve the quality of care.	91.8	3.21 (.57)/ 3.13 (.63)
8.	Interprofessional collaboration will increase health professional satisfaction and retention.	89.5	3.20 (.59)/ 3.08 (.59)
9.	Different standards for how health professions perform the same controlled acts can impede interprofessional collaboration.	88.9	3.25 (.77)/ 3.28 (.63)
10.	Different standards for how health professions perform the same controlled acts can impact negatively on the quality of care that is provided.	88.3	3.18 (.69)/ 3.26 (.61)
11.	My colleagues are willing to cooperate on new practices.	87.7	3.16 (.57)/ 3.06 (.65)
12.	Interprofessional collaboration will increase access to health services.	87.1	3.25 (.73)/ 3.06 (.68)
13.	There is a lot of teamwork among my colleagues.	86.5	3.31 (.66)/ 3.08 (.71)*
14.	My immediate colleagues understand the roles and responsibilities of all team members.	84.8	3.13 (.69)/ 3.02 (.64)
15.	The sharing of controlled acts provides an opportunity to promote greater interprofessional collaboration.	84.2	3.03 (.58)/ 2.94 (.65)
16.	My regulatory College enables interprofessional collaboration.	80.1	3.15 (.66)/ 2.92 (.73)*
17.	My workplace provides orientation for new staff that involves all health professionals being oriented together.	63.7	2.91 (.79)/ 2.62 (.88)*
18.	Interprofessional collaboration was emphasized in my health professional education program.	61.4	3.09 (.83)/ 2.50 (.85)*
19.	There are "turf" issues around controlled acts among some members of the team.	45.6	2.48 (.80)/ 2.52 (.74)
20.	My colleagues and I fully appreciate which other health professions can now carry out controlled acts in this legislation.	45.0	2.48 (.68)/ 2.39 (.66)
21.	My colleagues discuss working together in support of the legislation to collaborate on controlled acts.	36.8	2.36 (.75)/ 2.30 (.71)
22.	Some colleagues still restrict the controlled acts that can be carried out to those before this new legislation was enacted.	31.6	2.22 (.65)/ 2.26 (59)

Note. Scale 1-4 Strongly Disagree to Strongly Agree. N=171.
*Denotes statistically significant differences (t-test significance $p < .05$)

care (91.8%) and increases access to health services (87.1%). S-LP&As agreed highly that IPC was in the public interest (95.9%), however, there were statistically significant differences in mean scores between S-LP&As based on age; younger S-LP&As had a slightly higher agreement that IPC was in the public interest.

Although S-LP&As support IPC, many respondents' comments indicated that significant barriers currently exist that impede the ability to fully implement IPC in clinical practice. Some respondents identified barriers that negatively affect health care services and patient care including policies that impede the ability to refer and diagnose clients, limited physician involvement, differing managerial policies in different settings, lack of administrator support, and fragmentation of services.

Some respondents indicated that the quality of client care is improvised and access to health services is reduced due to policies that inhibit the ability for S-LPs to diagnose language disorders:

> As speech language pathologists in the school system we do not have the controlled act to diagnose a language disorder, despite having extensive background in this area. We have shorter wait times for assessment than our psychology counterparts and it would speed up service for children with communication disorders if we were able to diagnose language impairments.

In addition, policies were identified as impediments to audiologists' ability to refer and diagnose patients which affects the quality of client care. Several participants indicated that the inability to refer clients directly to an otolaryngologist causes unnecessary delays for treatment and services:

> One interprofessional limitation that impedes my collaboration with other health professional in general is the inability to refer directly to an otolaryngologist. This limitation affects communication of results and can slow down and cause difficulties with the controlled act of hearing aid prescription.

Ministerial policies were identified as "piecemeal" and "fragmented" that limit access to services for children with speech and language disorders. Several participants commented on these "divided" policies that result in inefficiencies in service delivery and a lack of essential services for school aged populations:

> Ministry guidelines (tri-ministerial agreement) [lead to] division of speech-language pathology services for school aged children and are too piecemeal and divided. [These guidelines] severely limit the services available to students who may have both language disorders and speech/voice/fluency issues.

The need for physician involvement and the "buy in" from administrators to facilitate IPC and improve patient care were indicated by several participants' comments:

> A number of community services have not recognized the value of collaboration. In my view, administrators need to 'buy in' to the value of team care in order for this approach to be supported at the level of clinical care. Physician involvement in this process would be valuable but at present specialists (e.g., otolaryngologists) are not/choose not to participate in this process which invariably limits optimal care of the patient.

Different workplace policies can impact service delivery and compromise patient care. In particular, S-LPs indicated that different settings have varying policies regarding the role of the S-LP in performing modified barium swallowing studies (MBSS):

> I have worked in two hospital settings. At [one] hospital, performing (MBSS) was an act that was delegated to the S-LP without direct supervision. At [another hospital], this was not the case. I found that having trust in the knowledge and expertise of the S-LP in the area of MBSS assessment provided for more efficient service delivery with very minimal compromise to patient safety.

IPC and the Workplace

There was high agreement among S-LP&As with statements that their workplace supported IPC (93% - item 4). A smaller majority (63.7%) agreed or strongly agreed that their workplace provided orientation for new staff that involved all health professionals being oriented together (Item 17). Younger S-LP&As were more likely to agree that staff were oriented together than their older counterparts ($p < .05$).

Respondents indicated the importance of the workplace in supporting IPC and providing education on effective collaboration:

> It has been my experience throughout my career that collaboration occurs when the philosophy of the work setting allows it to, but more importantly there has to be education on the different models of collaboration as well as professionals who are comfortable with

their own skills that they can respect that another professional also has a role to play.

IPC and Colleagues

Respondents had high agreement among items 2, 5, 6, 11, 13 and 14 reflecting support for the importance of teamwork and collaborative practice. S-LP&As were in high agreement with statements that their colleagues cooperated on new practices (87.7%), shared similar ideas about patient care (92.4%), and participated in teamwork (86.5%). Moreover, S-LP&As were in high agreement that their colleagues valued each team member's expertise (92.4%), and understood the roles and responsibilities of all team members (84.8%). However, only a minority of S-LP&As respondents agreed or strongly agreed that their colleagues discussed working together in support of the legislation to collaborate on controlled acts (36.8%) and fully appreciated which other health professions could now carry out controlled acts (45%). Nearly half of participants indicated that "turf" issues existed around some controlled acts by colleagues (45.6%). There were statistically significant differences based on age with comfort participating in interprofessional collaborative practice, sharing similar ideas about patient care, and teamwork among colleagues with younger S-LP&As having mean scores on these three items.

The following quotes from different S-LP&As illustrate the types of "turf" issues that exist among colleagues:

> Serious turf wars between physicians and audiologists are destroying the profession of audiology; physicians are dispensing hearing aids and are not even trained.

> Antagonist turf wars between audiologists. I think that when money becomes a factor in the equation, then there is a change in the professional leading to poor communication between colleagues and a fight for patients to come in and buy their hearing aids from one audiologist vs. the next.

> Turf wars regarding dysphagia, and occupational therapists (OT) thinking they are the only ones qualified to address it.

> Specific acts that I'm well trained to do but are risky (e.g., dysphagia assessments) should be considered a controlled act. Because they are not, other colleagues (i.e., OT, dieticians) with minimal training and expertise can or are being asked to perform these acts to save hospital money...There is great risk of harm to the general public, as well, it fosters turf issues and affects interprofessional relationships.

"Turf" issues and misunderstandings can occur when colleagues do not understand the roles and responsibilities of all team members. Moreover, different perspectives among multidisciplinary colleagues can impede IPC:

> There is a divide between physicians and allied health and other professions in my job setting, such that there is probably not a good understanding amongst physicians as to what S-LPs or other professionals can do.

> Lack of time or a different focus impedes IPC. For example, OTs might want to focus solely on a student's gross motor skills and need for wheelchairs/walkers/standers etc., when I might also need their support (e.g., physical access and mounting) for augmentative and alternative communication in students presenting with severe physical disabilities and complex communication needs.

IPC and the Profession

There was high agreement among respondents that IPC increases retention of health professionals (89.5% - item 8). However, only a small majority of respondents indicated that IPC was emphasized in their health professional education program (61.4% - item 18). Statistically significant differences based on age were noted with respondents under 40 years of age showing high agreement that IPC was emphasized in their health professional education program (80% - mean = 3.09); whereas, only half of respondents 40 years of age or older indicated that IPC was emphasized in their health professional education program (51%- mean = 2.50).

Respondents identified several facilitators and barriers that enable or impede the ability to collaborate interprofessionally in clinical practice. Facilitators include positive personalities, openness to IPC, trust, respect for others' perspectives, problem-solving collaboratively, and team meetings. S-LP&A respondents commented on the facilitators that enable IPC in clinical practice:

> Enabling factors [to IPC] would be administrative support, times for collaboration, which allows time for discussion, meetings, etc., and valuing the synergy when two different perspectives come together to problem solve for the client.

Barriers to IPC include lack of understanding of other health professionals' expertise and roles, lack of time, competition, heavy workloads, conflicting interpretations of results, and regulatory policies. Participants indicated that busy schedules impede IPC:

> Time…often people feel too busy with their assigned patient care tasks that they don't feel they have time to reflect on this and discuss meaningfully with colleagues and continue learning about each other's roles.

While for some respondents they perceive their regulatory body's regulations and policies may impede the ability of some S-LP&As to work effectively on a team:

> As a health professional…there are huge barriers to interprofessional collaboration as a result of the [college's] regulations. While psychologists and social workers are free to discuss students in a general way without explicit parental consent, we have to be excluded from the discussions because of our college's insistence on obtaining consent for discussions at multidisciplinary meetings…Our college regulations and the college interpretation of legislation about privacy and consent are oriented toward functioning in a health care setting, ignoring the fact that many of us work in schools. In fact, the psychologists, who are health professionals, do not have the same stringent requirements regarding consent from their college, allowing them to work more effectively consulting to teachers and special education staff.

Discussion

The findings from this study enhance our understanding of S-LP&A's perspectives regarding IPC. In particular, these findings provide insight into facilitators that promote and barriers that impede IPC for S-LP&As in clinical practice. S-LP&A respondents support the ideal of IPC as evident with their high agreement with statements that IPC is in the public interest, improves quality of care, and increases access to health services. However, many respondents identified several barriers that impede IPC and negatively impact health care services and client care. These barriers include limited physician involvement, lack of administrator support, government, College, and workplace policies that impede the ability to refer and diagnose clients, and fragmentation of services. Many of these barriers to IPC identified by S-LP&A respondents are consistent with those found in past research among other health care professionals. Systemic barriers, such as the lack of clear policies governing professional practice, can make the implementation of IPC in clinical practice difficult (Martin-Rodriguez et al., 2005). The findings from this analysis suggest that College regulations and government and workplace policies should reflect the current direction of interdisciplinary team practices in the clinical environments of S-LP&As.

The workplace plays an important role in coordinating, orienting staff, and supporting IPC. This is consistent with current research that IPC can be enhanced through IPE in the workplace by creating positive interaction and encouraging collaboration and discussion involving all interdisciplinary professions (Barr et al., 2005; Martin-Rodriguez et al., 2005). While S-LP&As were in high agreement that their workplace supported IPC, only a small majority of respondents indicated that their workplace provided orientation for new staff that involved all health professionals being oriented together with younger S-LP&As more likely to have experienced this than older S-LP&As. Previous research suggests that factors such as the organizational structure, administrative support, resources available to team members, and coordination and communication mechanisms within the organization help define teamwork in the workplace (Martin-Rodriguez et al., 2005). To facilitate IPC for S-LP&As, workplaces should promote orientation sessions and forums or formal meetings that involve all team professionals. In addition, because younger S-LP&As are more likely to have had this exposure during orientation, workplace education should address knowledge gaps of older S-LP&As.

Interprofessional education (IPE) appears to be an integral part of S-LP&A professional development programs for recent S-LP&A graduates. A high majority of S-LP&A respondents under 40 years of age indicated that IPC was emphasized in their health professional education program. The emerging trend of incorporating IPE in professional education programs can improve the effectiveness and efficiency of IPC in actual practice and likely explains why younger S-LP&As are more comfortable with IPC. This is consistent with the literature that IPE can promote IPC when there is an integral educational progression between the preparation of students in health professional programs and the actual professional practice in health care settings (Health Force Ontario, 2010). IPC professional development programs should be offered by professional associations or in the workplace for S-LP&As who may not have received IPE in their professional education program.

While S-LP&As support teamwork and collaborative practice, several barriers impede the ability to achieve the ideals of IPC. These barriers arise from long-standing issues in professional cultures (Hall, 2005) including "turf" issues, lack of understanding of the roles, skills and expertise of other health care providers, and varying perspectives on what constitutes IPC. Turf issues or professional territoriality discussed by S-LP&As occurred when professionals share overlapping scopes of practice. This is consistent with current research that suggests that structures, values, power relations, and obscure role boundaries between health care professionals can present challenges to IPC in terms of role allocation and professional autonomy (Barrett et al., 2007). However, these barriers may be overcome by focusing on the needs of the client and improving client care. Interprofessional teams require continuous interaction and mutual respect for other disciplinary contributions and perspectives that center around common goals such as excellent client care. With common goals, positive outcomes can be best achieved through collaborative efforts with other professionals (Barrett et al., 2007). The role of regulatory policies, health professional education programs, the professions of S-LP&As and clinicians are interrelated in facilitating and/or impeding IPC in clinical practice. It is recommended that stakeholders across these sectors work collaboratively to find ways to incorporate IPC into their education, policies, and culture to optimize client-centered care.

Limitations

As with all studies, there are limitations. The sampling approach for the survey was a non-probability sample limiting the ability to make generalizations to the larger S-LP&As population. S-LPs and audiologists were not identified separately in the survey limiting the ability to examine whether differences exist in their perspectives. This is a secondary analysis of data from a larger study therefore limiting the scope of the analysis. The qualitative data obtained from S-LP&As respondents was in response to one open-ended statement eliciting written online comments only. Future studies might examine perspectives through more in-depth interviews to better understand S-LP&As perspectives on IPC.

Conclusion

This study provides preliminary findings on the perspectives of S-LP&As on IPC. Recent legislative amendments to Ontario's health professional regulatory system require regulated health professionals, including S-LP&As, to collaborate interprofessionally where they share controlled acts. These changes have future implications on the IPC of S-LP&As and the delivery of client care. Work environments that foster and support collaboration, communication, trust, and mutual respect for all team members' roles, expertise, and contributions within their scope of practice can improve health care providers' satisfaction and optimize client care. Although S-LP&As respondents support IPC, barriers exist that impede their ability to fully implement the ideal of IPC in clinical practice. Given that S-LP&As work in a variety of settings with diverse populations, future changes to government, regulatory, and workplace policies may be needed to facilitate IPC in interdisciplinary practice environments. A shared commitment among policy-makers, regulatory bodies, employers, and clinicians is required to find ways of implementing, practicing, and sustaining IPC in clinical practice that respect and value each professional's unique knowledge and expertise, while also meeting the increasing needs and expectations of clients and families.

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Analyse du rôle de l'orthophoniste dans des cas juridiques au Québec

An Analysis of the Role of the Speech-Language Pathologist in Legal Cases in Quebec

MOTS CLÉS

ORTHOPHONISTE

TÉMOIN EXPERT

SPEECH LANGUAGE PATHOLOGIST

EXPERT WITNESS

Eve Gasseau
Isabelle Benoit
Véronique Vaillancourt
Chantal Laroche

Abrégé

Cet article vise à démystifier le rôle de l'orthophoniste dans les cas en litige entendus devant un tribunal au Québec, en décrivant le rôle de témoin expert et en tentant de répondre aux questions suivantes: 1) Est-ce que les orthophonistes ont un rôle à jouer en tant que témoin expert dans des cas en litige qui visent tant les enfants que les adultes?; 2) Quelles sont les problématiques principales des cas juridiques dans lesquels les orthophonistes sont appelés à contribuer?; 3) Par quelles modalités les orthophonistes contribuent-ils aux cas en litige?; et 4) Quel est l'impact de la contribution des orthophonistes sur la décision rendue par le Tribunal? Pour répondre à ces questions, 49 cas juridiques touchant la population pédiatrique (N=26) et la population adulte (N=23), répertoriés dans des bases de données juridiques du Québec, ont été analysés. Il en ressort que les orthophonistes peuvent être appelés à contribuer dans des cas en litige qui touchent tous les domaines d'expertise en orthophonie ainsi que diverses problématiques, soit par l'entremise du rapport écrit ou, plus rarement, par un témoignage devant le Tribunal (seulement dans cinq des 49 cas juridiques analysés). Les catégories de problématiques en jeu dans les cas juridiques touchant les enfants étaient la compensation financière à la suite d'un accident, le divorce/la séparation, la garde en famille d'accueil, les services dispensés par les commissions scolaires et les subventions pour handicapés. Du côté des adultes, les problématiques portaient davantage sur les compensations financières à la suite d'un accident ou une lésion professionnelle et le support pédagogique individuel avec aide aux devoirs. Quant à l'impact de la contribution de l'orthophoniste sur la décision rendue par le Tribunal, on note un faible impact dans la majorité des cas juridiques analysés. Ce faible impact pourrait s'expliquer, en partie, par plusieurs facteurs : 1) le type de contribution (rapport vs témoignage), 2) le nombre d'experts impliqués dans la cause, 3) la nature du cas juridique, incluant la présence ou non de difficultés concomitantes non liées au langage, à la communication, à la parole, à la voix et à la déglutition, et 4) le rôle de l'orthophoniste dans le cas en litige, soit d'offrir une opinion en lien avec la cause ou de dresser uniquement un portrait global de la situation du client. L'analyse a également permis d'identifier plusieurs cas juridiques où un orthophoniste aurait pu être appelé à contribuer. Il importe donc aux orthophonistes de reconnaître et de promouvoir leur rôle potentiel comme témoin expert et de conserver des rapports et notes de progrès justes, complets et à jour. De la formation continue sur le rôle de témoin expert devrait aussi être offerte par les ordres et les associations professionnels afin d'aider à démystifier l'implication potentielle des orthophonistes dans les cas en litige présentés devant le Tribunal.

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Abstract

This article aims to demystify the role of the speech language pathologist in legal cases heard before the courts in Quebec, by describing the role of the expert witness and by addressing the following questions: 1) Do speech language pathologists have a role to play as expert witnesses in legal cases involving children and adults?; 2) What are the main categories of legal cases to which speech language pathologists contribute?; 3) In what ways do speech language pathologists contribute to legal cases? and 4) What is the impact of the speech language pathologist's contribution on the tribunal's decision? To answer these questions, 49 cases involving children (N=26) and adults (N=23) found in two Quebec legal databases were analyzed. Results show that speech language pathologists may contribute to legal cases involving all areas of expertise in speech language pathology, as well as various other areas, either by providing written reports or, less frequently by testifying before the tribunal (only 5 of the 49 cases). The legal issues involving children dealt with financial compensation following an accident, divorce/separation, foster care, services offered by school boards, and subsidies for persons with a disability. In adult cases, the issues were more likely to involve financial compensation following an accident and/or work injury, and individual teaching support with homework help. With regards to the impact of the speech language pathologist's contribution on the tribunal's decision, only minimal impact was noted in most cases. This limited impact can be explained in part by various factors: 1) the type of contribution (report versus testimonial), 2) the number of experts involved in the case, 3) the nature of the case, including the presence or absence of concurrent difficulties not related to language, communication, speech, voice, and swallowing problems and, 4) the role of the speech language pathologist in the case, to either offer an opinion related to the case or solely to provide a general overview of the client's situation. The study also allowed identifying numerous legal cases where a speech language pathologist could have been asked to contribute. It is thus important for speech language pathologists to recognize and promote their potential role as expert witnesses and to maintain accurate, complete and updated progress notes and reports. Continuing education on the role of expert witnesses should be offered by professional associations and colleges in order to demystify the potential implications of speech language pathologists in legal cases presented before the courts.

Introduction : l'orthophoniste a-t-il un rôle en tant que témoin expert devant les tribunaux?

Dans certains litiges, il arrive que le Tribunal soit confronté à une preuve qui requiert des connaissances techniques ou particulières. Lorsque cette situation se présente, il est difficile, voire impossible, pour le Tribunal de se prononcer de manière éclairée sur la question en litige. C'est à ce moment qu'entre en jeu le témoin expert. Tel que recensé dans la publication de Johnson, Krafka, et Cecil (2000), il existe plusieurs domaines d'expertise, tant en ingénierie et en sciences pures qu'en sciences de la santé. En effet, les psychologues, les médecins ainsi que les professionnels de la réadaptation, tels que les ergothérapeutes, les physiothérapeutes, les audiologistes et les orthophonistes, peuvent témoigner en tant qu'experts. Le présent article vise à démontrer que l'orthophoniste, en particulier, peut avoir à jouer un rôle en tant que témoin expert. Pour se faire, un recensement et une analyse des cas juridiques impliquant des orthophonistes au Québec ont été effectués. Avant tout, il est important de définir clairement le rôle du témoin expert, de décrire la procédure utilisée par le Tribunal afin de solliciter un témoin expert et de retenir son témoignage, puis d'aborder la formation offerte aux orthophonistes par les associations et les organisations quant au rôle de témoin expert.

Qu'est-ce qu'un témoin expert?

Il est important d'établir la définition d'un témoignage. Selon l'article 2843 du Code civil du Québec (2013), « Le témoignage est la déclaration par laquelle une personne relate les faits dont elle a eu personnellement connaissance ou par laquelle l'expert donne son avis. » Cette définition laisse entrevoir une distinction entre le rôle du témoin de fait et celui du témoin expert. Alors que le témoin de fait ne porte pas de jugement sur les informations qu'il transmet lors de son témoignage, l'expert, quant à lui, est appelé à donner son avis concernant les diverses preuves présentées au Tribunal. Selon Royer (2008), dans son livre *La Preuve Civile*, le témoin expert a comme rôle supplémentaire d'éclairer le Tribunal et de l'aider à juger de la pertinence d'une preuve qui relève d'un domaine scientifique ou technique. Dans certaines situations, un témoin de fait pourrait aussi exprimer une opinion par rapport à l'âge, au caractère et à l'état physique ou mental d'un individu. Par exemple, Royer (2008) cite le cas juridique de Mayrand contre Gingras en 1990 dans lequel un témoin de fait a rapporté l'état d'ivresse d'une partie. Contrairement au témoin de fait qui prend souvent parti lors de son témoignage, le témoin expert se doit de rester impartial et de ne former son opinion qu'en se basant sur les faits disponibles. À titre illustratif, en 1999, le juge Jean Guibault a rejeté le témoignage d'une orthophoniste, bien qu'il jugeait qu'elle possédait les compétences nécessaires pour présenter son opinion en tant que témoin expert, en déclarant que « [l]e Tribunal a rarement vu un tel parti pris de la part d'un témoin expert. Il ne fait aucun doute que Mme Larose a épousé la cause de Mme B... et son attitude en cour a convaincu le Tribunal qu'il se devait d'écarter complètement l'opinion émise par ce témoin. » (Perron c. Audet, 2002). Bref, un témoin expert est un individu qui possède des connaissances particulières, voire une expertise dans un domaine quelconque, et qui est appelé à donner son opinion sur les faits présentés dans un cas judiciaire, tout en faisant preuve d'une impartialité exemplaire.

Comment devient-on un témoin expert?

Les demandes de témoins experts peuvent émaner de plusieurs sources. Dans le domaine de la santé, on peut citer les organismes gouvernementaux qui doivent défendre leur décision d'accorder ou non un service ou une indemnité, les individus qui se croient lésés par une décision de tels organismes, ou les avocats qui ont à défendre un individu ou un organisme. Lorsque le témoin expert est invité à se présenter devant le Tribunal, l'outil principal utilisé pour déterminer la compétence et l'expertise du témoin est son curriculum vitae. Selon Royer (2008), ce document permet au juge de déterminer la nature de l'expertise, les qualifications, ainsi que l'ampleur et le sérieux des travaux de recherche de l'expert. Le juge doit aussi faire état de l'impartialité de ce témoin, ainsi que de la pertinence de son expertise face aux preuves présentées au Tribunal. Le témoin expert doit posséder « des connaissances et une expérience spéciales qui dépassent celle du juge des faits. » (R. c. Béland, 1987). Le Code de procédure civile du Québec (C.p.c.) (2012) contient plusieurs articles qui servent de lignes directrices en ce qui a trait au témoignage de l'expert. L'article 414 permet au Tribunal de demander à un expert d'effectuer une évaluation des faits du cas juridique. De plus, si les deux parties ont soumis des rapports rédigés par des témoins experts et que ces documents se contredisent, l'article 413.1 du C.p.c. autorise les experts à se rencontrer afin de discuter des points de divergence dans leurs rapports et de rédiger, par la suite, un rapport commun qui sera déposé comme preuve. Le C.p.c est appuyé par les Règles de procédure civile (R.p.c) (2013). L'article 18.1 des R.p.c permet aux parties de demander au Tribunal d'assigner un expert commun. Si, en plus de fournir un rapport, l'expert est appelé à témoigner, il doit commencer

son témoignage en nommant ses titres, ses qualifications et son expérience pertinente à la question en litige pour établir son aptitude à comparaître comme témoin expert. Dans certains cas juridiques, le procureur peut souligner les éléments importants du curriculum vitae de l'expert avant de l'interroger, afin d'éviter une longue introduction. De plus, l'article 18.1 des R.p.c exige que le Tribunal reçoive un rapport d'expertise, le curriculum vitae de l'expert, son compte d'honoraire à jour et son tarif actuel.

Au niveau fédéral, le rôle du témoin expert lors des litiges soulève plusieurs questionnements. Le document intitulé «Témoins experts devant les Cours fédérales», rédigé par le Comité des règles des Cours fédérales sur les témoins experts (2008), apporte certaines réponses concernant la procédure à suivre lors du témoignage d'un expert. Ce document suggère notamment que les éléments suivants se retrouvent dans le rapport de l'expert soumis en preuve:

- Un énoncé soulignant les questions traitées dans le rapport;
- Les qualifications de l'expert quant aux questions traitées;
- Les hypothèses et les faits sur lesquels sont basées les opinions présentées;
- Un résumé des opinions;
- Si le rapport est en réponse à un rapport d'un autre expert, un résumé des points d'accord et de désaccord avec les opinions de l'autre expert;
- Le ou les motifs qui ont permis d'établir chaque opinion;
- Les ouvrages et les documents consultés afin de former chaque opinion;
- Un résumé des méthodes utilisées (examens, vérifications, enquêtes) sur lesquelles l'expert s'est fondé, les qualifications de la personne qui les a effectuées, et une mention de la présence ou non d'un membre de la partie opposée;
- Les mises en garde ou réserves nécessaires quant à l'interprétation des opinions présentées, par exemple une insuffisance de données ou une recherche inadéquate.

Ainsi, il s'avère que le rôle du témoin expert peut être exigeant, non seulement en temps, mais aussi au plan des connaissances nécessaires et de la procédure légale à suivre lorsqu'on assume ce rôle. Il apparaît donc essentiel que les orthophonistes puissent recevoir le support nécessaire afin d'accomplir ces fonctions, et ce, de la part de leurs ordres ou de leurs associations professionnels, tant aux niveaux fédéral que provincial.

Les orthophonistes sont-ils bien outillés pour s'acquitter du rôle de témoin expert?

Selon l'ordre des orthophonistes et audiologistes du Québec (OOAQ), l'orthophoniste possède une expertise en ce qui concerne le développement normal et les troubles affectant le langage, la communication, la parole, la voix et la déglutition. L'OOAQ reconnaît également que ses membres peuvent agir à titre de témoin expert (OOAQ, 2012). Par ailleurs, Orthophonie et Audiologie Canada a offert des présentations lors de conférences annuelles, soit l'une d'entre elles sur l'audiologie médico-légale (David M. Lipscomb, de Correct Service, Inc.) en 1988, une autre intitulée *I've been summoned, now what?* (Juge J. Williams, juge en cour familiale) en 1989, et une présentation intitulée *The Speech-Language Pathologist as an Expert Witness* (Wendy Duke, Columbia Speech and Language Services, David Doig, David H. Doig & Associates, Barristers and Solicitors) en 2002. Il semble que cette association professionnelle nationale prend certaines mesures afin d'outiller ses membres face à leur rôle de témoin expert. Cependant, la recherche documentaire effectuée pour cette étude n'a pas permis d'identifier de document officiel soulignant explicitement ce à quoi l'orthophoniste peut s'attendre lorsqu'il accepte de témoigner en tant qu'expert.

En effet, aucune documentation à ce sujet n'a été relevée au niveau de l'association des audiologistes et des orthophonistes de l'Ontario (OSLA) ainsi que de l'association québécoise des orthophonistes et audiologistes (AQOA). Pour ce qui est de l'ordre des orthophonistes et des audiologistes du Québec (OOAQ), un seul article a été répertorié, celui de Laroche (2011), qui discute d'exemples de cas juridiques impliquant des audiologistes et qui offre des conseils à ceux qui sont appelés à témoigner.

But de l'étude

Cette étude a pour objectif de répondre aux questions suivantes: 1) Est-ce que les orthophonistes ont un rôle à jouer en tant que témoin expert dans des cas en litige qui visent tant les enfants que les adultes?; 2) Quelles sont les problématiques principales des cas juridiques dans lesquels les orthophonistes sont appelés à contribuer?; 3) Par quelles modalités les orthophonistes contribuent-ils aux cas en litige?; et 4) Quel est l'impact de la contribution des orthophonistes sur la décision rendue par le Tribunal?

Méthodologie

Bases de données consultées

Dans le cadre de cette étude, la recherche documentaire a été effectuée en prenant en considération uniquement le système législatif du Québec, les autres provinces étant exclues en raison de différences législatives importantes au niveau pancanadien. Deux bases de données ont alors été consultées, soit celles de l'institut canadien d'information juridique (CanLII: www.canlii.org) et de la société québécoise d'information juridique (SOQUIJ: http://jugements.qc.ca/). Dans le moteur de recherche CanLII, les collections « Québec » et « cours » ont été sélectionnées, alors que les options «législation» et «tribunaux administratifs» n'ont pas été retenues puisque les législations ainsi que les poursuites visant les orthophonistes ne faisaient pas l'objet du but de cette recherche. Il est à noter que CanLII ne limitait pas l'étendue temporelle de la recherche effectuée, alors que dans la base de données de la SOQUIJ, une limite de temps a été établie, s'étendant du 1er janvier 1900 au 20 mai 2013.

Mots-clés

Les divers mots-clés suivants ont été utilisés : orthophoniste témoin expert, orthophonie témoin expert, dysphagie orthophoniste, dysphagie orthophonie, bégaiement orthophoniste, bégaiement orthophonie, orthophoniste société assurance automobile Québec, orthophonie société assurance automobile Québec, speech language pathologist expert witness, speech language pathologist expert witnesses, speech language pathologist, language pathologist expert witness, speech language pathologist expert, SLP. De plus, les mots-clés « orthophonist expert » et « orthophonist expert witness » ont été ajoutés puisque le terme «orthophonist» est apparu comme une traduction anglaise d'« orthophoniste » lors des premières recherches.

Procédures d'analyse des cas juridiques

Seuls les cas juridiques où un orthophoniste a été impliqué ont été retenus pour une analyse plus détaillée, même si son rôle se limitait à fournir un rapport orthophonique. Une fiche d'analyse a permis d'extraire les informations suivantes pour chaque cas juridique retenu : le numéro du cas juridique, l'identification des parties requérantes et intimées (poursuivies), une brève description du dossier et du rôle de l'orthophoniste (rapport ou témoignage devant le Tribunal), l'identification des autres experts impliqués ainsi qu'une description de la décision rendue, accompagnée des éléments déterminants sur lesquels cette dernière s'est appuyée. Dans les cas où l'information était disponible, les éléments d'intérêt rapportés par l'orthophoniste ont également été identifiés. Une attention particulière a alors été portée aux éléments de nature orthophonique.

Deux étudiantes en orthophonie étaient responsables de remplir les fiches, l'une pour les cas juridiques d'enfants et l'autre pour les cas juridiques touchant les adultes. Afin d'assurer une approche d'analyse similaire, les deux étudiantes ont analysé un premier cas juridique (enfant) ensemble. Par la suite, après avoir complété environ cinq fiches chacune, un second cas juridique (adulte) a été analysé séparément par les deux étudiantes. Une comparaison des fiches a révélé une description similaire du cas juridique par les deux étudiantes.

Cette analyse a permis de répondre aux trois premières questions de l'étude, soit de déterminer si les orthophonistes ont un rôle à jouer en tant que témoin expert, dans quelles problématiques sont-ils appelés à contribuer et par quelles modalités s'effectue cette contribution. Afin de répondre à la quatrième question, soit de documenter l'impact de la contribution de l'orthophoniste, les cas juridiques ont été classifiés, en l'absence de critères objectifs, dans les trois catégories suivantes:

(1) faible impact: cas juridiques pour lesquels l'opinion de l'orthophoniste va à l'encontre de la décision finale, est non fondée, sert uniquement à dresser un portrait global de la situation, ou est tout simplement mentionnée au passage;

(2) moyen impact: cas juridiques pour lesquels l'opinion de l'orthophoniste va dans le sens de la décision du Tribunal et est mentionnée parmi plusieurs autres éléments dans la décision rendue;

(3) fort impact: cas juridiques pour lesquels la contribution de l'orthophoniste semble avoir directement influencé la décision du Tribunal, l'orthophoniste témoin expert étant mentionné spécifiquement dans la décision rendue.

Résultats

Cas juridiques répertoriés

Il semblerait que les orthophonistes sont appelés à contribuer, à divers degrés, à des cas en litige. Au total, 70 cas juridiques ont été répertoriés dans les deux bases de données québécoises. Une première classification a permis de catégoriser les cas juridiques selon la population touchée, soit les adultes (N=23) et

les enfants (N = 47). Une telle catégorisation a permis de refléter la dichotomie principale de la clientèle en orthophonie. Les divers cas juridiques, listés en ordre chronologique, ont ensuite été regroupés selon la nature de la problématique aux tableaux de l'Annexe A (enfants) et de l'Annexe B (adultes).

Pour les cas juridiques touchant les enfants (N = 47), on pouvait discerner diverses problématiques, incluant: 1) la compensation financière suite à un accident (4 cas juridiques); 2) un divorce ou une séparation (17 cas juridiques), incluant la garde de l'enfant (9 cas juridiques), la pension alimentaire (5 cas juridiques) et la sécurité de l'enfant (8 cas juridiques); 3) la garde en famille d'accueil (15 cas juridiques); 4) les services dispensés par les commissions scolaires (3 cas juridiques); et 5) les subventions pour handicapés (8 cas juridiques). Il est à noter que certains cas juridiques dans la catégorie divorce ou séparation touchaient plusieurs des sous-catégories, par exemple un cas impliquant à la fois la pension alimentaire, la garde et la sécurité de l'enfant. C'est pourquoi la somme des cas juridiques des sous-catégories excède le total pour cette catégorie.

Afin de diversifier l'analyse des cas juridiques tout en limitant leur nombre pour des raisons pratiques (soit que le nombre de cas à analyser par chacune des étudiantes soit similaire), les catégories de problématique suivantes ont été retenues: la garde en famille d'accueil, les services dispensés par les commissions scolaires et les subventions pour handicapés. Ces cas juridiques (N=26) ont été identifiés par la couleur grise au tableau de l'Annexe A. Pour atteindre ce nombre, la catégorie de compensation financière suite à un accident a été omise, en raison de son faible nombre et du fait qu'elle est abordée dans l'analyse des cas juridiques adultes, tout comme celle des cas juridiques traitant de divorce ou de séparation. Malgré leur nombre important, ces derniers rejoignaient des enjeux semblables à ceux touchant la garde en famille d'accueil et le rôle du Tribunal est similaire dans ces deux catégories, soit de déterminer quel est le milieu le plus sécuritaire et propice à l'épanouissement de l'enfant. Il est à noter que certains cas juridiques retrouvés à l'Annexe A ont fait l'objet de plusieurs décisions rendues par le Tribunal. Ainsi, le total des cases grises excède 26 dans le tableau de cette Annexe.

En raison d'un nombre plus restreint de cas juridiques répertoriés chez les adultes (N = 23), ces derniers ont tous fait l'objet d'une analyse détaillée et ont été classifiés en deux grandes catégories dans le tableau de l'Annexe B : 1) les compensations financières (22 cas juridiques) suite à un accident (17 cas juridiques) et/ou une lésion professionnelle (6 cas juridiques); et 2) le support pédagogique individuel avec aide aux devoirs (1 cas juridique) pour un jeune adulte ayant réclamé l'accès à des ressources professionnelles afin de poursuivre ses études secondaires. En ce qui concerne les compensations financières, la première sous-catégorie inclut les remboursements pour un traitement quelconque, l'obtention d'un pourcentage additionnel de déficit anatomophysiologique et toute autre demande de compensation financière suite à un accident, alors que la seconde vise plutôt les employés blessés lors de l'accomplissement de leurs tâches de travail. Un professeur qui développe des nodules aux cordes vocales en raison d'une utilisation excessive de la voix représente bien cette seconde sous-catégorie. Il est à noter qu'un cas juridique a été associé aux deux sous-catégories de compensations financières.

Nature de la contribution de l'orthophoniste

Dans la majorité des cas juridiques impliquant tant les adultes que les enfants, la contribution de l'orthophoniste se limitait plutôt à fournir un rapport écrit qu'à témoigner devant le Tribunal (seulement 5 cas juridiques). Dans d'autres instances, ce sont les témoins experts ou de fait qui ont rapporté des extraits du rapport orthophonique. Par exemple, dans le cas juridique de M.J. contre la Société de l'assurance automobile du Québec (1999), la conjointe du requérant a cité quelques éléments du rapport orthophonique pour appuyer le fait qu'elle devait être présente lorsque son mari s'alimentait. Non seulement n'était-il pas apte à se nourrir seul, mais elle devait lui rappeler d'avaler, selon les recommandations de l'orthophoniste. Dans un autre exemple, l'orthopédagogue a utilisé le rapport orthophonique pour appuyer ses observations rapportées devant le Tribunal (M.L. contre la Régie des rentes du Québec, 2002).

Impact de la contribution de l'orthophoniste

Après avoir établi que les orthophonistes peuvent être appelés à contribuer à des cas en litige dans plusieurs domaines et que leur contribution se limite davantage à fournir un rapport qu'à témoigner devant le Tribunal, il est intéressant de se pencher sur l'impact potentiel d'une telle contribution sur la décision rendue. Ainsi, les cas juridiques retenus ont été classifiés, aux Tableaux 1 et 2, selon le degré d'impact de la contribution (faible, moyen ou fort).

Tableau 1. Niveau d'impact en fonction des types de cas juridiques analysés qui impliquaient des enfants

Niveau d'impact	Garde en famille d'accueil	Commission scolaire	Subvention pour enfants handicapés	Proportion
Faible	12 cas	0 cas	0 cas	12/26
Moyen	3 cas	2 cas	2 cas	7/26
Fort	0 cas	1 cas	6 cas	7/26

Faible : la décision du Tribunal va à l'encontre de la contribution de l'orthophoniste ou le rôle de l'orthophoniste se limite à dresser un portrait global de la situation.
Moyen : l'expertise déterminante n'est pas celle de l'orthophoniste, mais elle se base sur la contribution orthophonique.
Fort : l'expertise déterminante est celle de l'orthophoniste.

Tableau 2. Niveau d'impact en fonction des types de cas juridiques analysés qui impliquaient des adultes

	Compensations financières suite à :			
Niveau d'impact	Un accident	Une lésion professionnelle	Support pédagogique et aide aux devoirs	Proportion
Faible	10 cas	3 cas	1 cas	14/23
Moyen	6 cas	1 cas	0 cas	7/23
Fort	1 cas	1 cas	0 cas	2/23

Faible : la décision du Tribunal va à l'encontre de la contribution de l'orthophoniste ou le rôle de l'orthophoniste se limite à dresser un portrait global de la situation.
Moyen : l'expertise déterminante n'est pas celle de l'orthophoniste, mais elle se base sur la contribution orthophonique.
Fort : l'expertise déterminante est celle de l'orthophoniste.

Tel que défini à la section 2.3, la contribution de l'orthophoniste a été jugée comme ayant un faible impact sur la décision rendue par le Tribunal dans les cas où son opinion allait à l'encontre de la décision finale, était non fondée, servait uniquement à dresser un portrait global de la situation, ou était simplement mentionnée au passage. Un exemple de ce type de contribution est bien représenté dans le cas juridique de la Protection de la jeunesse - 11135 (2011), où les observations rapportées par les psychologues avaient plus de poids que ceux de l'orthophoniste, étant donné la présence de problèmes psychologiques importants chez les parents. Du côté adulte, le cas juridique de S.S. contre la Régie des rentes du Québec (2012) est également un exemple typique d'une contribution à faible impact puisque l'orthophoniste ne faisait que dresser un portrait global de la situation du requérant sans toutefois contribuer à la question en litige.

Dans les cas juridiques où l'opinion de l'orthophoniste allait dans le sens de la décision du Tribunal et était mentionnée parmi plusieurs autres éléments dans la décision rendue, la contribution a été jugée comme ayant un impact moyen. Par exemple, dans le cas juridique de C.D. contre la Régie des rentes du Québec (2009), l'expertise déterminante était celle d'un pédiatre qui avait basé ses observations sur les rapports de plusieurs autres experts, incluant l'orthophoniste. De façon similaire, le Tribunal a retenu l'opinion du neuropsychologue dans le cas juridique adulte de R.D. contre la Société de l'assurance automobile du Québec (2001), quoique cet expert ait appuyé ses observations sur plusieurs évaluations, incluant le rapport en orthophonie.

Finalement, un impact fort a été attribué à des cas juridiques où l'opinion de l'orthophoniste semblait

avoir directement influencé la décision du Tribunal, l'orthophoniste témoin expert étant mentionné spécifiquement dans la décision rendue. Le cas juridique de L.S. contre la Régie des rentes du Québec (2010) est un bel exemple de ce type d'impact puisque l'orthophoniste a révisé une demande de subvention pour enfant handicapé et le Tribunal a basé sa décision sur une analyse du dossier orthophonique de l'enfant. Un autre exemple, tiré des cas juridiques adultes, est la cause de Simard contre la Commission scolaire des Samares (2000). Dans la décision rendue, il est clairement indiqué que le Tribunal s'est basé, en grande partie, sur le témoignage de l'orthophoniste et de quelques autres experts. Le Tribunal a jugé que les trois femmes ont subi des lésions professionnelles et qu'elles avaient le droit d'obtenir les prestations reliées aux maladies professionnelles et à celles des accidents du travail.

Il est intéressant de noter que, dans le dernier exemple où la contribution a été jugée comme ayant eu un impact fort, l'orthophoniste a témoigné devant le Tribunal. En effet, un impact fort a été noté dans 3 des 5 cas juridiques dans lesquels un orthophoniste a été appelé à témoigner; les deux autres ayant été classifiés dans la catégorie à faible ou à moyen impact. Les données du Tableau 3 reflètent cette catégorisation de l'impact de la contribution de l'orthophoniste en fonction de son degré d'implication dans le cas juridique (rapport vs témoignage). Il semblerait que les témoignages aient eu un impact plus important sur la décision rendue que les rapports, quoiqu'on ne puisse généraliser ce constat en raison du faible nombre des cas juridiques dans lesquels un orthophoniste a témoigné. Dans le même ordre d'idées, lorsque la contribution de l'orthophoniste se limite à la rédaction d'un rapport, l'impact semblait plus faible dans la majorité des cas.

Contribution d'autres experts

Dans la majorité des cas juridiques, plus d'un expert a été appelé à contribuer. Une liste des différents experts impliqués dans les cas juridiques enfants et adultes se retrouve au Tableau 4, alors que la Figure 1 fait état du nombre d'experts différents impliqués dans les cas juridiques répertoriés.

Dans la plupart des cas juridiques d'enfants, on constate qu'un faible nombre d'experts différents, soit de 1 à 5, ont contribué, alors que ce nombre augmente à environ 6-10 experts pour les cas juridiques adultes. Il semblerait ainsi que le nombre d'experts impliqués soit plus faible pour les enfants que pour les adultes. En effet, le nombre d'experts différents ayant contribué à une cause juridique ne dépasse pas 9 pour les enfants alors qu'il atteint 15 pour les adultes.

Puisque plusieurs experts différents peuvent contribuer à un même cas juridique, on peut se questionner sur la relation potentielle entre le nombre d'experts impliqués et l'impact de la contribution de l'orthophoniste sur la décision rendue par le Tribunal (voir Tableau 5). Compte tenu du faible nombre de cas juridiques dans chacune des catégories listées au Tableau 5, des tendances claires sont difficiles à établir et ne sauraient, le cas échant, atteindre le seuil de signification au plan statistique. Il en ressort quand même que la

Tableau 3. Impact de la contribution de l'orthophoniste en fonction du niveau d'implication dans le cas juridiques.

Impact de la contribution orthophonique	Nombre de cas où l'orthophoniste a présenté un rapport		Nombre de cas où l'orthophoniste a témoigné	
	Cas enfants	Cas adultes	Cas enfants	Cas adultes
Faible impact	12 cas	13 cas	0 cas	1 cas
Moyen impact	6 cas	7 cas	1 cas	0 cas
Fort impact	5 cas	1 cas	2 cas	1 cas

Faible impact : la décision du Tribunal va à l'encontre de la contribution de l'orthophoniste ou le rôle de l'orthophoniste se limite à dresser un portrait global de la situation.
Moyen impact: l'expertise déterminante n'est pas celle de l'orthophoniste, mais elle se base sur la contribution orthophonique.
Fort impact: l'expertise déterminante est celle de l'orthophoniste.

Tableau 4. Titres des témoins experts impliqués dans les cas juridiques analysés

Titre du témoin expert impliqué	Cas juridiques	
	Enfants	Adultes
Neurologues		x
Neurochirurgiens		x
Neuropsychologues	x	x
Psychologues	x	x
Psychiatres	x	x
Omnipracticiens		x
Dentistes		x
Chirurgiens-dentistes		x
Chirurgiens-orthopédistes		x
Orthopédistes		x
Oto-rhino-laryngologistes		x
Chirurgiens spécialistes en oto-rhino-laryngologie		x
Chirurgiens		x
Chirurgiens plasticiens		x
Cardiologues		x
Radiologistes		x
Rhumatologues		x
Physiatres		x
Éducateurs spécialisés	x	x
Orthopédagogues		x
Enseignants	x	x
Évaluateurs		x
Conseillers en réadaptation		x
Conseillers en main-d'œuvre		x
Conseillers en orientation		x
Coordonateurs cliniques		x
Coordonateurs de plan d'intervention		x
Agents de ressources humaines		x
Travailleurs sociaux	x	x
Ergothérapeutes	x	x
Physiothérapeutes	x	x
Audiologistes		x
Spécialistes en orthophonie*		x
Orthophonistes	x	x

*La distinction entre un orthophoniste et un spécialiste en orthophonie n'est pas clairement définie dans les transcriptions des tribunaux. On suppose qu'un spécialiste en orthophonie n'a pas la même formation. Les orthophonistes doivent faire partie de l'ordre du Québec, afin de pratiquer dans cette province, alors que ce n'est pas cité pour les spécialistes en orthophonie.

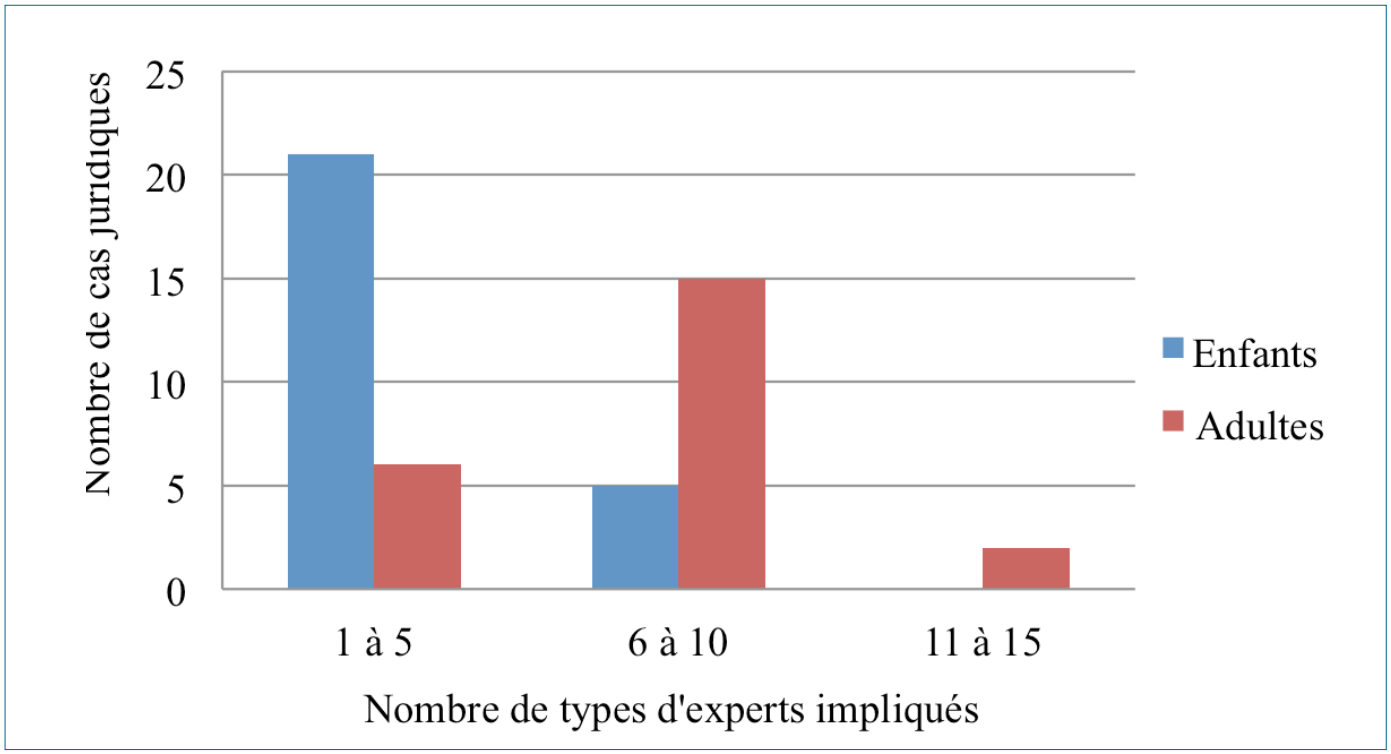

Figure 1. Nombre de cas juridiques dans lesquels plusieurs types d'experts étaient impliqués.

majorité des contributions orthophoniques jugées comme ayant eu un impact fort semblent se limiter à des cas juridiques dans lesquels un nombre relativement restreint de différents experts ait contribué, tant chez les enfants que chez les adultes.

Il semblerait donc que le type de contribution (rapport vs témoignage) ait davantage un effet sur l'impact de cette contribution que le nombre d'experts impliqués; un témoignage ayant plus de poids sur la décision rendue qu'un rapport orthophonique.

Tableau 5. Impact de la contribution de l'orthophoniste en fonction du nombre de professionnels impliqués dans les dossiers enfants et adultes

Nombre d'experts	Impact faible		Impact moyen		Impact fort	
	Enfants	Adultes	Enfants	Adultes	Enfants	Adultes
1 à 5	7 cas	3 cas	3 cas	2 cas	4 cas	1 cas
6 à 10	5 cas	8 cas	3 cas	1 cas	3 cas	1 cas
11 à 15	0 cas	2 cas	1 cas	2 cas	0 cas	0 cas
16 à 20	0 cas	0 cas	0 cas	2 cas	0 cas	0 cas
21 à 25	0 cas	1 cas	0 cas	0 cas	0 cas	0 cas

Faible : la décision du Tribunal va à l'encontre de la contribution de l'orthophoniste ou le rôle de l'orthophoniste se limite à dresser un portrait global de la situation.
Moyen : l'expertise déterminante n'est pas celle de l'orthophoniste, mais elle se base sur la contribution orthophonique.
Fort : l'expertise déterminante est celle de l'orthophoniste.

Discussion

Au terme de cette étude, on peut affirmer que les orthophonistes ont un rôle à jouer en tant que témoin expert dans des cas en litige qui visent tant les enfants que les adultes, et qui touchent tous les champs de pratique de l'orthophonie, soit le langage, la communication, la parole, la voix et la déglutition (OOAQ, 2012). Des questions demeurent par contre sans réponse quant à l'effet sur la décision rendue par le Tribunal du type de contribution de l'orthophoniste (rapport ou témoignage) et du nombre d'experts impliqués dans la cause. L'analyse effectuée dans le cadre de cette étude a également permis d'identifier des cas juridiques où la contribution de l'orthophoniste aurait pu être pertinente, mais dans lesquels l'expertise de ce dernier n'a pas été mise à profit.

Types de cas juridiques répertoriés

La plupart des cas juridiques identifiés à partir des deux bases de données consultées (au total 70 cas) traitaient majoritairement de divorce/séparation, de garde en famille d'accueil et de subventions pour handicapés chez la population enfantine, ainsi que de compensations financières suite à un accident et/ou une lésion professionnelle chez les adultes.

Nature de la contribution de l'orthophoniste

Quoique la majorité des contributions orthophoniques dans les cas juridiques présentés devant le Tribunal implique un rapport écrit plutôt qu'un témoignage en personne, on ne peut conclure que les orthophonistes préfèrent contribuer sous la forme d'un rapport écrit. Lors de l'analyse, il fut par ailleurs souvent difficile de déterminer si l'orthophoniste avait été clairement appelé à contribuer dans un cas juridique ou si son rapport avait plutôt été cité par un autre professionnel. Par exemple, un orthopédagogue pourrait appuyer ses propos à l'aide d'un rapport orthophonique dans un cas d'accès à de meilleurs services professionnels dans les commissions scolaires, si la personne atteinte du trouble de communication ou son délégué responsable avait au préalable consenti à ce que le rapport soit utilisé devant le Tribunal. Il en ressort, néanmoins, qu'un rapport orthophonique, en partie ou en totalité, puisse servir de preuve ou d'appui dans un procès, sans que l'orthophoniste-auteur en soit informé. De plus, malgré que l'analyse n'ait pas permis de répondre à cette question, il est hautement plausible que le choix du type de contribution ne revient pas nécessairement aux experts dans plusieurs cas juridiques.

On peut même émettre l'hypothèse que, si un choix s'imposait, plusieurs orthophonistes opteraient pour la soumission d'un rapport écrit plutôt que de témoigner en personne, et ce, pour plusieurs raisons. Le domaine de la santé est reconnu pour ses ressources limitées, tant financières qu'au niveau du temps mis à la disposition des professionnels qui y œuvrent. Ainsi, peu de professionnels choisiraient, face à une pénurie de services et de longues listes d'attente, de s'investir dans un témoignage devant le Tribunal, même si cette option était souhaitable. Par ailleurs, le témoignage peut entraîner des niveaux de stress beaucoup plus élevés (interrogatoire, contre-interrogatoire, peur de ne pas être en mesure de bien répondre aux questions ou d'émettre une opinion différente de celle des autres) que la rédaction d'un rapport, surtout chez des professionnels qui ont généralement peu ou pas d'expérience dans les témoignages devant le Tribunal et qui n'ont reçu aucune formation à cet effet. En contrepartie, le compte rendu écrit est un exercice très familier aux orthophonistes.

On peut également se demander si l'opinion de l'expert a réellement plus d'influence lorsque ce dernier témoigne devant le Tribunal. Malgré qu'il soit difficile par l'entremise de cette étude de répondre à cette question en raison du faible nombre de témoignages, soit 5 témoignages sur 49 cas juridiques, on peut noter que la contribution de l'orthophoniste a été jugée comme ayant eu un impact fort dans 3 de ces 5 instances, et moyen ou faible dans les 2 autres. Lorsque la contribution se limite à un rapport, l'impact est variable, quoique la plupart des cas aient été classifiés dans les catégories à faible et à moyen impact, avec seulement 6 cas dans la catégorie à fort impact. Même s'il s'avère difficile, selon ces données, d'établir un lien clair entre la nature de la contribution et son impact sur la décision rendue, on peut tout de même supposer que l'impact est plus important lors d'un témoignage puisque le Tribunal a alors la possibilité de mieux cerner l'impartialité et le bien-fondé de l'opinion du professionnel, comparativement à la lecture d'un rapport écrit.

Impact de la contribution de l'orthophoniste

Un faible impact a été attribué à la contribution de l'orthophoniste dans plus de la moitie des cas juridiques analysés (26 sur 49) dans le cadre de cette étude. Ceci pourrait s'expliquer, du moins en partie, par le nombre souvent élevé de témoins de faits et d'experts qui soumettent des éléments-clés au juge. Quoiqu'une relation claire n'ait pu être établie entre le nombre d'experts impliqués et l'impact de la contribution de l'orthophoniste, il semblerait qu'un impact fort

surviendrait plus souvent quand le nombre d'experts différents impliqués dans la cause est limité à 6 ou moins. Par ailleurs, plusieurs professionnels autres que les orthophonistes peuvent se prononcer dans les domaines de la communication, du langage et de la déglutition. Il faut également se rappeler que les catégories de faible, moyen et fort impact demeurent subjectives et s'appuient sur des critères n'ayant pas fait l'objet d'une validation externe.

L'impact de la contribution pourrait, par ailleurs, dépendre du rôle de l'orthophoniste dans le cas juridique. L'orthophoniste était parfois uniquement appelé à dresser un portrait clinique de l'individu, sans se prononcer sur la question en litige, permettant ainsi au juge d'avoir une vision plus éclairée. Par exemple, dans le cas juridique des Affaires sociales – 425 (N.D. contre la Société de l'assurance automobile du Québec, 2000), il était hors du champ d'expertise de l'orthophoniste de prendre position sur le remboursement potentiel des séances en neuropsychologie, son rôle se limitant plutôt à établir la condition du requérant et à faire part d'observations effectuées lors de rencontres avec ce dernier, afin d'aider le juge à trancher.

La contribution orthophonique peut également avoir un faible impact sur la décision rendue lorsque certains éléments-clés de la situation du requérant ne sont pas pris en considération par les divers experts. Dans le cas juridique de G.L. contre la Société de l'assurance automobile du Québec (1999), le Tribunal a considéré que la plupart des experts impliqués, incluant l'orthophoniste, avaient omis la condition médicale du requérant quelque temps après l'accident alors qu'ils auraient dû la comparer à celle qui régnait au moment de la réévaluation quelques années suite à l'accident. Ainsi, puisque la détérioration médicale avait été décrite sur la base de quelques faits isolés, selon le Tribunal, le témoignage des experts a pesé peu dans la décision rendue.

En contrepartie, lorsque la contribution de l'orthophoniste est plus directement en lien avec la question en litige, l'expertise présentée semble davantage être considérée dans la décision rendue. Par exemple, dans le cas juridique de C.L. contre la Société de l'assurance automobile du Québec (2002), l'orthophoniste se prononçait sur l'augmentation potentielle du montant accordé pour un déficit anatomophysiologique (DAP) de la communication. Sur la base des résultats d'évaluations, l'orthophoniste avait conclu que le requérant n'avait qu'un léger manque du mot, ce qui a motivé la décision du Tribunal à ne pas accorder de DAP supplémentaire.

Pertinence de la contribution de l'orthophoniste comme témoin expert

Dans certains cas juridiques retenus, nous avons jugé qu'un orthophoniste aurait pu être appelé à témoigner devant le Tribunal.

Il arrive fréquemment, dans les cas juridiques impliquant des enfants, qu'un autre professionnel appuie son opinion sur le rapport de l'orthophoniste. Dans le cas juridique de C.D. contre la Régie des rentes du Québec (2009) concernant l'allocation pour un enfant handicapé, le pédiatre retenu par la partie intimée s'est prononcé sur la question en litige en se basant sur les rapports d'autres professionnels de la santé, incluant un orthophoniste. Pourtant, dans plusieurs cas juridiques similaires, l'orthophoniste est plus souvent retenu comme expert. Un tel exemple est celui du cas juridique de L.S. contre la Régie des rentes du Québec (2010). L'orthophoniste chargé de réviser la demande d'allocation pour enfant handicapé, en analysant les documents soumis en preuve par les deux parties, a déterminé que la preuve ne répondait pas aux critères nécessaires pour accorder le supplément monétaire en question.

Dans les cas juridiques touchant la garde en famille d'accueil, la contribution de l'orthophoniste prend souvent moins d'importance que celle d'autres professionnels, tels que les psychologues, possiblement en raison des nombreux enjeux psychologiques présents. Dans le cas juridique de la Protection de la jeunesse – 11135 (2011), par exemple, l'orthophoniste a fourni un rapport d'évaluation et un plan de traitement pour un enfant jugé à risque de développer un trouble de langage. Malgré l'implication de cet expert, c'est l'expertise du psychologue qui fut déterminante, étant centrée sur l'état psychologique de l'enfant et celui de sa mère. Le type de cas juridiques semble aussi influencer l'importance de la contribution orthophonique. Lorsque des troubles psychologiques et des troubles de la communication coexistent, l'expert priorisé semble donc être le psychologue puisque ce dernier peut se prononcer sur la situation globale de l'individu, tout en s'appuyant, au besoin, sur le rapport orthophonique.

Les orthophonistes pourraient également être appelés à contribuer plus fréquemment auprès de la population adulte. Par exemple, dans le cas juridique de L.B. contre la Société de l'assurance automobile du Québec (2004), l'orthophoniste aurait pu témoigner au sujet d'une différence notable dans la condition du requérant après son accident, puisque cet expert lui avait dispensé des services professionnels avant l'accident. Mais c'est plutôt

le neurologue qui a rapporté, dans son témoignage, certains éléments du rapport orthophonique post-accident.

Le cas juridique de Di Sabato contre la Commission scolaire des Affluents (2008) est un autre exemple où la contribution d'un orthophoniste aurait pu être pertinente. La question en litige était la suivante : les nodules aux plis vocaux de l'intimée sont-ils liés à son emploi? Malgré que plusieurs professionnels soient intervenus dans le dossier, (chirurgiens spécialistes en oto-rhino-laryngologie et oto-rhino-laryngologistes), et que l'on ait mentionné à plusieurs reprises le suivi du requérant en orthophonie, les notes de progrès et le rapport de l'orthophoniste n'étaient pas disponibles lors du procès. Pourtant, les chirurgiens spécialistes en ORL embauchés par les deux parties ne s'entendaient pas sur le bienfait des traitements en orthophonie, celui embauché par la partie requérante constatait l'échec de tels traitements alors que celui retenu par l'intimée rapportait une amélioration subjective et objective de l'intimée, « [...] [qui] est liée au changement dans l'hygiène vocale et dans l'utilisation de la voix, ainsi qu'aux traitements d'orthophonie ».

Pour le cas juridique relié au support pédagogique et à l'aide aux devoirs (Affaires sociales – 537: J.F. contre la Société de l'assurance automobile du Québec, 2000), la contribution de l'orthophoniste aurait pu être plus significative étant donné, encore une fois, que les autres experts ont présenté des informations en lien avec le langage et la communication de la requérante.

Conclusion

Cette étude avait pour objectif de déterminer si les orthophonistes ont un rôle à jouer en tant que témoin expert dans des cas en litige qui visent tant les enfants que les adultes, d'identifier les problématiques principales des cas juridiques dans lesquels les orthophonistes sont appelés à contribuer, d'identifier les modalités principales de cette contribution (rapport vs témoignage en cour) ainsi que l'impact de cette dernière sur la décision rendue par le Tribunal.

Au terme de cette étude, il est clair que les orthophonistes peuvent agir à titre de témoin expert dans des cas juridiques visant tant les enfants que les adultes, et touchant tous les domaines d'expertise de l'orthophonie (langage, communication, parole, voix et déglutition). Chez les enfants, les problématiques les plus fréquentes dans les cas répertoriés étaient le divorce/la séparation, la garde en famille d'accueil et les subventions pour handicapés, alors que chez la population adulte, la cause principale des litiges était celle des compensations financières suite à un accident et/ou une lésion professionnelle. Cette étude a également permis d'établir que la contribution de l'orthophoniste se limite davantage à un rapport écrit qu'à un témoignage devant le Tribunal dans la majorité des cas en litige.

Quant à l'impact de la contribution de l'orthophoniste sur la décision rendue par le Tribunal, les réponses sont beaucoup moins claires. Quoique qu'un faible impact ait été attribué dans la majorité des cas juridiques analysés dans le cadre de cette étude, il semblerait que le témoignage de l'orthophoniste, même si peu fréquent, a un impact plus important sur la décision rendue qu'un rapport écrit. Il semblerait également que l'impact de la contribution de l'orthophoniste soit plus important lorsqu'un faible nombre de professionnels sont impliqués dans le cas juridique. Aussi, dans les cas où des enjeux particuliers sont présents (par exemple des problèmes psychologiques), en plus des problèmes de langage, de communication, de parole, de voix ou de déglutition, l'expertise de l'orthophoniste semble avoir un poids plus faible que celle d'autres professionnels (par exemple les psychologues), qui peuvent appuyer, au besoin, leur témoignage sur le rapport orthophonique. Finalement, l'impact de la contribution semblerait également dépendre du rôle de l'orthophoniste-expert. Lorsque son rôle est de simplement dresser un portrait clinique de l'individu, l'impact est habituellement faible contrairement aux cas juridiques dans lesquels l'orthophoniste offre une expertise qui est directement en lien avec la question en litige.

Des questions demeurent donc sans réponses quant à l'effet du type de contribution de l'orthophoniste (rapport ou témoignage), du nombre d'experts impliqués dans la cause, de la problématique en cause, et du rôle du témoin expert sur la décision rendue par le Tribunal. Des relations claires n'ont pu être établies, en grande partie en raison du faible nombre de cas juridiques répertoriés, particulièrement le faible nombre de témoignages. Ainsi, il serait souhaitable de répéter l'exercice en augmentant le nombre de cas juridiques. Pour y arriver, il faudrait considérer tous les types de problématiques visées et étendre la recherche à des bases de données juridiques disponibles dans les autres provinces canadiennes, plutôt que de limiter l'analyse aux problématiques les plus fréquemment rencontrées au Québec.

Puisque tout orthophoniste, peu importe son domaine d'expertise, peut être appelé à contribuer à un cas en litige, il est important que la profession soit bien informée, entre autres, sur la définition d'un témoin

expert, du degré d'implication d'un témoin expert et des procédures à suivre pour devenir un témoin expert. Bref, les orthophonistes doivent être bien outillés afin de se sentir plus à l'aise avec un rôle qui leur est, pour la plupart, très peu familier. Le rôle d'un témoin expert et les procédures à suivre devraient donc faire partie des éléments d'apprentissage des orthophonistes, soit par l'entremise du curriculum universitaire ou de la formation continue dans ce domaine. Puisque le témoignage d'un orthophoniste peut avoir un impact important sur la décision du Tribunal, il incombe aux associations et ordres professionnels, notamment Orthophonie et Audiologie Canada, l'association des audiologistes et des orthophonistes de l'Ontario, l'association québécoise des orthophonistes et audiologistes et l'ordre des orthophonistes et des audiologistes du Québec, d'outiller ses membres afin qu'ils puissent bien exécuter leur rôle de témoin expert. Il serait également important d'informer et de sensibiliser les autres professionnels quant aux champs de pratique et aux rôles de l'orthophoniste, afin que tous puissent reconnaître la pertinence de leur contribution.

Par ailleurs, puisqu'un rapport orthophonique peut être présenté à titre de preuve ou de document d'appui lors d'un témoignage devant le Tribunal, sans que l'auteur du rapport en soit nécessairement avisé, il est souhaitable qu'on rappelle aux orthophonistes l'importance d'un rapport et des notes de progrès détaillés, complets et à jour. Encore une fois, les ordres et les associations auraient intérêt à informer leurs membres du fait que les rapports et notes de progrès ne sont pas leur propriété et qu'ils pourraient à n'importe quel moment se retrouver dans les mains d'un expert ou devant le Tribunal. Enfin, il serait intéressant que les orthophonistes ayant déjà été appelés à jouer un rôle de témoin expert dans des cas juridiques partagent leur expérience avec leurs collègues en publiant un compte-rendu dans les revues professionnelles.

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Annexe A : Cas juridiques touchant les enfants

* Les colonnes en gris foncé sont celles analysées dans le présent article

---- : Les lignes en pointillées indiquent que les mêmes requérant et intimée reviennent devant le tribunal pour poursuivre le litige.

Enfants						
Compensation financière suite à un accident	Divorce ou séparation			Garde en famille d'accueil	Services reçus par la commission scolaire	Subventions pour handicapés
	Garde de l'enfant	Pension alimentaire	Sécurité de l'enfant			
Y.M. c. La Société de l'assurance automobile du Québec 2000-12-19	S. T. c. A. D., 2003 CanLII 7536 (QC CS)— 2003-09-23			X, Re, 2002 CanLII 42637 (QC CQ)— 2002-12-16	Commission des droits de la personne et des droits de la jeunesse c. Commission scolaire des Phares, 2004 CanLII 46172 (QC TDP)— 2004-11-30	Affaires sociales — 233 (D.L. c. Régie des rentes du Québec) 1999-03-01
M.L. c. Société de l'assurance automobile du Québec 2003-03-28	G.E. c. Ge.B. 2002-04-29		Dans la situation d'Y.M.-A. 2002-09-05	Dans la situation de L.(D.), 2003 CanLII 16674 (QC CQ)— 2003-02-27	Commission des droits de la personne et des droits de la jeunesse c. Commission scolaire des Phares, 2009 QCTDP 19 (CanLII)— 2009-12-02	M.L. c. Régie des rentes du Québec 2002-05-28
M.L. c. Société de l'assurance automobile du Québec 2003-11-03	É.M. c. N.L. 2004-08-16		X, Re, 2005 CanLII 54699 (QC CQ) — 2005-06-08	D.L. (Dans la situation de) 2004-12-01	Commission scolaire des Phares c. Commission des droits de la personne et des droits de la jeunesse, 2012 QCCA 988 (CanLII)— 2012-05-29	N.B. c. Régie des rentes du Québec 2002-05-29
G.B.-G. c. Société de l'assurance automobile du Québec 2006-08-23	S.I. V. E.E. 2005-09-06		Protection de la jeunesse — 066417, 2006 QCCQ 23320 (CanLII) — 2006-03-09	X, Re, 2003 CanLII 4654 (QC CQ)— 2003-08-26	G.S. c. Québec (Ministre de l'Éducation, du Loisir et du Sport) 2009-11-27	C.B.-R. c. Régie des rentes du Québec 2003-06-23

	E. (G.) c. B. (Ge.), 2002 CanLII 28731 (QC CS) — 2002-04-29	G. P. c. Gh. L., 2005 CanLII 4071 (QC CS)— 2005-02-21	Protection de la jeunesse — 064652 2006-07-06	S. A., Re 2004-02-25	Desgagné c. Québec (Ministre de l'Éducation, du Loisir et du Sport), 2010 QCCS 4838 (CanLII)— 2010-10-13	C.D. c. Régie des rentes du Québec 2009-06-10
	Droit de la famille — 113191 2011-04-29		Protection de la jeunesse - 071622, 2007 QCCQ 8282 (CanLII) — 2007-03-06	X (Dans la situation de) 2004-05-28		L.S. c. Régie des rentes du Québec 2010-07-29
	Droit de la famille — 112699 2011-08-31		Protection de la jeunesse — 114224 2011-03-29	X (Dans la situation de) 2006-02-02		S.Z. c. Régie des rentes du Québec 2010-10-18
	Droit de la famille — 113910, 2011 QCCS 6635 (CanLII)— 2011-11-15		Protection de la jeunesse — 123062, 2012 QCCQ 15887 (CanLII)— 2012-02-27	Protection de la jeunesse — 075745, 2007 QCCQ 21951 (CanLII)— 2007-06-07		L.A. c. Régie des rentes du Québec 2011-06-03
	Droit de la famille — 122230, 2012 QCCS 3907 (CanLII) — 2012-08-03			Protection de la jeunesse — 076098 2007-08-15		
				Protection de la jeunesse — 077508, 2007 QCCQ 17653 (CanLII)— 2007-09-05		
				Protection de la jeunesse — 086340 2008-12-02		
				Protection de la jeunesse — 101039, 2010 QCCQ 13422 (CanLII)— 2010-03-22		

				Protection de la jeunesse — 11135, 2011 QCCQ 2567 (CanLII)— 2011-01-06		
				Protection de la jeunesse — 12378 2012-02-03		
				Protection de la jeunesse — 124119 2012-06-19		
				Protection de la jeunesse — 124119, 2012 QCCQ 8083 (CanLII)— 2012-06-19		
				Protection de la jeunesse — 126919 2012-11-13		

Annexe B : Cas juridiques au sujet des adultes

Adultes		
Compensation financière		Support orthopédagogique individuel et support aux devoirs
Suite à un accident	Lésion professionnelle	
M.F. c. Société de l'assurance automobile du Québec 2010-01-27		Affaires sociales — 537 (J.F. c. Société de l'assurance automobile du Québec) 2000-07-17
G.L. c. Société de l'assurance automobile du Québec 1999-02-18	Simard et Commission scolaire des Samares 2000-08-28	
M.J. c. Société de l'assurance automobile du Québec 1999-06-02	HEATHER SCOTT, partie requérante, et COMMISSION SCOLAIRE SIR WILFRID LAURIER, partie intéressée, et COMMISSION DE LA SANTÉ ET DE LA SÉCURITÉ DU TRAVAIL - Direction régionale Lanaudière, partie intéressée 2003-05-16	
Affaires sociales — 425 (N.D. c. Société de l'assurance automobile du Québec) 2000-02-23	Paolo Chouinard, partie requérante, et Boiseries Architecturales Rageot inc., partie intéressée, et Commission de la santé et de la sécurité du travail, Partie intervenante 2006-05-26	
R.D. c. Société de l'assurance automobile du Québec 2001-03-16	Commission scolaire des Affluents et Di Sabato 2008-11-19	
M.M. c. Société de l'assurance automobile du Québec 2002-01-22	Jean et Montréal (Ville de) 2008-12-05	
C.L. c. Société de l'assurance automobile du Québec 2002-02-15		

B.C. c. Société de l'assurance automobile du Québec 2002-10-28		
I.G. c. Société de l'assurance automobile du Québec 2002-10-28		
C.L. c. Société de l'assurance automobile du Québec 2003-04-23		
J.G. c. Québec (Ministre de l'Emploi, de la Solidarité sociale et de la Famille) 2003-12-11		
L.B. c. Société de l'assurance automobile du Québec 2004-09-07		
R.S. c. Société de l'assurance automobile du Québec 2005-01-12		
R.B. c. Société de l'assurance automobile du Québec 2007-10-15		
L.B. c. Société de l'assurance automobile du Québec 2010-06-02		
S.T. c. Société de l'assurance automobile du Québec 2010-09-07		
S.S. c. Régie des rentes du Québec 2012-06-18		

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Exploring the Validity of the Transsexual Voice Questionnaire for Male-to-Female Transsexuals

Explorer la validité du « Transsexual Voice Questionnaire » *appliqué aux transsexuels d'homme à femme*

KEY WORDS
TRANSSEXUAL
VOICE
QUESTIONNAIRE

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Abstract

Speech and voice feminization for transsexual women is a relatively new field within the scope of speech-language pathology and research in this area is sparse and narrowly focused. The current study investigates the content validity of a newly developed tool, the Transsexual Voice Questionnaire, Male to Female, TVQ^{MtF}, (Dacakis, Davies, Oates, Douglas, & Johnston 2013). Five transsexual women were interviewed and the content of the interviews was compared with the content of the TVQ^{MtF} items. The themes most frequently expressed in the interviews were the themes addressed in the TVQ^{MtF}. Similarly the items on the questionnaire that were rated as particularly problematic concerned the themes that were most frequently raised in the interviews. Although the sample size was small these initial findings indicate that the TVQ^{MtF} may provide a valid picture of transsexual women's real life experiences with voice and is worthy of further study.

Abrégé

La féminisation de la parole et de la voix pour les femmes transsexuelles est un domaine relativement nouveau pour la discipline de l'orthophonie, et la recherche dans ce domaine est rare et étroitement ciblée. Cette étude explore la validité du contenu d'un outil nouvellement développé, le *Transsexual Voice Questionnaire*, d'homme à femme, TVQ^{MtF}, (Dacakis et al. 2013). Cinq femmes transsexuelles ont été interviewées et le contenu de ces entrevues a été comparé au contenu des éléments du TVQ^{MtF}. Les thèmes exprimés le plus fréquemment dans les entrevues étaient ceux qui étaient d'abord soulevés dans le TVQ^{MtF}. De façon semblable, les éléments du questionnaire qui avaient été jugés particulièrement problématiques étaient les mêmes que ceux qui avaient été fréquemment rapportés dans les entrevues. Quoique la taille des échantillons était petite, ces constatations initiales indiquent que le TVQ^{MtF} pourrait offrir un portrait réaliste des expériences de vie de femmes transsexuelles pour ce qui est de la voix et mérite une étude plus approfondie.

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Speech and voice feminization for transsexual women is a relatively new field within the scope of speech-language pathology. In their Standards of Care the World Professional Association for Transgender Health (WPATH) defines 'transsexual' as "Adjective (often applied by the medical profession) to describe individuals who seek to change or who have changed their primary and/or secondary sex characteristics through feminizing or masculinizing medical interventions (hormones and/or surgery), typically accompanied by a permanent change in gender role." (WPATH, 2013, p. 103). For transsexual women the sense of 'being born in the wrong body' may be acute, leading them to take steps to feminize aspects of communication such as speech and voice, to harmonize with their own sense of gender.

Prior Studies

In 2012 Oates reviewed the literature discussing communication changes among transsexual women and found that most papers were chiefly concerned with voice. An earlier study (Pasricha, Dacakis and Oates, 2008) noted that voice was also the aspect of communication with which the transsexual women themselves were mostly concerned. Early investigators into voice feminization in transsexual women looked at the average speaking fundamental frequencies (SFF), equating higher SFF with good intervention outcomes. Trends in the Gelfer and Schofield (2000) data indicated that transsexual women subjects perceived as female did have a higher SFF and higher upper limit SFF than subjects perceived as male.

Other researchers have expanded this line of investigation to include the effect of other acoustic and aerodynamic parameters on perceived speaker gender. Holmberg, Oates, Dacakis, and Grant (2010), for example, found that the use of low speech intensities and increased glottal airflow could contribute to a successful female voice. Studies by Günzburger (1993) and Carew, Dacakis & Oates (2007) largely agree with these findings. Carew et al (2007) and Hillenbrand and Clark (2009) suggest that a combined modification of both SFF and resonance tract formants may be most effective in feminizing the voice. Hancock and Garabedian (2012) come to a similar conclusion but also note that modifications of speech and voice other than SFF and resonance have not been widely studied. Recently Hancock, Colton, and Douglas (2014) suggest upward gliding and larger semitone range of intonations may contribute to feminizing the voice in transsexual women speakers.

Reports by McNeill, Wilson, Clark and Deakin (2008) and Owen and Hancock (2010) have expanded the discussion beyond the link between objective parameters of voice and perceptions of gender. McNeill et al (2008) suggested that simply achieving a higher SFF did not guarantee a transsexual client's happiness with her voice. Both these studies examined the relationship between a transsexual woman's voice and ratings of femininity, as perceived by both herself and her listeners. Both studies found that a higher self-rated degree of femininity corresponded with a higher listener-rated perception of vocal femininity.

This short literature review highlights the expanding areas of interest in the field of transgender communication. Davies, Papp, and Antoni (in press) give an extensive review of this literature.

Laboratory studies of feminine voices have identified some of the gender-related acoustic features of speech and have demonstrated that listeners can and do make judgments of gender based on vocal cues. Researchers have not yet tried to connect the acoustic and perceptual facts to the real life experiences of transsexual persons. This may in part reflect the absence of an appropriate measure of "real-life".

In 2006 an assessment tool, The Self Evaluation of Voice Questionnaire (TSEQ), was published (Davies and Goldberg, 2006a; 2006b). This questionnaire was modified from the Vocal Handicap Index (Jacobson, Johnson, Grywalski, Jacobson, & Benninger, 1997) to be trans-specific. It was designed specifically to measure a transsexual person's concerns with voice and to provide a broad picture of a transsexual individual's experience with voice and the ways that voice relates to sense of self and daily life. In the years since its publication, the TSEQ has been included in feminization protocols by increasing numbers of clinicians and researchers throughout North America and abroad. Although the widespread use of this questionnaire would suggest otherwise, little was known about its characteristics. In particular, the psychometric properties of the TSEQ had not yet been established.

Current Study

In 2008, researchers from La Trobe University in Melbourne and the University of British Columbia in Vancouver began a collaborative project that was initially intended to determine the psychometric properties of the TSEQ. As a first step, the researchers reviewed each item and made revisions that would improve clarity and relevance. These decisions were guided by consultations with transsexual clients and speech-language pathologists as well as the researchers' own clinical experience. The resulting revision of the TSEQ was extensive: 24 of the

30 items in the TSEQ were replaced or significantly modified. (See Dacakis, Davies, Oates, Douglas, & Johnston, 2013 for a detailed account of the revision process.) The item review process had essentially created a new questionnaire. To avoid future confusion this revised version of the TSEQ was renamed the Transsexual Voice Questionnaire, Male to Female (TVQ^{MtF}), and the researchers shifted their investigation of psychometric properties from the TSEQ to the TVQ^{MtF}. Like its predecessor the TVQ^{MtF} has 30 items, each asking the user to rate the frequency of an experience or the strength of agreement with a statement, using a 4 point Likert Scale.

Two studies have now been conducted to provide an initial look at the psychometric properties of the TVQ^{MtF}. The first study investigated reliability (Dacakis et al, 2013). Chronbach's alpha, item-total correlations and intraclass correlations were used to determine internal consistency and test-retest consistency. The results of these analyses all indicated that the TVQ^{MtF} was a reliable assessment instrument (Dacakis et al, 2013).

We are reporting the second study here - an investigation of the content validity of the TVQ^{MtF}. We used data from interviews with transsexual women to address the question: To what degree does the Transsexual Voice Questionnaire, Male to Female (TVQ^{MtF}) provide a valid picture of the concerns of transsexual women about their voices?

Approaches to Validity

Attempts to define validity reach back more than a century. In spite of much effort, validity remains "possibly the most fundamental and the most elusive of all assessment concepts" (Newton, 2013). Theorists writing about validity run the gamut from a positivism that celebrates universals and the science of discovery to a postpositivism that no longer looks for truth but accepts the local and constructed nature of knowledge (Lather, 1993). These philosophical differences are reflected in the types and subtypes of validity that are proposed. Cook and Campbell's (1979) types of validity, i.e. statistical conclusion validity, external validity, and internal validity are clearly different than those discussed by Lather (1993) from her postpositivistic position, i.e. ironic validity, paralogical validity, and voluptuous validity.

A paper published in 1991 by S. Messick of the Educational Testing Service borrows from each end of the continuum – traditional categories of validity but interpretations that are situated in particular moments of practice. "Validity is an integrated evaluative judgment of the *degree* to which empirical evidence and theoretical rationales support the adequacy and appropriateness of inferences and actions based on test scores and other modes of assessment." (Messick, 1991, p.5). Messick argues that validity is not so much a property of a test or other assessment tool as it is a complex decision to be made about an entire body of evidence and theory. The value of any single concept or piece of evidence will depend on the nature and adequacy of past work and the anticipated consequence of the validity decision at a specific time and place.

Given these different views on the fundamental nature of validity, it is not surprising to find different views on content validity as well. In some instances content validity is treated as subordinate to construct validity, in other instances it stands alone. Content validity can be viewed as a characteristic that an assessment tool does or does not have, or as a piece of information that varies in importance from one decision to the next depending on the larger context of data, theory, values, and circumstance. Despite such differences, theorists who write from within the more traditional frameworks are likely to include content validity in their taxonomies and there is considerable agreement about what it entails and how it can be measured.

A working definition of content validity is provided by Haynes, Richard and Kubany, (1995), who state that "content validity is the degree to which elements of an assessment instrument are relevant to, and representative of, the targeted construct" (p.239). A 'targeted construct' is whatever the assessment tool is meant to measure. The TVQ^{MtF} is intended to identify and measure the experiences and concerns of transsexual women about voice and voice change. There are a number of different ways that content validity can be determined, but two in particular seem to fit the size and exploratory nature of our study: criteria-relationships and concurrency.

The first approach assesses validity by establishing a standard against which the TVQ^{MtF} can be evaluated. In our case the standard was the interview content. We examined various aspects of the interview data and determined the degree to which the TVQ^{MtF} agreed with our standard. The second approach takes a slightly different perspective on the data and asks whether or not individual responders performed similarly on the two measures, i.e. did a person who talked at some length about the social consequences of voice also rate social experiences as challenging on the TVQ^{MtF}.

METHOD

This research project was approved by the Behavioural Research Ethics Board at the University of British Columbia, Vancouver, Canada.

Participants

Five women who self-identified as transsexual were the primary participants in this study. They were recruited from the community through posted notices in clinical offices and short talks by the first author at a transgender support group. The five women were a subset of a larger pool of volunteers (6 women, 5 men) and were selected with the following concerns in mind. First, persons in the 'transgender' category group cross or transcend culturally defined categories of gender in diverse ways, including differences in the degree of disparity between their gender identity and the sex they were assigned at birth (WPATH, 2013). In order to make the findings in this initial project as clear as possible, we decided to limit the study to those who identified as transsexual rather than those who fell within the more heterogeneous category of transgender. Secondly, as the study progressed it became evident that the experiences with, and concerns about voice were quite different for transsexual women than they were for transsexual men. The differences stemmed in part from differences in the outcomes of hormone therapy. The androgens frequently prescribed to transsexual men may cause a profound and desired decrease in SFF and SFF range without further intervention. (Damrose, 2009). The hormones given to transsexual women have no analogous effect. To remove this source of heterogeneity in our sample we decided to limit our study to transsexual women. One woman chose to discuss topics unrelated to voice and her experiences with voice, so her data were also excluded from further analysis.

Our final participants were 5 transsexual persons, all Male to Female (MtF). Their ages ranged from 44 to 64 with a mean age of 54.8. All participants were fluent in English and none were communicatively impaired. The length of time presenting as female ranged from 1 year in trans-friendly environments to 7 years, 4 months in all situations. All participants were using feminizing hormones and had been using them for 5 months to 7 years, 4 months. No participants had undergone pitch elevating phonosurgery, 2 out of the 5 had participated in voice therapy and only one had undergone gender reassignment surgery.

Procedures

Each participant was seen once for approximately one hour. The session began with a 30 minute interview exploring their experiences and concerns about their voices. The participants then filled in the TVQ^{MtF} after which they were asked to comment on the TVQ^{MtF} and add any further concerns about voice which had not been elicited in the interview.

A graduate student who had been trained in ethnographic methodology conducted and audio-taped the interviews, beginning with open-ended questions, e.g. "Can you tell me about your voice?" When responses to the very general questions were no longer forthcoming, the interviewer asked a few more specific questions to see if the participant had further ideas to share, e.g. "Are there any situations in which you're more aware of your voice?" Recordings were transcribed by a speech-language pathology graduate student. The transcripts were then reviewed for accuracy by the first author as she listened to the audio recordings. (Heilmann et al, 2008). This approach to transcript reliability has been developed and evaluated extensively by Jon Miller and his colleagues at the Language Sample Analysis Laboratory at the Weismann Centre, University of Wisconsin, Madison (Heilmann, et al, 2008). It is more economical than the traditional procedure of comparing two independently prepared transcripts of the same session and yet yields high levels of accuracy.

Discourse and Content Analysis

In order to reach our research goals we needed a way to describe the interviews and the TVQ^{MtF} data in the same terms. We developed an analysis scheme by looking closely at the questionnaire and identifying the recurring themes that seemed to underlie the questions. We found six such themes:

1. Effect of voice on ease of social interaction
2. Effect of voice on emotions
3. Relationship between voice and gender identity
4. Effort and concentration required to produce voice
5. Physical aspects of voice production
6. Pitch

This scheme was used to code the content of both the TVQ^{MtF} and the interviews. Each of the TVQ^{MtF} items and each idea expressed in an interview was tagged as belonging to one or another of the six content themes. Items that could not be assigned to a theme were noted as such. The two authors and a senior colleague made the decisions about content and will be referred to as "coders." All three were experienced speech-language pathologists

with considerable expertise in discourse analysis, voice assessment, and/or the analysis of spontaneous conversational samples. All final codes were consensus decisions; disagreements were resolved by discussion.

Coding of the TVQ^{MtF} required decisions about the general topic area that each questionnaire item represented. Table 1 summarizes these relationships. As can be seen, 29 of the 30 items could be classified in one or another of the six content areas of our coding scheme, with the number of items per theme varying from 3 to 7. This correspondence is not surprising since the themes were initially drawn from the TVQ^{MtF}.

The only item remaining outside one of the 6 content areas was #23: "My voice restricts the sort of work I do". This item turned out to be a loner. There were no other TVQ^{MtF} items on the topic of employment and it was not raised by anyone being interviewed. Since our project was not designed for item-by-item analysis, we are unable to comment further.

Coding of the interview transcripts was a more complex task that required decisions about three aspects of the discourse: turn boundaries; presence or absence of substantive ideas; and the meaning category of each idea identified. Basically, the coders had to decide what, if anything, the interviewee was talking about each time she

Table 1: The items that fall into each of the content themes derived from the TVQ^{MtF}.

Theme	Item#	TVQMtF Items	Total items in theme
#1: Effect of voice on social interaction			7
	7	I avoid using the phone because of my voice	
	8	I'm tense when talking with others because of my voice	
	12	I feel uncomfortable talking to friends, neighbours and relatives because of my voice	
	13	I avoid speaking in public because of my voice	
	17	My voice difficulties restrict my social life	
	25	I am less outgoing because of my voice	
	26	I feel self-conscious about how strangers perceive my voice	
#2: Effect of voice on emotion			6
	2	I feel anxious when I know I have to use my voice	
	14	My voice sounds artificial	
	16	I feel frustrated with trying to change my voice	
	24	I feel my voice does not reflect the true me	
	28	It distresses me when I am perceived as a man because of my voice	
	30	I feel discriminated against because of my voice	

#3: Relationship between voice and gender identity	3	My voice makes me feel less feminine than I would like	5
	6	My voice gets in the way of me living as a woman	
	10	My voice makes it hard for me to be identified as a woman	
	19	When I laugh I sound like a man	
	20	My voice doesn't match my physical appearance	
#4: Effort, concentration needed to produce voice			3
	15	I have to concentrate to make my voice sound the way I want it to sound	
	18	When I'm not paying attention my pitch goes down	
	21	I use a great deal of effort to produce my voice	
#5: Physical aspects of voice production			4
	1	People have difficulty hearing me in a noisy room	
	9	My voice gets croaky, hoarse or husky when I try to speak in a female voice	
	22	My voice gets tired quickly	
	27	My voice "gives out" in the middle of speaking	
#6: Pitch			4
	4	The pitch of my speaking voice is too low	
	5	The pitch of my voice is unreliable	
	11	When I speak the pitch of my voice does not vary enough	
	29	The pitch of my speaking voice is restricted	

took a conversational turn. For the purposes of this project an "idea" was defined as a topic consistent utterance or set of utterances. A given idea ended with the introduction of a new theme-topic. To be counted as a distinct "idea" a passage needed to focus on a topic that could be distinguished from other topics in the surrounding text. This notion of a general thematic "idea" is similar to what has elsewhere been called a "discourse topic" (Brown & Yule, 1983) as opposed to a propositional topic. An example of the analysis is provided in the Appendix. Note that our definition does not rule out redundancy; a given idea can persist throughout an interview.

The three coders read the transcripts and identified and classified each idea about voice that was expressed in the interviews. They also noted when the interviewee talked about an aspect of voice for which there was no coding category or introduced topics that did not concern voice.

Although there were only five participants, the interview database was quite substantial. The coders reviewed some 780 utterances spoken by the transsexual women, divided these utterances into 196 turns, and then within those turns identified and classified 316 ideas, 240 of them were explicitly about voice.

Results

Although the interviews were focused on voice, preliminary analyses revealed that, on average, 24% of the ideas expressed did not specifically concern voice, and while these topics were appropriate in context, they could not address our research questions. Among other things the interviewees talked about aspects of gender presentation other than voice, and language forms and patterns often identified with female and male speakers (Tannen, 1990). They also asked for clarification, or in some other way managed the conversation. In the analyses that follow, we will only use the 240 ideas expressed about voice.

Tests of Criteria-Relationship

Our first specific research question was, "Do the TVQ^{MtF} items cover the same concerns about voice as are spontaneously raised by transsexual women?

We began with a general comparison of the thematic content of the TVQ^{MtF} and the thematic content of the interviews. Taking the interview data as the criteria we found that virtually all of the TVQ items (29 out of 30) do address the concerns and experiences voiced by the interviewees. This is one indication of questionnaire validity. However, it was also true that 24% (N=58) of the voice related ideas from the interviews did not fit into the TVQ^{MtF}-based thematic categories.

The most frequently mentioned area of concern not found in the TVQ^{MtF} was voice change. Comments and questions about the likelihood of voice change and the role of therapy in this process comprise 10.7% of the ideas expressed. This broad category is shown in Table 2, column 7.

The remaining 13.2% of the voice related interview content was comprised of an assortment of topics, briefly discussed, often by only one person: surgery, non-speech vocalization, such as laughing or coughing, speech and voice variation depending on conversational partner, and the holistic nature of the feminization process. These topics are grouped together in column 8, not because they share content, but merely to account for the remaining percentage points.

Thus far the content comparisons had showed that while virtually all of the TVQ^{MtF} items dealt with ideas that had been spontaneously raised by the transsexual women, the questionnaire did not address the full array of their concerns. However, looking further at the six interview topics that did not fit within the thematic categories of the TVQ^{MtF}, they seemed to be topics that were inherently low frequency. We tested the relationship between frequency

Table 2. PIndividual and mean percentages of voice-related ideas expressed in the interviews for each content theme in the TVQ^{MtF} [a].

	TVQ^{MtF} Content Themes							
ID	#1 Social Interact	#2 Emotions	#3 Gender Identity	#4 Effort	#5 Physical Aspects	#6 Pitch	#7 Change Process	#8 Other Voice
1.	9.0	4.5	19.4	14.9	3.0	22.4	7.9	19
2.	4.6	6.8	27.0	6.8	15.9	22.7	0.0	5
3.	4.6	9.1	27	13.6	3.0	9.1	14.3	19
4.	6.3	18.8	31.3	12.5	0.0	12.5	12.5	6.3
5.	3.3	3.3	40	3.3	3.3	20	10	16.7
Mean	**5.6**	**8.5**	**29.**	**10.2**	**5.1**	**17**	**10.7**	**13.2**
(sd)	**(2.2)**	**(6.2)**	**(7.5)**	**(5)**	**(6.2)**	**(6.2)**	**(2 .6)**	**(7)**

a. All values in this table are percentages. The % symbols were omitted to improve readability.

and inclusion in the questionnaire, using Fisher's Exact Probability Test for a 2 X 2 cross tabulation, i.e. themes that occurred in the interviews with High and Low frequency crossed with interview topics that were In or Out of the questionnaire. The relationship proved significant, p=.040. The TVQ^{MtF} items primarily dealt with the ideas that occurred more frequently in the interviews. There is a practical limitation on the number of items that can be included in a questionnaire. Given that the whole array of topics could not be included, the fact that the TVQ^{MtF} tends to include those topics that are more likely to be raised by the transsexual women themselves is good evidence of representativeness.

Our last criteria-related analysis looked further at the representativeness of the TVQ^{MtF}, using the data that related to our initial six themes. In the cross-tab analysis it was largely these themes that had been grouped together as being High Frequency. We now treated each theme individually and calculated the proportional frequency of mention for each theme in each of the five interviews. Table 2 provides both the individual and the group data. It is clear from this table, and from Table 1, that neither the questionnaire items nor the ideas expressed in the interviews were distributed evenly across the six themes. Some ideas were expressed relatively more often than others and there were more items for some themes than others. We calculated a Spearman rank order correlation between the distribution of ideas in the interviews and items in the questionnaire. A correlation coefficient of -.25 indicated that there was no reliable relationship between these distributions. The TVQ^{MtF} items dealt with content themes that were also voiced by our transsexual interviewees, but not proportionally. Ideas that occurred more frequently in the interviews were not necessarily the ideas that were explored with more questionnaire items.

To aid in the interpretation of this finding, we looked again at the data in Table 2. The standard deviations for some of the themes indicate similar degrees of interest across the five women. Other themes have relatively large standard deviations because one or two of the women show a much greater interest in the topic than do the rest of the women. A larger database would be needed to describe and interpret such differences. As a starting point however, we calculated Kendall's coefficient of concordance to see the degree to which the 5 participants agreed in their choice of themes to talk about, and at what length. The W coefficient was .63, significant at $p<0.01$. This value indicated a moderately strong level of agreement among the participants as to the relative importance of the various themes.

To summarize our criteria-related tests of validity, we found good evidence of both relevance and representativeness. Relevance is seen in the fact that 29 of 30 items in the questionnaire focused on concerns and experiences that had been raised by transsexual women in the interviews. Assuming that importance is reflected to some degree in frequency of mention, there was considerable agreement among the women as to the relative importance of the various themes. Representativeness is seen in the fact that the themes most likely to be included in the TVQ^{MtF} were the themes that had high frequencies of mention in the interviews.

Tests of Concurrency

We turn next to analyses designed to answer our second research question: "Do the rating responses of transsexual women on the TVQ^{MtF} indicate the same degree of relative concern for a topic as was indicated in their interviews?" This is essentially a test of concurrent validity. The women participated in an interview about their voice and then later on the same day completed the TVQ^{MtF}. We look at the question, "To what degree do their responses in these two tasks agree?"

Each TVQ^{MtF} item requires the participant to respond by checking a number from 1 to 4. Higher values indicate greater levels of concern or higher frequencies of occurrence. Our research question was explored by looking to see whether the issues raised and discussed most often in the interviews were the same as the issues that had been checked with higher numbers on the TVQ^{MtF}. For each of the TVQ^{MtF} themes we took the numbers checked on all of the items belonging to that theme by all of the participants, and calculated an average response score. These average scores represented the degree of participant concern about each of the content areas. For example, as can be seen in Table 1, there were three TVQ^{MtF} items (15, 18, 21) belonging to Theme 4, "effort and concentration required to produce voice". The average response score for this theme was 3.5. In contrast, the comparable mean score for the seven items belonging to Theme 1 "the effect of voice on the ease of social interaction" was only 2.5. We rank ordered the average response scores for each of the six TVQ^{MtF} content themes, and compared that rank order to the rank order based on the relative number of times a given theme-idea was expressed during the interviews. The Spearman rank order correlation coefficient for this comparison was .77, indicating a strong level of agreement. Due in large part to the small number of comparisons, this value did not reach statistical significance. Nevertheless, for any given theme, if the average response score on the TVQ^{MtF} was high, the

average occurrence of that theme in the interview data also tended to be high.

As a final test of validity, we used percent-of-responses-at-level-"4 (usually or always)" as another measure of the level of concern about each theme. Again combining the data from all of the items belonging to a theme and from all of the participants, we calculated the percent-of-responses-at-level-4 for each content theme. We compared the rank order of these percentages with the rank order of the themes as indicated by frequency of mention during the interview. The rank order correlation coefficient for these two variables was .89, statistically reliable at $p<.05$. This coefficient indicates a very strong agreement between the level of concern about a given content theme that was evident in the TVQ^{MtF} responses and the level of concern evident in the interviews. Interview topics that were raised and discussed more often were more often rated with "4".

Discussion

Major Findings

This study was designed to determine whether the Transsexual Voice Questionnaire (Male to Female) provides a valid picture of transsexual women's concerns and experiences with voice. We attempted to answer this question by comparing features of content, structure, and response in the TVQ^{MtF} with the views expressed by transsexual women themselves. Specifically we asked (a) if the content themes in the TVQ^{MtF} corresponded with the content of the interviews, (b) whether the proportional distribution of TVQ^{MtF} items across themes mirrored the distribution of ideas found in the interviews, and (c) if the themes rated as problematic on the TVQ^{MtF} were also the themes that were discussed more frequently and at greater length in the interviews. These are the major findings from these analyses:

- All of the content themes in the TVQ^{MtF} also occurred in the interviews.
- The TVQ^{MtF} content categories did not cover all of the ideas expressed by the interviewees, but the ideas that were covered tended to be high frequency, and by inference, important.
- Severity ratings on the TVQ^{MtF} were in accord with the likelihood and extent that a given theme would be raised and discussed in the interview.

Taken together, these findings provide empirical evidence of the validity of the TVQ^{MtF}, or in the framework of Messick, they would contribute to an *integrative evaluative judgment* that the TVQ^{MtF} could be used in a given situation.

Research Implications

Using Scores

The one test that did not have a positive outcome was our detailed test of proportional representation. According to Haynes et al. (1995), similarities in proportional distributions would be one way to demonstrate representativeness and ultimately the content validity of the TVQ^{MtF}. We found that the proportional distribution of *items* across themes did not match the proportional distribution of *ideas* across themes. The interviewees and the questionnaire differed as to which themes deserved the greatest attention. While proportionality would indeed contribute to the validation process, its absence is more difficult to interpret. In the present study it seems that the scope of some themes, e.g. 'the effect of voice on social interactions', is very wide and naturally invites a larger number of items than themes such as 'pitch'. If this is true, an even distribution of items across themes would present a distorted view of voice concerns. Clinicians and researchers who wish to "score" the TVQ^{MtF} should keep in mind the uneven distribution of items across themes and either use theme weights when calculating total scores or avoid overall scores and instead use scores for sections defined by content themes .

Questions about scoring would be best answered by multivariate analyses but the small size of our database precluded the use of these approaches. With a larger database it would be possible to use procedures such as Discriminant Function Analysis and Factor Analysis to address questions about individual differences or about the dimensions or factors that underlie responses on the TVQ^{MtF}. These factors may resemble the topic themes used in the present study, or they may point to some aspects of personality or circumstance that have broad influence such as optimism, sociability, or self-directedness. In either case, scoring systems could be developed from the dimensional data such that the total score represented each dimension equally or gave more weight to dimensions that reflected the client's values and goals.

Future directions

The positive findings reported in both the Dacakis et al (2013) study of reliability, and the study of validity reported here invite further investigation of the new questionnaire. Given the small number of participants in the current study our findings can certainly be viewed as preliminary, but they also can be viewed as initial, i.e. as the first steps in the development of the body of evidence needed to guide assessment decisions.

We are still in the early stages of understanding gender markers in voice and communication and how to affect their change in transsexual people. The current body of literature is small, with small numbers of participants in the studies and lack of control groups. In her review of the literature Oates (2012) notes that the current evidence for voice therapy's effectiveness in this population is weak. She found that the data reported in 83% of the studies consisted of expert opinion or consensus - "the very lowest level on the evidence hierarchy. The remaining 17% of publications in this field provide only marginally stronger evidence" (Oates, 2012, p. 59). We need larger studies designed to provide higher levels of evidence to confirm, disconfirm or nuance the initial findings reported here.

Research Priorities

Findings of this research project have clear implications for clinical researchers wishing to start new lines of inquiry. As indicated in Table 2, "The relationship between voice and gender identity" was the theme most frequently raised in the interviews. Not only did it have the highest mean value for percentage of ideas expressed, 29%, but it was ranked in importance as number 1 or 2 by each of our five participants. As one participant put it, "The voice is how you express that [the gender transition] journey." This concern with voice was also expressed by the transsexual women that Dacakis et al. (2013) interviewed during the development of the TVQ^{MtF}. Yet in the larger clinical and research literature concerning gender transition, voice is rarely discussed. This suggests a critical need for need for input from speech-language pathologists and linguists about the role of voice in gender transition.

Theme #6, 'Pitch' was rated as the second highest in importance by the interview participants, and contained 17% of spontaneously raised content. This is not surprising. Pitch is perhaps the easiest perceptual variable to hear in a voice and there are established norms for average speaking pitch ranges for cis (genetic) men and cis women (Hillenbrand & Clark, 2009). However what is commonly understood as 'pitch' includes contributions both from the larynx (fundamental frequency and harmonics) and vocal tract (formant frequencies). It is perceptually difficult to distinguish between these two inputs and most probably the women in this study have the layperson's more general understanding of the term 'pitch'. The complex interplay of laryngeal and vocal tract contributions to pitch perception is an area that would welcome research and would have clinical applications.

Clinical Interpretations and Applications

As is true with any assessment tool, effective use of the TVQ^{MtF} increases with knowledge and experience. The following points may be useful to remember while using this questionnaire. First, it is important to keep in mind that TVQ^{MtF} responses are Likert scale responses. As such they can convey only order, not unitized quantity. If a transsexual woman originally responds to a question by marking "4" and later responds with a "2", we know that she is now less concerned about that matter but we do not know how much less.

Knowledge of the psychosocial background of the individual completing the TVQ^{MtF} may also prove useful when interpreting the responses. This seems particularly true of the questions associated with Themes 1 and 2. Item 7, for example, reads "I avoid using the phone because of my voice." With today's technology, it is hard to imagine the circumstances that would lead to a "4" for that item. On the other hand, a "4" rating on item 13, "I avoid speaking in public because of my voice" is easy to imagine. Clinicians may wish to decide item by item which answers imply the more severe social problem.

In some cases it may even be that the absence of a problem is the problem. Consider two possibilities for rating item #17 "My voice difficulties restrict my social life" with a "1" (never or rarely). One woman may respond this way because she has a healthy, active social life while another may not experience problems with her voice in social situations because she is socially isolated. Some transsexual women, fearing ridicule or violence, rarely go out in public. As they are not putting themselves into situations where social interaction as a female is difficult the voice may not be perceived as a problem. If such a woman later rates this item with a "2" (sometimes) or "3" (often) it may actually represent progress in her transition.

Ten percent of the spontaneously raised interview content fell under the theme of "Effort and concentration required to produce voice", however only 5% of the content came under the heading, "Physical aspects of voice production". This suggests that for these participants the effort was one of vigilance and constant monitoring of the voice rather than as a sense of physical strain. One participant described her 'feedback loop' which she used to continuously monitor her voice to keep it sounding as she wished. It appears that significant mental effort is commonly needed to achieve and maintain a feminine voice. Advances in the neurosciences may lead to a better specification of that mental effort and new possibilities for intervention.

Alfred Wolfson, the iconic voice teacher from the early 20th century, is quoted as saying, "The voice is the muscle

of the soul." (Wise, 2007). There is discomfort if the voice does not reflect an individual's sense of self. The TVQ^{MtF} was developed to assist researchers, speech-language pathologists and transsexual people in an exploration of the voice: how it relates to a sense of gender identity and how it affects day to day function in the world. The current investigation presents initial evidence that the TVQ^{MtF} used thoughtfully and with appropriate knowledge, can present a valid picture of these issues for transsexual women.

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Authors' Note

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Appendix

Sample of interview transcription with content coded by theme

J = interviewer; P = MtF transsexual woman

J. Will you just tell me about your voice. What do you think about it?

P. I think it's a, what do I think about my voice? It's probably not where I want it to be./7/

J. Mmm-hmm

P. It's probably, ah, well, for one, I guess everyone's going to recognize you if they listen to you. And I'm just thinking it's probably more of a male voice than a female voice,/3/ and that's what I'm looking at right now, is, having a higher pitch/6/ and I, so that I don't-'caus that's the worst thing you can do, is you can go and look nice, and then you have this deep voice, or just something uh, when you're not thinking about it. And that's the biggest thing, you're always thinking about your voice,/4/ 'caus you don't want to, it not out you basically /3/.

Speech Recognition in Noise in 5-Year-Old Normal-Hearing Children

La reconnaissance de la parole dans le bruit par des enfants de cinq ans qui ont une acuité auditive normale

KEY WORDS

SPEECH RECOGNITION

NOISE

CHILDREN

NORMAL-HEARING

BINAURAL MASKING LEVEL DIFFERENCE

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Abstract

Objective: The objective of this study was to investigate if Hagerman's 3-word-utterances in monaural or binaural noise are appropriate for testing 5-year-old children.

Design: This test is a modification of Hagerman's 5-word-sentences, where the first two words are omitted in order to make it easier for children. The influence of three factors were evaluated; type of noise (slightly or fully modulated), noise presentation (monaural or binaural), and gender (male or female).

Study sample: Twenty normal-hearing 5-year-old children.

Results: The 5-year-old children could not take advantage of the short valleys in the modulated noise in the 3-word-utterances to the same extent as adults could in the original 5-word-sentences. A significant improvement was obtained with binaural noise compared to monaural noise (binaural masking level difference, BMLD) for both slightly and fully modulated noise. Boys showed significantly better results than girls.

Conclusions: The children were able to complete this test without problems. The results may be used as preliminary reference material for 5-year-old children.

Abrégé

Objectif : Explorer si les énoncés de trois mots de Hagerman dans des situations d'écoute monaurale ou binaurale dans le bruit sont appropriés pour évaluer des enfants de cinq ans.

Conception: Ce test est une modification de celui de phrases à cinq mots de Hagerman où les deux premiers mots sont enlevés pour que ce soit plus facile pour les enfants. L'influence de trois facteurs a été évaluée : le type de bruit (légèrement ou entièrement modulé), la présentation du bruit (monaurale ou binaurale) et sexe (gars ou fille).

Échantillon de l'étude : Vingt enfants de cinq ans ayant une acuité auditive normale.

Résultats : Les enfants de cinq ans n'ont pas pu bénéficier des courts intervalles de silence dans le bruit modulé des énoncés de trois mots autant que les adultes ont pu le faire avec les énoncés originaux de cinq mots. Les résultats montrent une amélioration significative des performances avec les bruits binauraux comparé aux bruits monauraux (différence des seuils masqués en binaural, DNMB) pour les deux types de bruit. Les garçons ont obtenu de meilleurs résultats que les filles.

Conclusions : Les enfants ont réussi ce test sans problème. Les résultats peuvent être utilisés à titre de référence préliminaire pour les enfants de cinq ans.

Abbreviations:

BMLD, binaural masking level difference
FUM, fully modulated
FUMB, fully modulated, binaural
SM, slightly modulated
SMB, slightly modulated, binaural
S/N, signal-to-noise ratio

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Introduction

The often noisy environment in preschools (McAllister, Granqvist, Sjölander, & Sundberg, 2009; Sjödin, Kjellberg, Knutsson, Landström, & Lindberg, 2012) can make it difficult for anyone to communicate. For a child, even a minimal degree of sensorineural hearing loss degrades the ability to recognize speech in noise (Crandell, 1993). It is therefore important to have a test for children's – and especially for hearing impaired children's – ability to communicate in noise. To date, a speech-in-noise test for children has been lacking in Sweden. Such a test may be useful for functional and differential diagnostics of children with hearing impairment. Furthermore, some children with learning problems experience speech-sound perception deficiencies that are wore in background noise (Cunningham, Nicol, Zecker, Bradlow, & Kraus, 2001). In Sweden, Hagerman's 5-word- sentences in noise is a test widely used for adults. However, for young children five words at a time can be too many for their short-term memory. Gathercole, Hitch, Service, and Martin (1997) showed that five-year-old children could not repeat more than four digits at a time. Therefore, a modified version of the Hagerman's test material using only 3-word-utterances was prepared and evaluated.

When listening monaurally to speech in noise, it will be easier to recognize speech if the same noise is also presented simultaneously to the opposite ear. This is one example of the so-called binaural masking level difference (BMLD), although the basic form of BMLD makes use of dichotic signals with 180 degrees phase difference of the signals and identical noise in the two ears (Johansson & Arlinger, 2002). Similar results are obtained with signals other than speech; e.g., pure tones. By adding an identical and in-phase noise contralaterally to the 3-word-utterances, we added a BMLD test to the study, although this part of the test was only a secondary goal. It may be valuable as a diagnostic test of children with perceptual problems (e.g. Putter-Katz, Feldman, & Hildesheimer, 2011; Sweetow & Reddell, 1978). However, some researchers have found no relationship between BMLD results and language problems in children (Breier, Fletcher, Foorman, Klaas, & Gray, 2003; Roush & Tait, 1984). We found very few articles on this issue and none using speech as the stimulus signal in the BMLD measurements.

Objective

The purpose of this study was to investigate if Hagerman's lists of 3-word-utterances in monaural or binaural noise are suitable for testing 5-year-old children.

Methods

Speech and noise material

Hagerman's sentence lists consist of 10 lists, each with ten 5-word-sentences (Hagerman, 1982). All lists have the same content of recorded words, but in different order. This gives a high probability that the lists are equally difficult for any individual. Only one original list of sentences was recorded. Then each word was cut out digitally and new lists with new sentences were put together. "Peter bought six new pencils" is an example of an original sentence. All sentences are constructed in a similar way. In another list one might find the sentence "Anna bought five new balls". Test-retest reliability for normal-hearing adults, using two lists for a threshold measurement is 0.4 dB in the slightly modulated noise (Hagerman & Kinnefors, 1995) and 0.6 dB in the fully modulated noise conditions (Hagerman, 1997). Speech-in-noise tests of this type are now available in many languages (Zokoll et al., 2013).

To create 3-word-utterances, the recordings of Hagerman´s Swedish 5-word-sentences in noise were used with the original versions of the various words stored digitally in the computer with a sampling rate of 30 kHz (Hagerman, 1982). The first two words in each sentence ("name + verb") were omitted, resulting in utterances like "six new pencils"; i.e. "numeral + adjective + noun". There were 12 lists, each with ten 3-word-utterances. All lists had exactly the same recordings of the 30 words. The same noise signals as those described below for the 5-word-sentences were used for the 3-word-utterances. There were two versions of the noise, the original, "slightly" modulated (SM) and a modified version, which is "fully" modulated (FUM). Both had a long-term average spectrum identical to that of the speech read by a female voice and were produced from, and for, the 5-word-sentences. The modulator was a noise with most of its energy between 1 and 5 Hz , and with a spectrum similar to the modulation spectrum of normal speech (Hagerman, 1982). The SM noise was modulated to a degree of 10%. The FUM noise was modulated to a degree of 100%; i.e., with the modulator level varying through the full range of the digital-analogue converter. The SM noise was identical for all sentence lists used (Hagerman, 1982). However, the FUM noise was different for each sentence list, since it had been cut into pieces and put together again in order to get the same noise segment behind identical words in the different lists (Hagerman, 1997). The noise was presented either monaurally in the same (right) ear as the speech, or binaurally in both ears simultaneously with identical phase in both ears.

The speech level was defined as the equivalent unweighted long-term sound pressure level of the speech

signal without pauses between the sentences. The noise level was defined accordingly. The calibration was made using a Brüel & Kjær Artificial Ear, Type 4153.

Subjects

Twenty-four children from two different preschools participated in the study. Tympanometry was conducted after the speech tests were administered. The inclusion region was +/- 100 daPa. After testing, speech test results for four children were omitted due to unsatisfactory tympanometry results. Therefore, results are based on 13 boys and 7 girls (mean=5.7, SD= 0.3 years). No audiograms were collected, but all were considered to have normal hearing based on parents' knowledge about earlier hearing tests, mostly from the general Swedish check-up, including hearing tests, at 4 years of age. All children were considered to have typical development, since no parents were aware of any learning difficulties or other related difficulties. All children had Swedish as their native language and no one had a severe cold at the time of the test. Hogan and Moore found that among children with a history of otitis media effusions those with an effusion prevalence within the fourth quartile had significantly worse BMLD results compared to the rest of the group, as measured when the ears were normal (Hogan & Moore, 2003). However, the children in our test group had no such problems, according to the parents.

Equipment

The measurements were performed in quiet rooms in the two preschools. Speech and noise signals were presented from a signal processor (Tucker-Davis Technologies, System 3) via headphones (Sennheiser, HDA 200). A personal computer containing our software controlled the signal processor and the test routine. All computer and the Tucker-Davis equipment software was written in our laboratory.

Procedure

Ear canals and eardrums were checked with an otoscope. Speech was always presented to the right ear. The noise was presented either to the right ear or binaurally, with the level fixed at 65 dB SPL (calibrated on an artificial ear B&K 4153). Each subject listened to 10 lists, including two training lists. The first utterance of the first training list had a signal-to-noise ratio (S/N) of +10 dB. As long as 2 or 3 correct words were obtained, S, the speech level, was decreased 5 dB after each utterance. After the first time that only 1 or 0 correct words were obtained and onwards, the speech level was changed after each utterance according to the adaptive scheme shown in Table 1. This scheme was then continuously followed between and within consecutive lists. The method aims to achieve a threshold of 67% correct answers, instead of 40 % as in the original test, to keep the children motivated.

After each utterance the noise was stopped and an oral response was awaited. When the number of correct responses had been recorded, the next utterance was presented. The mean value of the S/N settings, in dB, chosen after each of the ten utterances, was presented as the threshold value of the list. Five test lists were presented with the SM noise and five with the FUM noise. The children were divided into two groups. Group 1 (n=12) started with a training list and four test lists with the SM noise; two lists (i.e. test-retest) with monaural noise and then two lists with binaural noise (the last two called SMB). They then listened to one training list and four test lists with the FUM noise, two lists with monaural noise, and then two lists with binaural noise (the last two called FUMB). Group 2 (n=8) were tested in the same way, but with the two types of noise in reverse order, to balance learning effects for the two types of noise. However, due to the drop-out of four subjects with unsatisfactory tympanometry, the balancing of the learning effects between the two noise types was slightly reduced.

Table 1. Change of speech level (dB), after an utterance, based on number of correctly repeated words. This scheme pertains to the SM noise. When the FUM noise is used the size of the changes are doubled. This scheme was used throughout the study after the first time less than 2 correct responses out of 3 were obtained.

Number of correct responses	0	1	2	3
Speech level change, dB	+2	+1	0	-1

The duration of the whole test procedure was about one hour, including an intermission of 15 to 20 minutes.

Results

Raw data are shown in Table 2. To obtain good reliability in a clinical test routine, we suggest that the threshold should be measured with one training list and two test lists. Therefore, mean thresholds were also calculated for the two-test and retest lists that had equal presentation modes. This resulted in four mean values per subject, one for the SM noise (with monaural noise), one for the SMB noise (with binaural noise) one for the FUM noise (with monaural noise), and one for the FUMB noise (with binaural noise).

Table 2. Individual and mean threshold values in dB for the first and second test list in each presentation mode. Subjects with numbers above 200 started with the four thresholds in the FUM noise. SM=slightly modulated, SMB=slightly modulated, binaural, FUM=fully modulated, FUMB=fully modulated, binaural. The last three rows show the standard deviations of the individual test and retest means.

Subject	Gender	SM1	SM2	SMB1	SMB2	FUM1	FUM2	FUMB1	FUMB2
104	girl	-3.0	-4.6	-7.0	-7.2	-3.6	-2.6	-4.4	-4.4
105	girl	-2.6	-3.2	-4.0	-6.4	1.2	-2.2	-2.2	-9.2
204	girl	-3.2	-1.6	-4.4	-4.9	-3.6	-5.8	-5.2	-7.4
101	girl	-3.6	-3.0	-5.1	-6.9	-2.4	-4.4	-7.2	-9.8
102	girl	-3.2	-3.1	-4.5	-6.9	-1.2	-5.2	-7.0	-6.6
103	girl	4.6	0.9	-1.7	-3.5	0.8	-1.8	-5.4	-6.2
201	girl	0.2	-3.1	-6.0	-4.8	-0.3	-0.6	-1.2	-4.0
154	boy	0.2	-2.3	-6.0	-4.9	-0.8	-0.8	-5.0	-4.6
155	boy	-4.5	-4.5	-7.4	-7.9	-4.6	-6.8	-6.8	-9.6
156	boy	-4.0	-4.2	-6.8	-8.1	-4.2	-5.4	-9.4	-8.8
255	boy	-3.1	-4.4	-3.8	-6.6	-4.4	-1.0	-5.6	-6.6
256	boy	-3.1	-2.8	-3.6	-5.2	-3.6	-3.3	-5.4	-7.4
257	boy	-5.5	-4.9	-6.6	-6.9	-2.8	-3.6	-9.0	-9.4
151	boy	-3.2	-3.8	-5.6	-5.6	-4.2	-4.0	-6.8	-7.4
152	boy	-3.7	-5.2	-6.8	-8.3	-5.4	-6.2	-10.4	-10.8
153	boy	-3.3	-5.0	-6.3	-6.4	-4.8	-6.0	-7.0	-9.2
251	boy	-4.0	-4.1	-6.6	-6.6	-2.4	-2.6	-6.0	-5.0
252	boy	-5.4	-5.9	-7.8	-8.6	-2.2	-3.2	-8.8	-9.0
253	boy	-5.6	-5.6	-7.2	-7.1	-2.8	-2.4	-6.8	-8.2

Table 2. Continued

Subject	Gender	SM1	SM2	SMB1	SMB2	FUM1	FUM2	FUMB1	FUMB2
157	boy	-2.9	-3.5	-5.4	-7.0	-3.4	-4.0	-5.4	-9.2
mean	girls	-1.5	-2.5	-4.7	-5.8	-1.3	-3.2	-4.7	-6.8
mean	boys	-3.7	-4.3	-6.1	-6.9	-3.5	-3.8	-7.1	-8.1
mean	girls+boys	-2.9	-3.7	-5.6	-6.5	-2.7	-3.6	-6.3	-7.6
mean	girls	-2.0		-5.2		-2.3		-5.7	
mean	boys	-4.0		-6.5		-3.7		-7.6	
mean	girls+boys	-3.3		-6.1		-3.2		-6.9	
SD	girls	2.24		1.39		1.75		1.86	
SD	boys	1.22		1.11		1.47		1.64	
SD	girls+boys	1.86		1.33		1.67		1.91	

Analysis of variance was carried out to check if there were significant differences, with the independent variable gender as a between-subject factor, and with type of noise (SM, FUM), noise presentation (monaural, binaural), and test-retest as within subject factors.

The following main factors were found to significantly influence results: test-retest ($p<0.00001$), monaural-binaural noise ($p<0.00001$), and gender ($p=0.011$). The following interactions were significant: test-retest/gender ($p=0.018$), and SM-FUM/monaural-binaural ($p=0.043$).

The significant mean test-retest difference, i.e., between consecutive lists with equal presentation mode, was 1 dB (0.7 dB for the boys and 1.4 dB for the girls). These differences represent the learning effect. The overall significant gender difference was 1.65 dB, with boys having better thresholds. The significant difference between all thresholds with monaural noise and those with binaural noise was 3.3 dB, with binaural noise giving better thresholds. This significance difference also held for the two types of noises separately. There was no significant difference between the overall mean thresholds with SM noise and with FUM noise. However, there was a significant difference of 0.8 dB between the results with SMB noise and FUMB noise. Table 3 shows more detailed results of test-retest differences. The standard deviation of the test-retest differences divided with $\sqrt{2}$ represents the repeatability; i.e., the standard deviation expected for many repeated measurements.

The mean results for boys and girls are shown in Figure 1. The results for the boys were better than those of the girls for each type of noise and noise presentation.

Discussion

The measurements were performed in ordinary rooms in the preschools and not in sound proof booths. However, the earphones HDA200 have good attenuation of sounds from the outside, since they are circumaural and reconstructed ear muffs. Furthermore, the noise in the test was 65 dB SPL. The audiologist who performed the measurements clearly stated that the environmental noise was marginal and could not influence the measurement results. It was not measured by a sound level meter.

Four children were excluded after tympanometry, although a slight conductive loss for a child would probably not have influenced the group result. Speech-in-noise tests are not very sensitive to the absolute level of the signals and the signal-to-noise ratio is the crucial variable.

The most important part of this experiment was to gather monaural data on children for speech in the SM noise. The BMLD measurements are regarded as an option, and were included since they were easy to incorporate. However, we do not yet know whether it is worthwhile to use these measurements. We recommend that two lists be used to obtain threshold after the training list, to enhance

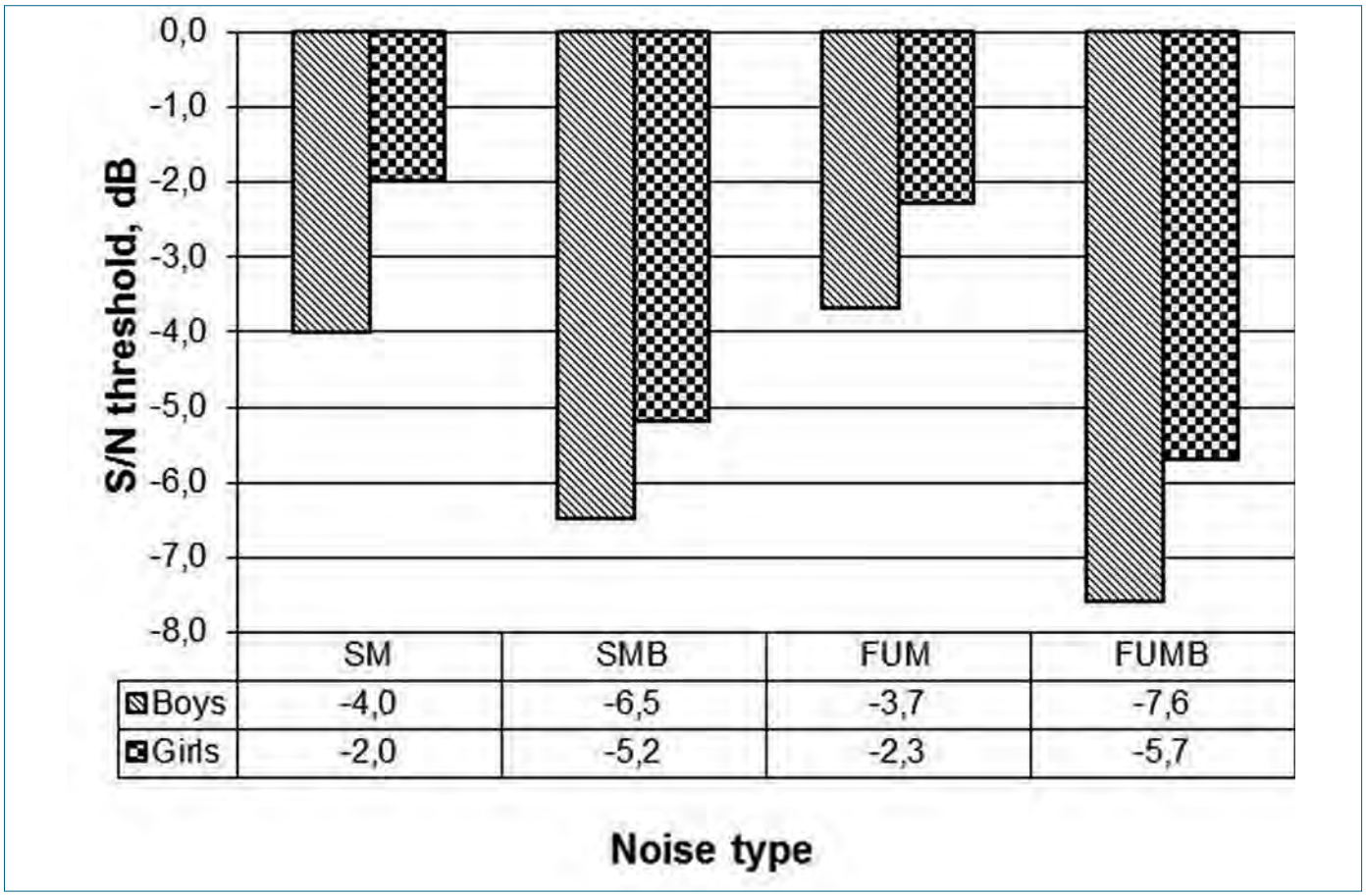

Figure 1. S/N threshold means for boys (n=13, left bars) and girls (n=7, right bars) separately for the different types and presentation modes of the noise. SM=slightly modulated, SMB=slightly modulated, binaural, FUM=fully modulated, FUMB=fully modulated, binaural.

Table 3. Means and standard deviations of the differences between test and retest results for the two types of noise and for monaural and binaural noise presentations. SM=slightly modulated, SMB=slightly modulated, binaural, FUM=fully modulated, FUMB=fully modulated, binaural.

Noise type		SM	SMB	FUM	FUMB
	Gender				
mean	girls	1.0	1.1	1.9	2.1
	boys	0.6	0.7	0.3	1.0
	girls+boys	0.8	0.9	0.9	1.4
SD	girls	2.0	1.3	1.7	2.5
	boys	0.9	1.0	1.3	1.4
	girls+boys	1.3	1.1	1.6	1.9

the reliability, corresponding to the recommendation for the 5-word lists for adults. Therefore we presented the mean values of results for two lists. However, due to time limits, only one list was used in our experiment, and one for the retest procedure. It is well known that test-retest uncertainty is increased by a factor of √2 if half lists are used (Hagerman, 1976). For example, the standard deviation of the test-retest difference would have been 1.3/√2=0.9 for the whole group in the SM noise (Table 3, last row), if two lists per threshold were used. To obtain repeatability of thresholds measured using two lists, i.e., the standard deviation of many repeated thresholds it is necessary to divide by √2 again, which yields a value of 0.65. However, the learning effect is not included.

In this study, one girl achieved poor results, especially on the first half of the test (Table 2, No. 103). The reason for the poor performance is unknown, but a conductive loss can probably be excluded, since her tympanometry result was normal. The influence of her results makes the group results for the girls less reliable than those of the boys. However, even when these results were omitted, boys scored significantly better than the girls.

The results were compared to results for normal-hearing adults (Köbler, 2007). However, to compare results, differences in measurement methods had to be compensated for due to different definitions of the threshold. The method for the 3-word-utterances defines the threshold as 67% correct words, while the original 5-word-sentences for adults defines the threshold as 40% correct words. The psychometric function in Figure 4 in Hagerman (1982) shows that a 1.32 dB higher S/N-ratio is needed to acheive 66.7 % correct words compared to 40 % for normal-hearing adults with the 5-word-sentences. Table 4 shows the mean thresholds of the children, with the compensated results of Köbler (2007) within brackets. The BMLD values can be used directly for comparison purposes, since they express differences.

According to Boothroyd (1997) phoneme recognition of children does not reach the asymptotic value of adults until the age of about 12 years. In our experiment the 5-year-old children needed more than 2 dB better S/N to reach the same recognition level as that of adults in the monaural SM noise. Blandy and Lutman (2005) measured speech recognition of 7-year-old children for sentences in unmodulated noise. They found 3 dB worse thresholds in noise compared to young adults, a difference which is similar to our results. Hall, Grose, Buss, and Dev (2002) obtained almost 5 dB worse spondee thresholds in continuous noise for 6-year-old children compared to adults. In fully modulated noise the difference between children and adults is further enhanced. The release of masking in gated noise was 2 dB for the children and 4 dB for the adults in their study. The adults in Köbler's study, had as much as 10 dB better results in the modulated noise (FUM) compared to the SM noise (Köbler, 2007). The children in our study could obviously not take advantage of the valleys in the noise fluctuations since there was no significant difference between their results in SM noise and in FUM noise. Stuart (2005) found differences between speech recognition results in interrupted and continuous noise in children 6 to 15 years old. This difference increased with increasing age.

Table 4. Mean 66.7 % thresholds in dB of the 3-word-utterances for the 5-year-old children (N=20). Means for adults measured with 5-word-sentences (Köbler, 2007), now adjusted to a threshold at 66.7 % correct words (see text), are shown within brackets (N=14).

	Monaural noise	Binaural noise	BMLD, dB
SM	-3.3 (-5.7)	-6.1 (-10,8)	2.7 (5,1)
FUM	-3.2 (-15,3)	-6.9 (-20,7)	3.8 (5,4)

The advantage of binaural instead of monaural noise, the BMLD, was 3 to 4 dB for the children and about 5 dB for the adults. However, part of that advantage in the children might have been due to learning, since the binaural mode was always presented after the monaural mode. Thus, there seems to be an age effect, also shown by Hall, Buss, Grose, and Dev (2004); although they used a 500 Hz tone in both ears with reversed phase in one ear. The binaural analysis starts when the signals reaches the superior olive complex. Here the brain can compare time and intensity differences between the ears. These analyses are crucial for the formation of BMLD. It seems clear that 5-year-old children have not reached the ability of adults to use binaural

cues. At birth the peripheral hearing is fully developed, but the myelin sheaths surrounding the nerve fibers continue to develop after birth. The velocity of the nerve signals depends on the thickness of the myelin sheaths. The precision of the nerve signal velocity might be a factor in the development of BMLD. Not until the upper teens does the nerve signal velocity between the hemispheres reach that of an adult (Boothroyd, 1997; Tonnquist-Uhlén, Borg, & Spens, 1995).

Comparison of boys and girls

Unexpectedly, the boys generally showed significantly better results than the girls. We found no publications confirming these results. Although there were unequal sample sizes, this should not result in statistical problems, since gender was the only between-subjects factor, and the ANOVA is very robust against possible unequal variances. Blandy and Lutman (2005) found no difference between 7-year-old boys and girls. However, Hagesäter and Thern (2004) showed similar results for Hagerman's 5-word-sentences in children 7 and 9 years of age. They hypothesized that the boys in the study guessed more than the girls. From our experience this explanation seems plausible. The girls seemed to be more afraid of guessing and increasing the risk of making an error. It is also possible that boys are more trained to listen in noise, since they often play in larger groups with more noise.

Future direction

There is a need to confirm these results with larger groups of children of different ages and with a more rigorous control of normal hearing status. Subsequently, the test material can be used for the assessment of children with hearing or language problems.

Conclusions

- The 5-year old children were able to perform the test with 3-word-utterances in noise.
- The results may be used as a preliminary reference material for 5-year-old children.
- The ability of our group of 5-year-old children to recognize the 3-word-utterances in noise was not as good as that of adults measured with 5-word-sentences, especially not in modulated noise.
- There was a significant gender difference, the boys having a significantly better mean speech recognition threshold in noise than girls, but the sample size was small and unequal between the two genders.
- The children had about 2 dB less BMLD than adults tested previously.

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A Test of French Phonology: Construction and Use

Un test de phonologie du français: construction et utilisation

KEY WORDS

PHONOLOGICAL DEVELOPMENT

EVALUATION OF MANITOBA FRENCH

CANADIAN FRENCH PHONOLOGY

SPEECH SOUND DISORDERS

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Abstract

Clinicians have had limited resources for conducting phonological evaluations of Canadian Francophone children and, to this day, there are no standardized tests of French-Canadian phonology (Brosseau-Lapré, Rvachew, Arcand, & Leroux, 2011). Recently, preliminary normative data were collected with a French screening tool in Québec, with results indicating that the screening tool is sensitive in identifying children with protracted phonological development (MacLeod, Sutton, Sylvestre, Thordardottir, & Trudeau, 2014). The current paper presents another new assessment tool for Canadian French phonology (developed for Manitoba French) to evaluate the segments and word structures of Canadian French phonology in depth within the context of a nonlinear phonological framework. The objectives of this article are: (a) to provide an overview of nonlinear phonology, and demonstrate how models of linear and nonlinear phonology account for non-adjacent segments, (b) to describe Manitoba French phonology, (c) to examine the phonological characteristics of the French word list (consonants, vowels, and word structures), and (d) to explain briefly how to administer, transcribe, and analyze data from the assessment tool.

Abrégé

Les orthophonistes ont peu d'options pour l'évaluation phonologique du français canadien chez les enfants et à ce jour il n'y a encore aucun test normé pour ce type d'évaluation (Brosseau-Lapré, Rvachew, Arcand, & Leroux, 2011). Récemment, une collecte de données préliminaires a été effectuée auprès des enfants francophones au Québec avec un outil français de dépistage de la phonologie et les résultats indiquent que l'outil est sensible pour identifier des enfants ayant des troubles de la phonologie (MacLeod, Sutton, Sylvestre, Thordardottir, & Trudeau, 2014). Ce rapport-ci présente un nouvel outil pour l'évaluation détaillée de la phonologie pour le français canadien (élaboré pour le français du Manitoba), dont la structure vise à couvrir l'inventaire complet des phonèmes et des structures de mots du français canadien, dans le cadre théorique de la phonologie non linéaire. Les objectifs du rapport sont : (a) de présenter un survol de la phonologie non linéaire et démontrer comment les modèles de phonologie linéaire et non linéaire expliquent les phénomènes impliquant des segments non adjacents, (b) de décrire, brièvement, la phonologie du français Manitobain, (c) d'examiner les caractéristiques phonologiques de la liste de mots français (les consonnes, les voyelles, et les structures du mot) et (d) d'expliquer brièvement comment administrer, transcrire et analyser les données du test.

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Until recently, speech-language pathologists (S-LPs) have had limited resources for completing phonological assessments of Canadian French-speaking children and to this day, there are no standardized tests of French-Canadian phonology (Brosseau-Lapré, Rvachew, Arcand, & Leroux, 2011; MacLeod, Sutton, Sylvestre, Thordardottir, & Trudeau, 2014). Recently, a new screening tool for French phonology was piloted in Québec; results suggest that the screener is sensitive in identifying children with protracted phonological development (MacLeod et al., 2014). Another new tool was recently developed to facilitate more in-depth examination of children's phonology, e.g., in order to examine both simple and more complex syllable structures and to derive therapy goals. The current paper presents this new tool, which provides a detailed evaluation of the segments and word structure of Canadian French phonology within the context of a nonlinear phonological framework. Although initially developed for Manitoba French, this tool can be adapted to a variety of French dialects. The test is currently being used by S-LPs across Canada in a variety of contexts, including school boards, local community services, and private practice.

Nonlinear phonology framework

Both "linear" and "nonlinear" theories of phonology have been adopted for description of children's phonological development. As the name implies, "linear" phonological models describe phonological form along a single linear, rule-based plane (Chomsky & Halle, 1968). When a child's production differs from the expected adult target, linear accounts can explain patterns only in terms of neighbouring segments (consonants or vowels). However, when patterns occur between distant (non-adjacent) segments, linear models are unable to explain the pattern without recourse to complex sets of rules. Nonlinear phonological analyses (e.g. Goldsmith, 1976), departing from older rule-based generative phonology, can account for distant interactions through invoking a hierarchical framework of autonomous elements. If two consonants are not surface-adjacent, they may still be adjacent on a different plane. For example, consonants separated by vowels can be adjacent on a consonant tier, which is independent of a vowel tier (See also Bernhardt & Stemberger, 1998; Bernhardt & Zhao, 2010; Prince & Smolensky, 1993).

Nonlinear phonological models have two major tenets: hierarchical representation, and autonomy of phonological elements. In terms of hierarchy, each phonological element (consonant, vowel, parts of the syllable, the entire syllable, the foot, and the prosodic word) is situated in on its own level or tier, from the phrase level at the top of the hierarchy to the features at the bottom (see Figures 1 and 2). For example, the word bol ('bowl') contains a foot (*bol*), a syllable (*bol*), an onset (/b/) and a rime (/ɔl/), itself composed of a nucleus (/ɔ/), and a coda (/l/). The syllable *bol* contains three segments (/b/, /ɔ/ and /l/) and each segment comprises features that are organised according to a hierarchical geometry (referred to 'feature geometry') (see Figure 2). For example, the segment /b/ is composed of the following features grouped by node type: [+ consonantal], [- continuant] (manner of articulation node), [Labial] (place of articulation node), [+ voiced] (Laryngeal node).

In terms of autonomous representation, each of the levels of the hierarchy is considered to be independent, but linked to certain other levels (as can be seen in the feature diagram). Speech output can reflect patterns within one autonomous level, or interactions between multiple levels of hierarchical geometry (Bernhardt &

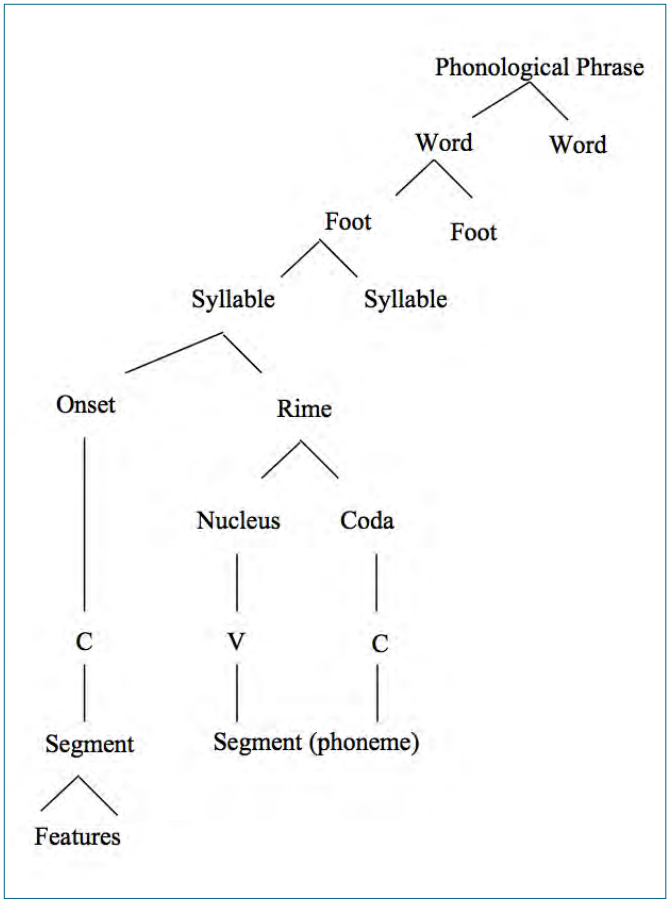

Figure 1. Hierarchical representation of phonological form from the feature to the phonological phrase.

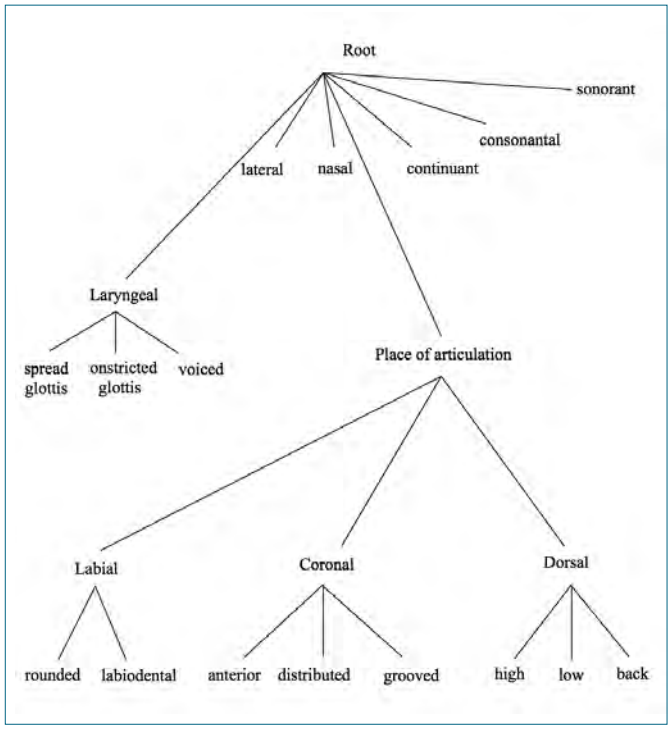

Figure 2. Hierarchical feature geometry, from the root (manner) to the place of articulation.

Stemberger, 1998; Bernhardt & Zhao, 2010). The following examples illustrate how hierarchical and autonomous representations in nonlinear (NL) phonology account for certain patterns, and the limitations of linear (L) rule-based phonology (see Table 1).

In examples 1 and 2, the words *étoile* and *hippopotame* show an interaction between coronal and labial consonants. In the word *étoile*, the two consonants (/t/ and /w/) are immediately adjacent (i.e., adjacent at the surface level) and the interaction is easily explained in both frameworks; however, in *hippopotame*, the two consonants (/t/ and /p/) are separated by a vowel and therefore are not adjacent at the surface level. Linear explanations cannot easily account for the interaction of two consonants when a vowel intervenes. In contrast, nonlinear phonology, based on hierarchical representations, allows separation of consonants and

Table 1. Nonlinear (NL) and linear (L) accounts for hierarchical and autonomous representations within speech productions.

Adult target	Child's production	Description (explanation)
1. /é'twal/ étoile 'star'	[e'pwal]	A target sequence of a [Coronal] (/t/) and a [Labial] (/w/) cannot be produced. Thus, the stop is produced as a [Labial]. NL and L frameworks are equally capable of explaining the pattern succinctly.
2. /ʔipɔpɔ'tam/ *hippopotame* 'hippopotamus'	[ʔipɔpɔ'pam]	A target sequence comprised of a [Labial] (/p/) and a [Coronal] (/t/) cannot be produced. The second stop is therefore also produced as [Labial]. NL: The two consonants are adjacent on their own independent level, and must share the same place of articulation, in this case, [Labial]. L: Because the consonants are not adjacent at the surface level, a linear rule-based explanation would require a series of complex and arbitrary rules to account for the distant interaction.
3a) /kɔ.'ʃɔ̃/ *cochon* 'pig' 3b) /mɔ̃.'taŋ/ *montagne* 'mountain'	[kɔ.'ʃɔ̃] ['taŋ]	NL: The more complex nasal vowel is only possible in a stressed part of a foot. Thus, there is deletion of the unstressed syllable when it contains a nasal vowel. Both the syllable and vowel are produced in the word *cochon*, where the nasal vowel is in a stressed syllable. Syllable prominence interacts with segmental content. L: Again, linear phonology would require a series of complicated rules, resulting in an arbitrary contrast between *cochon* and *montagne* or simply a designation of inconsistency.

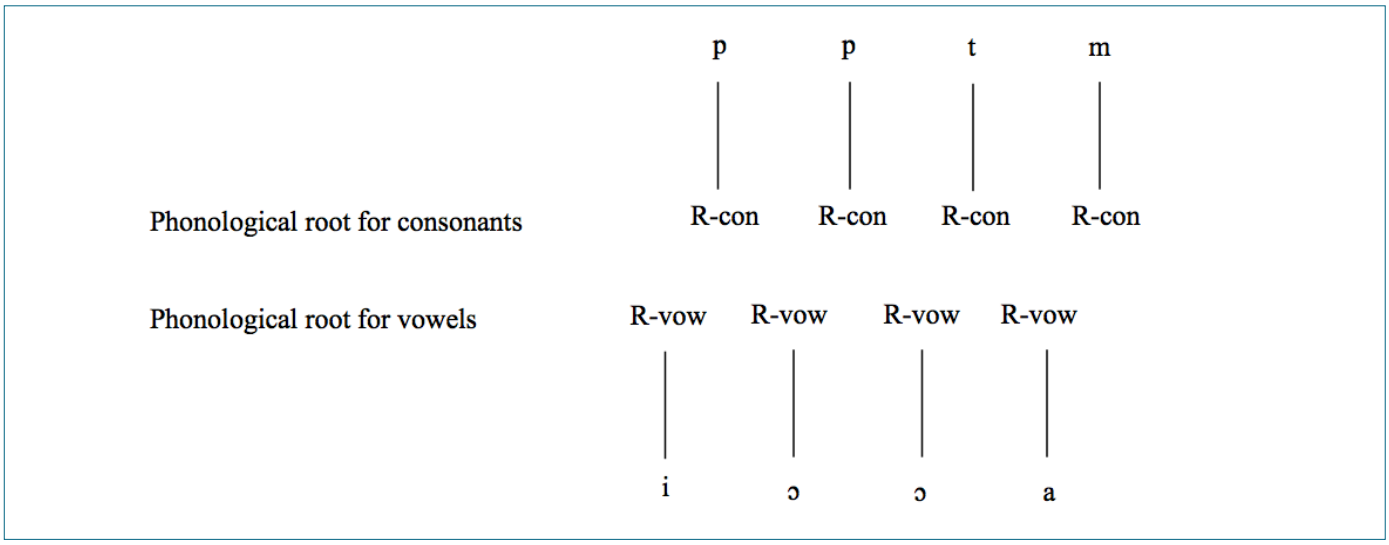

Figure 3. Nonlinear representation of consonant and vowel planes, with the root nodes of consonants and vowels on different non-adjacent planes.

vowels onto two different planes, with the assumption that the consonants are then immediately adjacent to one another (Bernhardt & Stemberger, 1998). Because vowels are represented on a separate plane, they do not interfere in the interaction between the consonants /t/ and /p/ (see Figure 3). Another type of interaction between prosodic and segmental levels of representation, are illustrated in the contrasting productions of *cochon* (3a) and *montagne* (3b). The more complex nasalized vowels are produced in a prominent (stressed) syllable (*co<u>chon</u>*) but not in a weaker, non-prominent syllable. The initial non-prominent syllable in the word *(mon)tagne* fails to surface, with subsequent deletion of the nasal vowel (and the word-initial consonant).

Word lists for the evaluation of a child's phonology must take into account potential interactions between segmental features (place, manner, and laryngeal), and the prosodic structure of a word (word length, syllable prominence, word shapes in CV sequences). In addition, the word list must provide rich and varied contexts for each target phoneme (Bernhardt & Stemberger, 1998; James, van Doorn, & McLeod, 2007; Kehoe, 2001; Morgenstern et al., 2010). In order to determine what would be relevant for a test of Canadian French phonology, the phonology of Canadian French (more specifically, Manitoba French) is described briefly below.

Overview of Manitoba French phonology

Canadian French is the dominant language in the province of Québec, and a minority language in all other provinces. This paper focuses primarily on Manitoba French, a variant spoken by more than 47,000 individuals. The majority of speakers reside in the Winnipeg area, but there are also small Francophone communities throughout the province (Statistics Canada, 2011). Most research on Canadian French has been conducted in Québec and Ontario. Only a very limited number of studies have described Manitoba French phonology (Hallion-Bres, 2000; Marchand, 2004). The most current data on Manitoba French are presented here, with gaps in the literature complemented by research from other provinces, respecting regional dialect differences. Most Franco-Manitobans are bilingual (French-English), which results in some speech characteristics being a result of interactions between French and English. While the influence of bilingualism on speech production is important, the topic of bilingualism exceeds the scope of this article.

Consonants

Manitoba French has 21 consonants, including 6 stops, 3 nasals, 7 fricatives, 3 glides, and 2 liquids (see Table 2).

Following a feature framework derived from Bernhardt & Stemberger (1998), consonants are grouped as follows (non-contrastive redundant features are noted in parentheses):

Manner of Articulation

1. Stops: [-continant, -sonorant] ([+consonantal]): /p, t, k, b, d, g/
2. Nasals: [+nasal] ([+consonantal, -continuant, +sonorant]): /m, n, {ŋ/ɲ}/

Table 2. Manitoba French consonants, organized by manner and place of articulation

		Labial	Coronal			Dorsal	
		[+labiodent]	[+anterior] (alveolar)	[-anterior]		[+high] (velar)	[-high], [-low] (uvular)
Stops	p		t d ʦ[a] ʤ[a]			k g	
[-continuant]	b						
Nasals	m		n		(ɲ)	ŋ	
[+nasal]							
Fricatives		f v	s z	ʃ ʒ			ʁ
[+cont,-son]							
Glides	w[b]			ɥ[b]	j	w[b] j[b]	
[-cons]	ɥ[b]						
Liquids							
[+lateral]			l				
[+rhotic]			(r)				ʀ

Note. Adapted from Walker (1984), with feature framework from Bernhardt and Stemberger (1998). [cont]=[continuant], [cons]=[consonantal], [son]=[sonorant], [labiodent]=[labiodental]. The parentheses indicate a possible variant for certain speakers/contexts.
[a] The affricates are [+strident] allophones of the /t/ et /d/ stops and could be characterized as [-continuant, +continuant].
[b] The glides are designated with two places of articulation.

3. Glides: [-consonantal] ([+sonorant, +continuant]): /w, ɥ, j/
4. Fricatives: [+continuant, -sonorant] ([+consonantal]): /f, v ,s, z ,ʃ , ʒ, (ʁ - rhotic variant)/
5. Affricates: [-continuant, +continuant], or [-continuant, +strident] ([+consonantal], [-sonorant]): [ʦ, ʤ] (allophones of /t, d/)
6. Liquids:
   a. [+lateral] ([+consonantal, +sonorant, ?continuant]): /l/
   b. [+trilled] ([+consonantal, +sonorant, +continuant]): /r, ʀ/ (see rhotic productions in the following section)

Place of Articulation

1. [Labial]:
   a. [Labial] only: /p, b, m/
   b. [+round]: /w, ɥ/
   c. [+labiodental]: /f, v/
2. [Coronal]:
   a. [+anterior]: /t, d, n, l, s, z, (ɾ)/
   b. [-anterior]: /ʃ, ʒ, ɥ, j, (ɲ)/
   c. [+grooved]: /s, z, ʃ, ʒ/
   d. ([-grooved]: /t, d, n, l, (ɾ))
3. [Dorsal]:
   a. [+high]: /k, g, ŋ/
   b. [-high, -back]: /(ʁ)/ (see rhotic productions in the following section)
4. [Labial]-[Dorsal]: /w/
5. [Coronal]-[Dorsal]: /j, ɲ/
6. [Labial]-[Coronal]: /ɥ/

Laryngeal (all [-spread glottis])

1. [+voiced]: /b, d, g, v, z, ʒ, (ʁ)/ (the /ʁ/ segment is produced by some speakers)
2. [-voiced]: /p, t, k, f, s, ʃ/

Consonant patterns in Manitoba French

Canadian French shows a number of alternative patterns concerning consonants (see Baligand, 1995; Hallion-Bres, 2000; Walker, 1984 for a complete description). The focus in this section is on Manitoba French (for which the test was originally devised) but additional information is presented on French in other provinces where there are gaps concerning Manitoba French.

1. Rhotics: Manitoba French has only one rhotic consonant, although variations in allophonic productions have been noted for the same speaker and for speakers across the province. For example, Hallion-Bres (2000) observed that the voiced apical trill /r/ is produced by older-speaking Manitobans, while the voiced uvular fricative /ʁ/ and voiced uvular trill /ʀ/ are found in an increasing proportion in younger speakers. Moreover, the uvular fricative /ʁ/ is often devoiced ([-voiced]) in syllable-final coda position, e.g., *tracteur* [tʀakˈtœʁ̥] ('tractor'), or between vowels (intervocalic), e.g., *perroquet* [pɛʁ̥ɔˈkɛ] ('parrot').
2. Affrication: Similar to most dialects of Ontario and Quebec French, Franco-Manitobans show assibilation of coronal stops that precede high front vowels (tense and lax) /i, ɪ, y, ʏ/ and glides /ɥ, j/, e.g., *tuque* [ʦʏk] ('toque'); *crocodile* [kʀɔkɔˈʤɪl] ('crocodile'). In Manitoba French, affrication appears to occur both within words and across word boundaries, e.g., *huit hippopotames* as [wɪʦipɔpɔˈtam] ('eight hippopotami').
3. [h] and aspiration:
   a. Debuccalization of lingual fricatives: Production of [h] for fricatives /ʃ/ and /ʒ/, is a rare occurrence in Manitoba French; however, some examples have been documented, especially for /ʒ/, e.g., *toujours* [tʏˈʒuʁ] ~ [tʏˈhuʁ] ('always').
   b. Orthographic 'h': Although orthographic 'h' is usually silent, Franco-Manitobans (and some speakers of Alberta French dialects) have been observed to pronounce onset [h] in certain words, e.g., *hiver* [hiˈvɛʁ] ('winter'), and *dehors* [dəˈhɔʁ] ('outside') (Hallion-Bres, 2000; Rochet, 1994; Rose & Wauquier-Gravelines, 2007; Walker, 1984). According to existing Manitoba data, the production of **'h'** is not

Table 3. Manitoba French vowels and features.

Features	[+tense]	[-tense]	[+nasal]
Labial [+round]	y ø u o ɔ œ̃ ɔ̃	ʏ œ œ	œ̃ ɔ̃
Coronal [+front]	i e (a) y ø ɛ̃ œ̃	ɪ ɛ ʏ œ œ	ɛ̃ œ̃
Dorsal [+back]	u o ʌ ɑ ɔ̃ ɑ̃	ə ɔ	ɑ̃ ɔ̃
Dorsal [+high]	i y u	ɪ ʏ	
Dorsal [-high][-low]	e ø o ɛ̃ œ̃ ɔ̃	ɛ œ ɔ	ɛ̃ œ̃ ɔ̃
Dorsal [+low]	a/ɑ	œ	ɑ̃

Table 4. Frequency of vowels in stressed and unstressed positions in the Manitoba French word list.

Dialect		ə	a	ɑ	o	ɔ	u	e	ɛ	ɛˡ	i	ɪ	ø	œ	ʌ	ʊ	ʏ	y	ɔ̃	ɑ̃	ɛ̃	œ̃
Manitoba	Stressed	0	18	4	6	4	3	4	15	5	6	4	3	5	2	1	6	2	6	5	5	2
	Unstressed	3	18	4	2	16	3	6	3	0	11	1	1	0	5	0	0	3	3	6	2	0

systematic and varies across speakers and demographic regions (Hallion-Bres, 2000).

c. Aspiration: Similar to French Acadians, Franco-Manitobans may aspirate voiceless lingual stops as in English, e.g., *cadeau* [kʰa'do] ('gift') (Hallion-Bres, 2000; Peronnet, 1995).

4. Elision of consonants occurs in many contexts in Manitoba French:

a. Elision of /l/: In determiners *le* and *la* ('the'), /l/ elision has often been documented for Manitoba French, e.g. *met la table* [mɛla'tab] ~ [mɛa:'tab] ('set the table'). Instances of /l/ deletion are also found in intervocalic consonants and clusters, e.g., *balançoire* [balɑ̃ 'swɑʁ] ~ [baɑ̃:'swɑʁ] ('swing').

b. Elision of /v/: The /v/ can also be deleted intervocalically, e.g., *hiver* [ʔi'vɛʁ] ~ [ʔi'ɛʁ] ('winter'), or in initial clusters when preceding glides, e.g., *voiture* [vwa'ʧyʁ] ~ [wa'ʧyʁ] ('car').

c. Deletion of word-final consonants: Similar to other French Canadian dialects, Manitobans often delete word-final consonants when they follow a [-sonorant] consonant. This deletion is observed in sequences of diconsonantal clusters such as *dentiste* [dɑ̃ 'tɪst]~[dɑ̃ 'tɪs]('dentist'), and, by extension, deletion of two consonants in words that end in triconsonantal clusters, e.g., *monstre* /'mɔ̃ stʁ/~/'mɔ̃ s/('monster').

Vowels

Manitoba French has a rich vowel system that includes 16 oral vowels and four nasalized vowels (/ɛ̃ œ̃ ɑ̃ ɔ̃/) (see Tables 3 and 4).

Vowel patterns in Manitoba French

Nasal Vowels

1. /ɛ̃/ versus /œ̃/: Like other Western Canadian dialects, but unlike European French dialects, Manitoba French has a contrast between /ɛ̃/

and /œ̃/ (Larivière, 1994; Rochet, 1994). The /ɛ̃/ is described as more tense than in other French Canadian dialects (Hallion-Bres, 2000).

2. /ɑ̃/-[ä]: A variant of /ɑ̃/, i.e., [ä] (more anterior) is typically produced in open stressed syllables (Hallion-Bres, 2000).

3. Neutralization: Two types of neutralization have been observed (Hallion-Bres, 2000):

   a. For some Manitoba French speakers, /ɑ̃/ neutralizes to [ɛ̃], although not to the same degree as in Canadian dialects such as Acadian French (Peronnet, 1995).

   b. In some Manitoba speakers, /ɔ̃/ neutralizes to [ɑ̃], especially when the word contains another /ɑ̃/ (Hallion-Bres, 2000).

4. Diphthongs: Similar to other French Canadian dialects, nasalized vowels in Manitoba French can be diphthongized, especially in closed stressed syllables. Thus, words such as *lampe* /ˈlɑ̃p/ ('lamp') or *ongle* /ˈɔ̃gl/ ('nail') may be produced as [ˈlɑ̃ʊ̃p] and [ˈɔ̃ʊgl] (Hallion-Bres, 2000).

5. Denasalization: In some regions of Eastern Manitoba (e.g., Ste.-Rose du Lac), adult French speakers denasalize certain nasal vowels, especially /ɑ̃/. Denasalization can occur both within single word utterances and across word boundaries, but nasal vowels in open syllables appear to be especially sensitive to this variation, e.g., *fontaine* [fɔ̃ˈtɛ] ~ [fɔˈtɛn] ('fountain') Hallion-Bres, 2000).

Oral Vowels

Oral vowels in Manitoba French behave similarly to those of other French-Canadian dialects (Hallion-Bres, 2000).

1. Laxing of high vowels: In some speakers, high vowels (/y, i, u/) are produced as lax variants (Hallion-Bres, 2000):

   a. In stressed closed syllables when the coda is voiced, e.g, toujours /tʏˈʒuʁ/ ~ [tʏˈʒʏʁ] ('always').

   b. In stressed open syllables, e.g., vivre /ˈvi/ ~ [ˈvɪ] ('to live').

2. Devoicing/elision: Vowel devoicing, or deletion of vowels, can occur intervocalically (Hallion-Bres, 2000), especially in two contexts:

   a. Between two voiceless consonants, either in continuous speech or in single word utterances. The vowel may be completely deleted, e.g. assistant /asiˈstɑ̃/ → [asɻˈstɑ̃] ~ [asːˈtɑ̃] ~ [asˈtɑ̃] ('assistant').

   b. For high stressed vowels, between two voiced continuant consonants, e.g., disons /dziˈzɔ̃/ → [ˈdzɔ̃] ('let's say'), or vous avez /vu.zaˈve/ → [vzaˈve] ('you have').

3. Diphthongs: Based on the Hallion-Bres (2000) corpus, oral vowels can become diphthongized only in stressed syllables. For example, icône /iˈkon/ → [iˈkoʊn] ('icon').

Word List Development for the French Phonology Test

French is one of 14 languages in a crosslinguistic study of preschoolers' phonological development (both typical and protracted). For each language, a single-word elicitation tool has been constructed that is representative of the phonology of the language. Grunwell (1985) recommended samples of at least 100 words for English phonological assessment, in order to allow a comprehensive analysis of word structures and segments. Word lists for both Manitoba French and Standard French (Almeida, 2013) have been constructed. The Manitoba version is applicable, however, across a number of Canadian dialects. A 111-word list was created, meeting the following criteria:

   a. Comprehensiveness: Each segment of the language is targeted at least twice (once in a stressed syllable and once in an unstressed syllable) in a variety of contexts in terms of word structure and length. The proportion of segments reflects their frequency in French. For example, there are more /s/ and /k/ consonants than /z/ and /ʒ/ consonants (New & Pallier, 2001).

   b. Familiarity and imageability: Words of the elicitation tool are familiar to children and can be represented by colour images/photos. A few words were selected from existing word lists, such as the *Protocol expérimental de l'Université de Montréal* (Bergeron, 1982) and the Nouvelle épreuves pour l'examen du langage (Chevrie-Muller & Plaza, 2001). Additional words were selected on the basis

of how familiar they would be to Manitoba French speakers, while considering word length and complexity. Most words are found in the *Inventaires MacArthur du Développement de la Communication* (Boudreault, Cabriol, Trudeau, Poulin-Dubois, & Sutton, 2007). The majority are nouns, with a few verbs, adverbs, and adjectives.

c. Efficiency: In preliminary testing, the speech-language pathology researchers found the test to take approximately 20 to 30 minutes. For some children with more severely protracted speech development or who are less familiar with some of the words, the test can take up to 40 minutes to complete.

Table 5. Word shape, frequency (ordered by word length) and targeted words in the Manitoba French word list (with English translation).

Word shape	#	Targeted words	English Translation of Targeted words
Monosyllabic			
CVC	20	Bol, Bulle, Phoque, Jambe, Langue, Lampe, Lave, Neige, Pomme, Peigne, Rêve, Robe, Rouge, Singe, Soupe, Tête, Tasse, Tuque, Vache, Vague	Bowl, Bubble, Seal, Leg, Tongue, Lamp, Clean, Snow, Apple, Comb, Dream, Dress, Red, Monkey, Soup, Head, Cup, Toque, Cow, Wave
CCV	8	Bien, Bleu, Brun, Chien, Doigt, Noix, Nuit, Roi	Good, Blue, Brown, Dog, Finger, Nut, Night, King
CV	7	Queue, Feu, Gant, Lait, Nez, Zoo	Tail, Fire, Glove, Milk, Nose, Zoo
CCVC	6	Cloche, Clown, Fleur, Fraise, Plume, Soif	Bell, Clown, Flower, Strawberry, Feather, Thirsty
CVCC(C)	3	Livre, Zèbre, Monstre	Book, Zebra, Monster
VCC	2	Ours, Ongle	Bear, Nail
CCVCC	1	Triste	Sad
CVV	1	Jouet	Toy
VC	1	Oeuf	Egg
VCCC	1	Arbre	Tree
V	1	Un	One
Disyllabic			
CV.CVC	11	Chandelle, Fontaine, Gorille, Girafe, Montagne, Mouffette, Musique, Saucisses, Salade, Tomate, Valise	Candle, Fountain, Gorilla, Giraffe, Mountain, Skunk, Music, Sausages, Salad, Tomato, Suitcase
CV.CV	9	Cadeau, Cochon, Des oeufs, Gâteau, Lapin, Maison, Nager, Robot, Cheveux	Gift, Pig, Some eggs, Cake, Rabbit, House, Swim, Robot, Hair

CCV.CV	4	Drapeau, Piano, Plonger, Poisson	Flag, Piano, Dive, Fish
CCV.CVC	4	Glissade, Grenouille, Princesse, Voiture	Slide, Frog, Princess, Car
CVC.CVC	4	Cache-cache, Casquette, Docteur	Hide-and-go-seek, Cap, Doctor
CVC.CV	2	Tortue	Turtle
CV.CCVC	2	Lumière, Citrouille	Light, Pumpkin
V.CVC	2	Échelle, Hiver	Ladder, Winter
CV.CCVC	1	Camion	Truck
CV.V	1	Jouet	Toy
V.CV	1	Hibou	Owl
CV.VC	1	Nuage	Cloud
CCV.V	1	Bleuet	Blueberry
CCVC.CVC	1	Tracteur	Tractor
V.CCVC	1	Étoile	Star
CVC.CCVC	1	Sorcière	Witch
CVC.CCV	1	Biscuit	Cookie
Multisyllabic			
CV.CV.CV	6	Kangourou, Chocolat, Champignon, Cheminée, Magasin, Perroquet	Kangaroo, Chocolate, Mushroom, Chimney, Store, Parrot
V.CV.CV	2	Araignée, Éléphant	Spider, Elephant
V.CV.CVC	2	Écureuil, Hôpital	Squirrel, Hospital
CV.CV.CCVC	2	Balançoire, Dentifrice	Swing, Toothpaste
CV.CV.CVC	1	Dinosaure	Dinosaur
CVC.CV.CV	1	Restaurant	Restaurant
CCV.CV.CVC	1	Crocodile	Crocodile
VCC.V.CCVC	1	Arc-en-ciel	Rainbow
V.CV.CV.CVC	1	Hippopotame	Hippopotamus

This clinical tool is designed to be suitable for children between the ages of 3 to 9 years. In order to identify children with protracted phonological development across the age span, the test includes a variety of word lengths, including multisyllabic words and both earlier- and later-acquired segments (e.g., bilabials versus coronal fricatives). The S-LP can select words from the list according to the child's speech development.

Phonological Characteristics of the Manitoba French Word List

The following section provides a detailed description of the Manitoba French word list characteristics, in terms of prosodic structure (intonation, stress, word length, and syllable structure), consonants and vowels (see Table 5), and phonotactic considerations concerning structure and segments.

Prosodic structure: Intonation, Stress, Word Length, and Syllable Structure

Intonation in French is used almost exclusively to express syntactic information such as the difference between a declarative and an interrogative utterance. Declarative sentences are displayed by final lowered intonation; by contrast, interrogative sentences are characterized by a final rising intonation (Lacheret-Dujour & Beaugendre, 2002). The French phonology test is designed as a single word elicitation using a cloze technique with utterance-final declarative intonation; thus, intonation is neutral with respect to the targets.

French is considered a syllable-timed language, i.e., the syllable is the rhythmic unit of the prosodic structure (Wenk & Wioland, 1982). A single internal stress is regularly assigned to the final syllable in a prosodic phrase that may contain one or several words. In early language development, French-speaking children tend to produce words with only one binary foot (two syllables), often reduplicants, where the final stressed syllable is repeated (Demuth & Johnson, 2003; Rose, 2000): e.g., *porte-monnaie* /pɔʁtmɔ'nɛ/ as [nɛ'nɛ] ('wallet'). Trisyllabic words tend to be truncated to disyllabic words (Demuth & Johnson, 2003; Rose, 2000).

In terms of word length, studies indicate that about 50% of the words of francophone children are disyllabic, 33% are monosyllabic (primarily CV and CVC), and the remaining 17% of words are multisyllabic (three or four syllables: Demuth and Johnson, 2003; Rose, 2000). The current word list generally matched these proportions, with 43% monosyllabic words, 42% disyllabic words, and 15% multisyllabic words (slightly more monosyllabic words than the reported frequency).

The variety of word lengths allows observation of interactions between word length, stress, and consonant/vowel production. For example, as noted earlier, a child may be able to produce the nasal vowel /ɔ̃/ in a stressed syllable, e.g., in *cochon* /kɔ.'ʃɔ̃/ ('pig'), but not in the initial unstressed syllable of a word such as *montagne* /mɔ̃.'taŋ/ ('mountain'). Thus, at least one token of every French consonant and vowel was elicited in both stressed and unstressed positions.

Table 6. Frequency of consonants in the Manitoba French word list, by position, manner, and place of articulation.

	Stops						Nasals			Fricatives						Glides			Liquids			Clusters
	p	b	t	d	k	g	m	n	ŋ	f	v	s	z	ʃ	ʒ	ʁ[a]	w	ɥ	j	l	ʁ/r	
Initial	3	4	4	3	7	3	6	4	-	3	3	6	2	4	3	-	-	-	-	7	5	29
Medial																						16
Syllable-initial	6	2	8	2	5	2	2	4	2	2	2	4	5	2	2	-	-	-	-	4	6	
Syllable-final					2									1							3	
Final	2	2	4	2	3	2	3	2	2	3	2	4	2	3	4	9	-	-	4	8	-	8
Total	11	8	16	7	17	7	11	10	4	8	7	14	9	10	9	9	-	-	4	19	14	53

[a] For certain speakers, the rhotic is produced as /ʁ/.

French has many possible word shape combinations (CV sequences), including open and closed syllables. In monosyllabic words the most common word shapes are: CV, CVC, CCV(C), CVCC and (C)VC(C) (New & Pallier, 2001; Sprenger-Charolles & Siegel, 1999). Word shape frequency data are lacking for disyllabic and multisyllabic words in French (Rose & Wauquier-Gravelines, 2007; Stokes, Kerns, & Dos Santos, 2012); however, the majority of disyllabic words for this test are common words found in the *Inventaires MacArthur du Développement de la Communication* (Boudreault et al., 2007) with CVCV, CCVCV and VCV word shapes.

The word list (see Table 4) contains a representative sample of the word shapes of French-speaking children. The majority of monosyllabic words in the list include the following word shapes: CVC and CCV(C), with a few CV(C) and (C)VC(C) words. The majority of disyllabic words consist of CVCV, CVCVC, CCVCV(C) and CVCCV(C) words. Thus, the test includes a variety of word shapes representative of the structure of French, both in terms of the number of syllables and in terms of the word shapes in CV sequences. The word list also includes 17 multisyllabic words with a variety of word shapes.

Consonants and vowels

As demonstrated in Tables 4 and 6, the word list includes the complete set of consonants and vowels in French in each word position (in accordance with French phonotactics, as discussed below).

Words were selected with a variety of consonant place and manner sequences, thus providing an opportunity to examine sequence-based phonological patterns, such as metathesis, assimilation, epenthesis, and coalescence. For example, the consonants in the word *grenouille* /gʀəˈnuj/ (‘frog’) includes a manner sequence of stop-liquid-nasal-glide and a place sequence of dorsal-uvular-coronal-[coronal-dorsal].

Administering the Test

Test administration comprises two steps: first, a short familiarization (‘warm-up’) phase (with objects or photos) and then a presentation of the photos for the full word list. A puppet named Julie can be used to encourage children to participate and follow along during test administration.

As noted, the test begins with 10 objects or photos. In addition to providing a ‘warm-up’ activity for the child, the words provide a larger sample of low frequency phonemes (for example, /z/, /ʃ/, /ŋ/) targeted in the following words: *éléphant* (‘elephant’), *kangourou* (‘kangaroo’), *zoo* (‘zoo’), *fraise* (‘strawberry’), *champignon* (‘mushroom’), *chandelle* (‘candle’), *rêve* (‘dream’), *glissade* (‘swing’), *vague* (‘ocean wave’), and *cheveux* (‘hair’). Because these words appear again in the full test, they can provide a set of data for evaluating consistency of production. This is especially important for the multisyllabic words, which are more vulnerable during development because they are less frequent, less practiced and contain many interacting phonological elements (Bérubé, Bernhardt, Mason, & Stemberger, 2014; Kehoe, 2001).

The second phase of the test involves the full picture elicitation (available free from the authors). The pictures are organized by themes in four different stories (animals, restaurant, things around the house), and are presented in a binder or electronically through a slide presentation. Each picture corresponds to one target word, with three to five pictures per page (although this can be modified to present fewer items per page).

Administration of the word list (familiarization set and full word list) is similar. Throughout the test, a doll or puppet named Julie and prompting sentences are used to encourage the child to name each picture, e.g., *Julie voit deux grands animaux, un joli* _____ (*éléphant*) et un _____(*kangourou*) (‘Julie sees two animals, a pretty ____ (éléphant) and a _____(kangourou)’). Prompting sentences are suggested for each targeted word; however, S-LPs may choose different prompting sentences depending on the child. When targeting words that begin with a vowel (e.g., *éléphant*), it is recommended to use a prompting phrase that ends with a vowel, e.g., *Julie voit un joli* _____ (*éléphant*) rather than an article, as in *Julie voit un* (‘*an*’)_____ (*éléphant*). This strategy allows the clinician to explore whether the child’s production shows a remnant of the article (as in [nele’fɑ̃]), that is, whether the pronunciation is influenced by the preceding consonant of the article with respect to the *loi de la liaison* (‘liaison rules’: Rose & Wauquier-Graveline, 2007), and/or whether the child only produces syllables that begin with consonants.

If the child does not recognize the object or picture, the clinician provides a choice of two responses, e.g. “does the image represent X or Y?” (where X represents the target word). If this strategy also does not work, the clinician says the target word and asks the child to repeat it. It is recommended to provide the prompting sentence before giving the choice of two words, as following other

researchers in clinical phonology (e.g., Preisser, Hodson, & Paden, 1988). Furthermore, if words other than those on the test appear necessary for the assessment of a certain child, these can be added.

Transcription and Analyses

Ideally, a native speaker of French will administer the test and complete the transcription using the International Phonetic Alphabet; however, non-French-speaking S-LPs can ask a caregiver or interpreter to help with elicitation, and can use the French audio-recordings as a model when completing the transcription (the recordings are also freely available from the authors). Free software programs are available for analysing the various levels of the phonological system, for example, two Canadian products: (1) PHON (Rose & MacWhinney, in press; Rose et al., 2006, childes.psy.cmu.edu/phon/) and (2) the Computerized Articulation and Phonology Evaluation System (CAPES, Masterson & Bernhardt, 2001, available from the authors). The assessment data can also be evaluated using a freely available nonlinear scan analysis (see Appendices 1 and 2 or contact the authors), which can lead to an intervention plan (goals, strategies) if warranted.

The T*est de phonologie du français* was created to evaluate the phonology of Manitoba French speakers; however, the test can be easily adapted to evaluate the speech of French-speaking children in all dialects of French across Canada. For example, if a child speaks a particular French dialect in New Brunswick, the S-LP can adjust the targeted words or speech sounds to reflect the regional dialect. The clinician will then compare the child's productions to the adult targets (adult targets for Montreal French will be soon available for the test).

A note on French phonotactics and implications for analysis

In this section, we discuss briefly phonotactic restrictions in French that may affect phonological analyses (see also Rose and Wauquier-Gravelines, 2007). In Manitoba French, like other dialects in Canada, the (non-)realization of the schwa is dependent on the *Règle des trois consonnes* (Delattre, 1966), a general phonotactic against the production of three adjacent consonants in the speech production through schwa deletion. The schwa vowel may or may not be realized in spoken forms. Depending on the speakers, this lax vowel may be produced anywhere along the continuum that exists between [œ] and [ə]. Therefore, where syllable deletions occur with target schwa vowels, the clinician will need to pay attention to whether the deletion is phonotactically prohibited or allowed.

French also displays a series of segmental changes at the edge of words in connected speech. The first such alteration is that of liaison, triggered in contexts where a hiatus would be formed at the boundary between two words. Liaison consists of the appearance of a latent consonant between the two words (in certain contexts, such as between clitics and nouns or verbs), which gets realized as the onset of the second word. For example, the phrase *un éléphant* /œ̃elefɑ̃/ (an elephant) is realized as /œ̃nelefɑ̃/. During elicitation, a child may use an unexpected consonant at the beginning of a vowel-initial word; liaison needs to be considered before assuming a phonological mismatch pattern. During elicitation it is thus best to provide the entire sentence except the target word (as noted above).

Finally, another phonotactic phenomenon in French is that of enchaînement: the re-assignment of a word-final consonant as an onset of the following word. For example, in the phrase *un bel elephant* ('a beautiful elephant') /œ̃ bɛl elefɑ̃/, the word-final consonant of bel becomes the onset of *éléphant*, as in /œ̃ bɛ lelefɑ̃/. In contrast to liaison, enchaînement does not prompt the appearance of latent consonants; rather, it affects the syllabification of lexical word-final consonants that are systematically produced, no matter the syntactic or phonological context (Encrevé & Scheer, 2005). Again, during analysis, it will be important to observe the context of elicitation of vowel-initial words.

Psychometric Properties of the Test

The *Test de phonologie du français* is a flexible tool that can be easily adapted to examine a child's phonological development. For example, the clinician can choose to complete the entire test or to administer only a few sections. The clinician can also add any number of targeted words to examine more closely the child's speech. (A screening set from the list is also available.)

The test has not yet been standardized and there is no information on floor effects and ceiling effects. Reliability has been evaluated only qualitatively by S-LP report. Clinicians who regularly use the test have noted anecdotally that the tool is precise and the results are consistent across items. In terms of content validity, the targeted words correspond to the test objectives, specifically the analysis of Canadian (Manitoba) French phonology. During the test development, all the phonological characteristics of each word were taken

Table 7. A selection of 10 pronunciations for a child aged 4;1 with notably protracted phonological development.

Target word	Adult	Participant 1	# Syl	Initial C		V1		Medial SF		V2		Medial SI		V3		Medial SF		Medial SI		V4		Final C	
				A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch
Lait	lɛ	lɛ	1	l	l	ɛ	ɛ																
Plume	plʏm	plʏm	1	pl	pl	ʏ	ʏ															m	m
Cheveux	ʃ(v)(ə)vœ	səfe	1(2)	ʃ	s	ə	ə					v	f	œ	e								
Glissade	glisad	gʰiɕal	2	gl	gʰ	i	i					s	ɕ	a	a	d	l						
Plonger	pʰlɔ̃ʒe	plɔɕe	2	pl	pl	ɔ̃	ɔ					ʒ	ɕ	e	e								
Musique	myzɪk	gʏz>ik	2	m	g	y	ʏ					z	z>	ɪ	i	k	k						
Balançoire	balɑ̃ swɑʁ	pajɸwæ:	3	b	p	a	a					l	j	ɑ̃	-			sw	ɸw	ɑ	æ:	ʁ	-
Éléphant	ʔelefɑ̃	ʁiβæ	3	ʔ	-	e	-					l	ʁ	e	i			f	β	ɑ̃	æ		
Kangourou	kɑ̃ guʁu	tauɥu	3	k	t	ɑ̃	a					g	-	u	-			ʁ	ɯ	u	u		
Champignon	ʃɑ̃ piŋɔ̃	ʑjɔ̃	3	ʃ	-	ɑ̃	-					p	-	i	-			ŋ	ʑj	ɔ̃	ɔ̃		

Note. C = consonant, V = vowel, Syl = syllable, SF = syllable-final, SI = Syllable-initial; Ch = Child; A = Adult.

Table 8. A selection of 10 pronunciations for a child aged 3;11 with typical phonological development.

Target word	Adult	Participant 2	# Syl	Initial		V1		Medial SF		V2		Medial SI		V3		Medial SF		Medial SI		V4		Final	
				A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch
Lait	lɛ	lɛ	1	l	l	ɛ	ɛ																
Plume	plʏm	plʏm	1	pl	pl	ʏ	ʏ															m	m
Cheveux	ʃ(v)(ə)vœ	ʃəvœ	1(2)	ʃ	ʃ	ə	ə					v	v	œ	œ								
Glissade	glisad	glisad	2	gl	gl	i	i					s	s	a	a							d	d
Plonger	pʰlɔ̃ʒe	pʰlɔ̃ʒe	2	pʰl	pʰl	ɔ̃	ɔ̃					ʒ	ʒ	e	e								
Musique	myzɪk	myzɪk	2	m	m	y	y					z	z	ɪ	ɪ							k	k
Balançoire	balɑ̃ swɑʁ	balɑ̃ swaʁ	3	b	b	a	a					l	l	ɑ̃	ɑ̃			sw	sw	ɑ	a	ʁ	ʁ
Éléphant	ʔelefɑ̃	ʔelefɑ̃	3	ʔ	ʔ	e	e					l	l	e	e			f	f	ɑ̃	ɑ̃		
Kangourou	kɑ̃ guʁu	kɑ̃ guru	3	k	k	ɑ̃	ɑ̃					g	g	u	u			ʁ	ɾ	u	u		
Champignon	ʃɑ̃ piŋɔ̃	ʃɑ̃ piŋɔ̃	3	ʃ	ʃ	ɑ̃	ɑ̃					p	p	i	i			ŋ	ŋ	ɔ̃	ɔ̃		

Note. C = consonant, V = vowel, Syl = syllable, SF = syllable-final, SI = Syllable-initial; Ch = Child; A = Adult.

into account according to a nonlinear phonological framework (word length, stress pattern, syllable structure, segments and features by position, feature sequences). A whole word match analysis was conducted with a group of 10 preschool children speaking Manitoba French, suggesting that the tool was able to identify children with protracted versus typical phonological development (Bérubé, Bernhardt, Stemberger, & Bacsfalvi, 2012). (A whole word match indicates that every segment of a word matches the adult target. [Ingram, 2002; Schmitt, Howard, & Schmitt, 1983].)

For example, a whole word match score for one child aged 4;1 with notably protracted phonological development (Participant 1) was 27.5% and for a typically developing child aged 3;11, was 92.5% (Participant 2). A sample of their pronunciations is presented in Tables 7 and 8.

Participant 1 had a high proportion of deletions and substitutions for fricatives, rhotics, and clusters, especially in multisyllabic words and within unstressed syllables. Moreover, Participant 1 exhibited numerous mismatches with nasal vowels (especially denasalization) within unstressed syllables. These same nasal vowels were produced accurately in stressed syllables in words of the same length. By contrast, Participant 2 showed mastery of most segments, including nasal vowels in both stressed and unstressed syllables. Both children accurately produced labial and coronal stops in disyllabic and multisyllabic words in 90% of instances, which is expected for children aged 4 years (Morgenstern et al. 2010). Their data show that the elicitation tool is capable of discriminating between a child who has moderately to severely protracted phonological development and a child with typical phonological development. In the next phase, data will be collected and statistically analysed from more children, which will increase the reliability and predictive validity of the tool.

Conclusion

The current paper introduces a phonological assessment tool specifically created to evaluate Canadian French phonology (in particular the Manitoba French dialect). The tool can be easily adapted for other Canadian French dialects. The word list was created in accordance with a nonlinear phonological framework (Bernhardt & Stemberger, 1998) and represents the phonology of Manitoba French adults. The tool allows for a representative and efficient evaluation (20-30 minutes) of the complete phonological repertoire of French: each phoneme is tested twice across a variety of word lengths, prominence patterns, and syllable structures. This clinical tool is now used across Canada by S-LPs working in a variety of contexts, including school boards, local community services, and private practice. The feedback from the S-LPs has been positive and they report that the children enjoy the assessment, especially with the use of a puppet. The French phonology test is part of a larger research program that is examining the multisyllabic word production of French-speaking children (Bérubé et al., 2014) and the interaction between word length and syllable structure across manner of articulation (Bérubé et al., 2010, 2011, 2012). The French phonology test, the set of pictures, the list of words, the audio files for Manitoba French, and the nonlinear analysis tool to help clinicians complete the evaluation and target therapy goals (see Appendix 1 and 2) are freely available from the authors. Similar tests are available for an additional 13 languages, including a recent adaptation for Standard French (Parisian French) (Bérubé, Bernhardt, Stemberger, & de Almeida, 2014), most of which are available at no cost from the authors. Moreover, an online tutorial on how to use the nonlinear analysis tool (for French and English) will be freely available in spring 2015 by contacting the authors. See Table 9 for the list of words used for the online tutorial.

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Table 9. A selection of 31 pronunciations for a child aged 4;1 with notably protracted phonological, used for the online tutorial

Target word		Child's production	A Syl	Target word shape	Child's word shape	Initial		Medial SI		V-M(1)		SI		V-M(2)		SF		SI		V-M(3)		SF		V-M(4)		Final	
Orthography	Phonetic					A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch	A	Ch
Lait	lɛ	lɛ	1	CV	CV	l	l	ɛ	ɛ																				
Plume	plʏm	plʏm	1	CCVC	CCVC	pl	pl	ʏ	ʏ																			m	m
Soif	swaf	s̪wæf	1	CCVC	CCVC	sw	s̪w	a	æ																			f	f
Tasse	tas	tɑs̪	1	CVC	CVC	t	t	ɑ	ɑ																			s	s̪
Vache	vaʃ	væs	1	CVC	CVC	v	v	a	æ																			ʃ	s
Zoo	zo	z̪o	1	CV	CV	z	z̪	o	o																				
Cheveux	ʃ(v)(ə)'vœ	ɕə'vœj	1(2)	C(V)CV	CVCVC	ʃ(v)	ɕ	(ə)	ə					v	v	œ	œ												j
Cheveux	ʃ(v)(ə)'vœ	sə'fe	1(2)	C(V)CV	CVCV	ʃ(v)	s	(ə)	ə					v	f	œ	e												
Cheveux	ʃ(v)(ə)'vœ	s̪ə'βœ	1(2)	C(V)CV	CVCV	ʃ(v)	s̪	(ə)	ə					v	β	œ	œ												
Glissade	gli'sad	gʰi's̪al	2	CCVCVC	CVCVC	gl	gʰ	i	i					s	s̪	a	a											d	l
Glissade	gli'sad	g̊ʰi's̪ad̪	2	CCVCVC	CVCVC	gl	gʰ	i	i					s	s̪	a	a											d	d̪
Glissade	gli'sad	kli'ɕad	2	CCVCVC	CCVCVC	gl	kl	i	i					s	ɕ	a	a											d	d
Gorille	gɔ'ʁij	gɔ'ʁij	2	CVCVC	CVCVC	g	g	ɔ	ɔ					ʁ	ʁ	i	i											j	j
Musique	my'zɪk	gʏ'z$^{>}$ik	2	CVCVC	CVCVC	m	g	y	ʏ					z	z$^{>}$	ɪ	i											k	k

Plonger	plɔˀʒe	plɔ̃'ɕe	2	CCVCV	CCVCV	pl	pl	ɔ̃	ɔ̃					ʒ	ɕ	e	e												s	ɕ
Robot	ʁo'bo	ʁə'bo	2	CVCV	CVCV	ʁ	ʁ	o	ə					b	b	o	o													
Saucisses	sɔ'sɪs	sˀu'sˀiɕ	2	CVCVC	CVCVC	s	sˀ	ɔ	u					s	sˀ	ɪ	i												s	ɕ
Tomate	tɔ'mat	tʰɔ'matʰ	2	CVCVC	CVCVC	t	tʰ	ɔ	ɔ					m	m	a	a												t	tʰ
Balançoire	balɑˀswɑʁ	paj'ɸwæː	3	CVCVCCVC	CVC.CCV	b	p	a	a					l	j	ɑ̃				sw	ɸw	ɑ	æː						ʁ	
Dinosaure	d͡zino'zɑʁ	tinoʁɔ'zɔx	3	CVCVCVC	CVCVCVCVC	ʣ	t	i	i	n	n	o	o		ʁ		ɔ			z	z	ɑ	ɔ						ʁ	x
Éléphant	(ʔ)ele'fɑ̃	ʁiː'βæ	3	VCVCV	CV:CV	(ʔ)		e						l	ʁ	e	iː			f	β	ɑ̃	æ							
Éléphant	(ʔ)ele'fɑ̃	n'ifa	3	VCVCV	CVCV	(ʔ)		e						l	n	e	i			f	f	ɑ̃	a							
Éléphant	(ʔ)ele'fɑ̃	li'fa	3	VCVCV	CVCV	(ʔ)		e						l	l	e	i			f	f	ɑ̃	a							
Kangourou	kɑ̃gu'ʁu	kaw'ʁu	3	CVCVCV	CVC.CV	k	k	ɑ̃	a					g	w	u				ʁ	ʁ	u	u							
Kangourou	kɑ̃gu'ʁu	ta'ɯu	3	CVCVCV	CVCV	k	t	ɑ̃	a					g		u				ʁ	ɯ	u	u							
Kangourou	kɑ̃gu'ʁu	kʰa.ə'ʁu	3	CVCVCV	CV.V.CV	k	kʰ	ɑ̃	a					g		u	ə			ʁ	ʁ	u	u							
Crocodile	kʁɔkɔ'd͡zɪl	ʁəː'ŋe	3	CCVCVCVC	CV:CV	kʁ	ʁ	ɔ	əː					k	ŋ	ɔ	e			dz		ɪ							l	
Perroquet	pɛʁɔ'kɛ	pe.ɔ.i'tɛ	3	CVCVCV	CV.V.CV	p	pl	ɛ	e					ʁ		ɔ	ɔ			k	t	ɛ	ɛ							
Champignon	ʃɑ̃pi'ŋɔ̃	ʑjɔ̃	3	CVCVCV	CCV	ʃ	ʑj	ɑ̃						p		i				ŋ		ɔ̃	ɔ̃							
Champignon	ʃɑ̃pi'ŋɔ̃	ʃɑ̃.pʰɪi.'ʃɔ̃	3	CVCVCV	CV.CVV.CV	ʃ	ʃ	ɑ̃	ɑ̃					p	pʰ	i	ɪ			ŋ	ʃ	ɔ̃	ɔ̃							
Champignon	ʃɑ̃pi'ŋɔ̃	ʂɑ̃pi'ŋɔ̃	3	CVCVCV	CVCVCV	ʃ	ʂ	ɑ̃	ɑ̃					p	p	i	i			ŋ	ŋ	ɔ̃	ɔ̃							

Note. C = consonant, V = vowel, Syl = syllable, SF = syllable-final, SI = Syllable-initial; Ch = Child; A = Adult, V-M = vowel in medial position.

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Appendix 1

Analyse non-linéaire – canadien français 2014 ©

Auteurs: Bernhardt, B. M. H., Stemberger, J.P., Bérubé, D.

Adaptée selon: Bernhardt, B.H. et Stemberger, J.P. (2000).
Workbook in Nonlinear Phonology for Clinical Application.
Austin, TX: PRO-ED (copyright reverted to authors)

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Les pages 1 à 5 incluent l'analyse et l'élaboration des objectifs de la thérapie.
Pour les cas plus complexes, utilisez les pages 6 à 8.

Nom : _____ Date de naissance : _____

Date de l'évaluation : _____ Age : _____

Difficulté d'audition : _____

Dialecte : _____

Habiletés de la communication de l'enfant: habileté/difficulté : _____

_____

Référé par : _____

% des mots entièrement corrects: _____ Séquences de CV correctes: _____ PCC (C. simples): _____

Séquence des objectifs de la thérapie et des stratégies de thérapie

	Structure du mot	Position, séquence	Traits et segments
Objectifs principaux de thérapie (indiquez la séquence des objectifs)			Traits individuels : Combinaison de traits :
Stratégies pour la thérapie (selon les objectifs principaux)	1. Segments établis selon la structure du mot (objectifs de la position des segments) : 2. Stratégies de thérapie :		1. Structure des mots à utiliser (séquence CV) : 2. Stratégies de thérapie :

Survol rapide – Encerclez ou cochez la case correcte

Niveau	Forme	Acquis/Capacité	Plus d'analyses sont nécessaires
Structure prosodique	Longueur du mot L'enfant produit des consonnes, mais le mode d'articulation, le point d'articulation ou le voisement ne correspond pas nécessairement à la cible adulte	Peu d'omission ☐ Peu d'épenthèse ☐	Page 3 ☐
Voyelles		Non-nasales ☐ Nasales ☐	Page 7 ☐
Consonnes Voir page 4	Mode d'articulation (la manière dans laquelle un son est produit)	Peu de substitutions du **mode d'articulation** ☐	Pages 4 et 6 ☐
	Point d'articulation (l'endroit où un son est produit)	Peu de substitutions du **point d'articulation** ☐	Pages 4 et 6 ☐
	Voisement (laryngé)	Peu de substitutions du **voisement** ☐	Pages 4 et 6 ☐

	Acquis/capacité	Plus d'analyses sont nécessaires
Variabilité et séquences	De façon globale, l'enfant démontre peu de variation dans la production des sons	Productions diverses pour un mot ☐ Productions diverses pour le même son, la même structure de phrase ☐ Plusieurs assimilations ☐ Les consonnes et voyelles se déplacent à d'autres endroits dans le mot ☐ **Si oui, consulter la p. 5**

Analyse de la structure du mot : Survol seulement, pas besoin de compter les phonèmes

A. Inventaire ou analyse indépendante = productions de l'enfant **B. Analyse relative** = comparaison avec la production adulte

Codez (selon la couleur): Acquis/capacité, besoins/non acquis, inconstant PI = position initiale, PM = position médiane, PF = position finale

(Optionel: Longueur du mot ____ ; Séquences de CV____ ; Cs. présentes par position ____ ; CC présentes ____ ; Autres: ____)

A. Inventaire : Nombre de syllabes par mot	Inventaire : Forme du mot dans les séquences CV (parenthèses = optionnel)
1 syllabe ☐ Acquis/Capacité ☐ Besoin/non acquis ☐ Forme du mot la plus complexe : Données manquantes	Structures fréquentes au niveau du mot dans les séquences CV : CV(V) CV(V)C Autres : _____ Consonne initiale simple Consonne finale Groupes consonantiques : PI PM 2 consonnes/mot
2 syllabes ☐ Acquis/Capacité ☐ Besoin/non acquis ☐ Forme du mot la plus complexe : Données manquantes	Structures fréquentes au niveau du mot ayant des séquences CV : CVCV CVCVC CVCCVC Autres : _____ Consonne simple : PI PM PF Groupe consonantique : 1/mot 2/mot CC PI PM PF CCC Iambique Trochaïque

B. Analyse relative : Comparaison avec la production adulte Encerclez ou cochez	
Omission de syllabe	2 syl ☐ 3+ syl ☐ Rare ☐ Souvent ☐
Addition d'une syllabe	Rare ☐ Souvent ☐
Déplacement accentuel	Rare ☐ Souvent ☐
Ajout de Consonne	Rare ☐ Souvent ☐
Omission de consonne simple PI PM PF	 Rare ☐ Souvent ☐ Rare ☐ Souvent ☐ Rare ☐ Souvent ☐ Omission↑dans les mots plus longs ☐
Omission d'au moins 1 C dans CC(C) PI PM PF	 Rare ☐ Souvent ☐ Rare ☐ Souvent ☐ Rare ☐ Souvent ☐ Omission↑dans les mots plus longs ☐

3 syllabes ou plus ☐

Acquis/Capacité ☐

Besoin/non acquis ☐

Forme du mot la plus complexe :

Données manquantes

Exemples de forme de mots (CV) allongée :

Patrons d'accentuation : wwS wwwS Autres

PI PM PF

Consonnes simples :
Consonnes doubles :
Consonnes CCC :

2 ou 3 CC dans un mot ☐
CC et C dans PI ☐

Surutilisation des segments

PI ☐ PM ☐ PF ☐
Segments :

Acquis/capacité : _____

Besoins : _____

Inscrivez les acquis et les besoins à la p.8

Inventaire des consonnes simples : codez acquis/capacité, besoin/non acquis ou inconstant

Notez : Il est posible que l'enfant produise une consonne simple lorsque la cible adulte est CC. Inscrivez les consonnes simples dans le tableau.

En français: p$^{(h)}$ b m t$^{(h)}$ d n k$^{(h)}$ g ŋ f v s z ʃ ʒ l w j ʁ ʀ/r ɥ

(Inscrivez les consonnes simples que l'enfant est capable de produire)

	Position initial	Position médiane	Position finale
Acquis : capacité forte			
Inconstant : habileté partielle			
Consonne est produite, mais ne correspond pas à la cible adulte Besoin/non acquis			
Complètement absent de l'inventaire de l'enfant Besoin/non acquis			
Consonnes qui n'existent pas dans la langue française			
Non demandées			
Substitutions fréquentes (segments souvent utilisés) (Consultez le bas de la p. 6)			
Sommaire de l'inventaire des traits (consultez la liste des traits à la p. 6)			

Consonnes qui manquent (pas produites) dans une position spécifique mais produites dans une autre position du mot

Veuillez indiquer les consonnes, habiletés et besoins trouvés sur cette page à la p. 8

Position initial	Position médiane	Position finale

Consonnes doublées – à ajouter à la p. 8

Codez : acquis/capacité, besoin/non acquis, inconstant
Indiquez toutes les consonnes doublées que l'enfant produit, surtout en position médiane. Indiquez l'inventaire complet des consonnes doublées et les patrons.

	Position initiale	Position médiane (à travers une frontière syllabique)	Position médiane (attaque)	Position finale
CC avec /j/, /w/ ou nasale	pj bj ʃj pw dw vw sw ʁw nɥ nw (ʃm)		tw mj	
CC avec /l/	pl bl kl gl fl			gl
CC avec /ʁ/ɐ/r	pʁ bʁ tʁ dʁ kʁ gʁ fʁ		fʁ ʁk	ʁd ɐs bɐ
CC avec fricative autre que /s/	fl fʁ vw ʃj (ʃv)		tʁ fʁ	vɐ
CC avec /s/	sw		sw sj sk st	st ɐs stɐ
CCC			ɐʃj skɥ	ɐbɐ
À travers une frontière syllabique		k.t ʃ.k		
Autres :				

Dans le cas où l'enfant produit les patrons suivants, il est important d'examiner le résultat de ces derniers.
Écrivez des exemples de mots qui contiennent ces patrons.
Est-ce que ces patrons se trouvent surtout dans les mots multisyllabiques Oui ☐ Non ☐

Assimilation / lãp/ > [mãp]	Dissimilation /pu/>[pi] mais /ti/>[tu]	Métathèse /sp/ > [ps]	Épenthèse /plʏm/ > [pəlʏm]	Coalescence /sp/ > [f] [Lab,+cont] fusion	Omission majeure

Séquences adultes : Inscrivez les séquences C_C ou CC selon les besoins. Inscrivez les séquences correctement produites (cibles adultes) qui ont été identifiées dans les tableaux ci-dessus. Ajoutez des exemples de mots pour chacune des séquences de consonnes doublées
L=Labiale; C=Coronale; D=Dorsale; U=Uvulaire

Séquence adulte	Séquence adulte	Séquence adulte	Séquence adulte
L-L	C-C	D-D	
L-C	C-L	D-L	U-L
L-D	C-D	D-C	U-C
L-U	C-U	D-L	U-D

Pages additionnelles : Consonnes et traits: Patrons de substitution

Veuillez décrire les substitutions relatives aux traits (colonne de gauche). Les substitutions sont organisées selon le **mode d'articulation**, le **point d'articulation** et le **voisement**. Portez attention aux substitutions (et non aux omissions), sauf si les omissions sont limitées à un nombre restreint de traits (modes d'articulation, points d'articulation ou voisement). Ce tableau aide à déterminer les objectifs de thérapie relative aux traits individuels et aux traits combinés (par exemple, l'enfant produit le son /f/, mais ne produit aucune autre fricative).

Traits	Consonnes selon l'inventaire adulte	Position initiale	Position médiane	Position finale
Mode d'articulation Semi-voyelles : [-consonantique] ([+sonant])	j w ɥ			
Liquides : [+sonant et +consonantique]	l ʁ /ʁ (r)			
[+latéral]	l			
Nasales : [+nasale]	m n ŋ			
Plosives : [-continu] [-nasale])	p b t d k g ([ʔ])			
Fricatives : [+continu] ([-sonant])	f v s z ʃ ʒ			
Affriquées allophoniques : [ts]/[dz]	ts dz / _V [+haut, -arrière,+arrondi]			

Point d'articulation Labiale	p b m f v w ɥ		
Labiodentale	f v		
Coronale [+antérieur]	t d n s z ts dz l (r)		
[-antérieur]	ʃ ʒ j ɥ		
«[+grooved]» ou [+strident]	ts s z dz ʃ ʒ		
Dorsale [+haut]	k g ŋ j w ɥ		
Dorsale [-haut] [-bas]	ʀ ʁ		
Voisement [-voisée]	p t k f s ts ʃ		
[+voisée] plosives et fricatives	b d g v z dz ʒ ʁ		
[+glotte étendue]	f s ts ʃ		

Pages additionnelles : Voyelles (seulement s'il y en a un besoin)
A. Inventaire ou analyse indépendante = productions de l'enfant
B. Analyse relative = comparaison avec la production adulte
Codez acquis/capacité, besoin/non acquis, inconstant

A. Inventaire des voyelles	Besoin spécifique	
	Syllabe accentuée	Syllabe non accentuée
Voyelles orales : i ɪ e ɛ a y ʏ ø œ ɶ ə ʌ ɔ u o ɑ Voyelles nasals : ɛ̃ œ̃ ɑ̃ ɔ̃ Autres:		

Codez besoins/non acquis ou inconstant (identifiez les changements de traits).

B. Analyse relative Traits	Voyelles	Différence comparée à la production adulte	
		Syllabe accentuée	Syllabe non accentuée
Dorsale [+arrière]	ʌ ə ɔ u o ɑ ɑ̃ ɔ̃		
Coronale [+avant]	i ɪ e ɛ a y ʏ ø œ ɶ ɛ̃ œ̃		
Dorsale [+haut]	i ɪ y ʏ u		
Dorsale [-haut] et [-bas]	e ɛ ø œ o ɔ ɛ̃ œ̃ ɔ̃		
Dorsale [+bas]	a ɶ ɑ ɑ̃		
Labiale [+arrondi]	y ʏ ø œ ɶ u o ɔ œ̃ ɔ̃		
[+tendu]	i e a y ø u o ɑ ɑ̃ ɛ̃ œ̃ ɔ̃		
[-tendu]	ɪ ɛ ʏ œ ɶ ə		

À noter :
a) Séquences qui contiennent /w/ et /ɥ/ sont inclues dans la section de groupes consonantiques
b) Veuillez indiquer les observations de la prosodie, l'intonation, le rythme et du débit de la parole

Veuillez indiquer les habiletés et les besoins de l'enfant selon les voyelles à la p. 8.

Pages additionnelles : Objectifs et stratégies pour la thérapie

	Structure du mot	Position du mot et séquences (de la p. 4 et 5)	Traits et segments (de la p. 4 et 6)
Acquis/Capacité qui peuvent être utilisés comme stratégies dans l'intervention	Nombre de syllabes par mot : Forme de mot CV : Patrons d'accentuation :	Consonnes simples par position du mot (voir acquis de la p. 4) Position initiale : Position médiane : Position finale : Séquences consonnes doubles (voir la p. 5) C_C : CC : V_V :	Consonnes par types ou traits individuels (des p. 4 et 6) Mode d'articulation : Point d'articulation : Voisement : Voyelles :
Besoins/non acquis	Nombre de syllabes par mot : Forme du mot CV : Patrons d'accentuation :	Consonnes simples par position du mot (voir la p. 4) Position initiale : Position médiane : Position finale : Séquences consonnes doubles (voir la p. 5) C_C : CC : V_V :	Consonnes par types ou traits individuels (des p. 4 et 6) Mode d'articulation : Points d'articulation : Voisement : Voyelles : C : Combinaison de traits Mode - point d'articulation Mode - voisement Point d'articulation – voisement Traits et combinaisons de voyelles
Autres facteurs à considérer (selon la p. 2) :			

Appendix 2
Nonlinear Phonological Scan Analysis for Intervention Planning - French

Pages 1-5 provide a basic analysis for word structure and consonants.
Additional Pages: p. 6-consonant feature mismatch patterns; p. 7-vowels; p. 8-Summary

Name: _____ Birthdate: _____

Test date: _____ Age: _____ Hearing : _____

Contact information: _____

General communication: _____

Referrals needed: _____

Optional % Match: Whole Word: _____ Word Shape (CV): _____ Consonants (PCC): _____

Other counts: _____

Long-term goals: (see p. 8): _____

First Block Treatment Goals: Type, Order, Treatment Strategies

	Word Structure	Positional, sequences	Features, Segments: p. 4 (6,7)
Goals for first treatment block with numbered order	**Length** (See p. 3) Stress Word shapes:	**Positional:** p. 4, bottom **Sequences:** p. 5	Individual features: Existing features to combine into new segment(s):
Therapy strategies by goal #	**Strong segments to use:** See p. 4, top Tx Strategies:		Strong word shapes to use: p.3 Tx Strategies:

Overview – Circle or check boxes. 5-10 minute quick look.

This page helps identify (a) which analyses are needed and (b) client strengths that may be useful for treatment.

Level	Forms	Clear Strength	Needs analysis
Word structure *For structure, the consonants and vowels do not have to match the actual adult speech sounds, but need to be present in some form (substitutions acceptable).*		Minimal deletion ☐ Minimal epenthesis ☐	☐ Page 3
Vowels		Vowels ☐	☐ - Page 7
Consonants **See chart on p. 4**	Manner: How a speech sound is made	Few manner substitutions ☐	☐ - Page 4
	Place: Where a speech sound is made	Few place substitutions ☐	☐ - Page 4
	Laryngeal : (voicing)	Few voicing changes ☐	☐ - Page 4

	Clear Strength	Needs analysis (inconsistent or absent)
Variability and sequences	Overall, the client's productions are not variable. ☐	Different productions for the same word? ☐ Different productions for the same speech sound, word structure? ☐ Several assimilations ☐ Cs, Vs often move to other places in the word? ☐ **For analysis, go to Page 5**

Other Information about the Client

	Strength	Need	Unknown
Language production			
Language comprehension			
Preliteracy/literacy/phonological awareness			
Motor skills (gross, fine, oral mechanism)			
Social skills			
Cognitive skills			
Environmental support for treatment, referrals			

Word Structure: Length, Stress, Word Shape in CV Sequences (Counts optional)

A. The forms used by the client **B.** Comparison with adult targets

Colour: strength, absent or marginal, inconsistent. Present but not for adult target.

WI = word-initial, WM = word-medial, WF = word-final

A. Forms used frequently by client (parentheses = some use)	A. Summary by word length
1-syllable words used? ☐ CV Sequences: CV(V) CV(V)C Other _____ Single C WI WF CC: WI WF 2 CC/word? CCC WI WF	Strength? ☐ Need? ☐ Most complex CV shapes: Not elicited?
2-syllable words used? ☐ CV sequences: CV(V)CV CV(V)CVC CVCCV(C) Other _____ Stress (S=Primary, s=secondary, w=unstressed): Sw wS Ss sS Single Cs: WI WM WF CC WI WM WF 2 CCs/ word? CCs & WF C in word? CCC WI WM WF	Strength? ☐ Need? ☐ wS or sS stress? Most complex CV shapes: Not elicited?
3 or more syl. used? ☐ Examples of long word shapes (CV): Stress: Sws Ssw Sww swS wSw wwS Swsw swSw Single Cs: WI WM WF CC WI WM WF CCC WI WM WF 2-3 CCs in a word? CCs & WF C in word?	Strength? ☐ Need? ☐ wSw stress? Most complex CV shapes? Not elicited?

B. Comparison with Adult Target *Circle or check*

Pattern: Length, stress	1 syllable	2 syllables	Multisyllabic
Syllable deletion		Yes Often? Where?	Yes Often? Where?
Syllable addition (vowel epenthesis)	Yes Often? Where?	Yes Often? Where?	Yes Often? Where?
Stress shift		Yes Often? Type:	Yes Often? Type:
Content reduced, weak syllables?		Yes Often? Type:	Yes Often? Type:

Pattern: CV Shape	WI	WM	WF	More in long words
Cs added	Yes Often?	Yes Often?	Yes Often?	Yes Often?
Deletion, Single Cs	Yes Often?	Yes Often?	Yes Often?	Yes Often?
Deletion in CC(C)	Yes Often?	Yes Often?	Yes Often?	Yes Often?
Overused Cs or Vs?	Yes Often?	Yes Often?	Yes Often?	Yes Often?

Optional Counts: % Word Length Match _____ % Word Shape Match ___ % C Present by Position _____
%CC Match ____ Other _____
Strengths: _____ Needs: _____ (Enter p. 8)

Client's Singleton Consonants

Note – Client may produce single Cs for adult CCs. These should be entered here.

Colour Codes: Match, absent or very marginal, inconsistent, present but not for adult target

French: pʰ b m tʰ d n kʰ g ŋ f v s z ʃ ʒ l w j ʁ ʀ/r ɥ

Counts optional by phoneme	Word-initial	Word-medial intervocalic	Word-final
Mostly match: Strength			
Inconsistent: Partial strength			
Present but not for adult target (can include segments also used as matches Need?			
Tested but absent or very marginal			
Non-French speech sounds			
Not elicited/tested			
Frequent substitutions (potential default segments) (p. 6, bottom)			
Optional summary of inventory by features (Refer to features, p. 6)			

Consonants missing in one established word position but found elsewhere in word plus those inconsistent in a word position (Word Position Needs, middle column pp. 1, 8)

Word-Initial	Word-Medial (intervocalic)	Word-Final

Neighbouring Consonant Sequences ("Clusters"): (Enter P. 8)
Colour: Strength, absent or very marginal, inconsistent, present but nor for adult target
Add additional CCs, especially word medially, and any WI clusters not tested.
Indicate what client used, and patterns of difference, e.g., /sp/ > [p]

	Word initial	Word medial (across syllable boundary)	Word medial (onset)	Word final
CC with /j/, /w/ or nasal	pj bj ʃj pw dw vw sw ʁw nɥ nw (ʃm)		tw mj	
CC with /l/	pl bl kl gl fl			gl
CC with /ʁ/ɤ/r	pʁ bʁ tʁ dʁ kʁ gʁ fʁ		fʁ ʁk	ʁd ʁs bɤ
CC with fricative other than /s/	fl fʁ vw ʃj (ʃv)		tʁ fʁ	vʁ
CC with /s/	sw		sw sj sk st	st ʁs stɤ
CCC			ʁʃj skɥ	ʁbʁ
Across syllable boundary		k.t ʃ.k		
Other :				

Mismatch Patterns in neighbouring or distant (C_C, V_V) sequences
Note examples of words with these patterns. Underline relevant parts of word.

Assimilation* /lɑ̃p/ > [mɑ̃p]	Dissimilation* /pu/>[pi] mais /ti/>[tu]	Metathesis* /sp/ > [ps]	Epenthesis* /plʏm/ > [pəlʏm]	Coalescence* /sp/ > [f] [Lab,+cont] fusion	Major deletion

*Occurs most in: Multisyllabic words ☐ Stressed syl. ☐ Unstressed syl.? ☐

Adult Target Sequences: (Enter C_C or CC, depending on needs)

Identify adult target sequences for mismatches above.

Can add match examples where inconsistent. L=Labial; C=Coronal; D=Dorsal (velar); U=Uvular

Adult sequence	Adult sequence	Adult sequence	Adult sequence
L-L	C-C	D-D	
L-C	C-L	D-L	U-L
L-D	C-D	D-C	U-C
L-U	C-U	D-L	U-D

Additional Page: Singleton Substitutions: Consonants, Features

This substitution analysis helps determine both individual and combination feature needs. Feature combination goals reflect inconsistency within a category, e.g., /f/ but no other fricatives. **Describe the substitutions that concern the feature at the left of the row, e.g. mismatch of manner only in the manner rows, mismatch of both place and manner in both rows.** Focus **on substitutions**, not deletions, unless deletions affect only occasional features.

Adult features	Adult C	Initial	Medial Intervocalic	Final
Manner Glides : [-cons] ([+son])	j w ɥ			
Liquids : [+son and +cons]	l ʁ /ʁ (r)			
[+lateral]	l			
Nasals : [+nasal]	m n ŋ			
Stops : [-continuant] & ([-nasal])	p b t d k g ([ʔ])			
Fricatives : [+cont] (&[-sonorant])	f v s z ʃ ʒ ʁ			
Affricates allophonic : [ts]/[dz]	ts dz / _V [+high, -back,+round]			
Place Labial	p b m f v w ɥ			
Labiodental	f v			
Coronal [+anterior]	t d n s z ts dz l (r)			
[-anterior]	ʃ ʒ j ɥ			
«[+grooved]» or [+strident]	ts s z dz ʃ ʒ			
Dorsal [+high]	k g ŋ j w ɥ			
Dorsal [-high] [-back]	ʁ ʁ			
Laryngeal [-voiced]	p t k f s ts ʃ			
[+voiced] stops and fricatives	b d g v z dz ʒ ʁ			
[+spread glottis]	f s ts ʃ			

Defaults: Frequent features, often in substitution patterns; may vary by word position.

Manner defaults? Circle expected: [+cons], [-cont], [-nas], [-lateral] Other:

Place defaults? Circle expected: Cor [+anterior] Other: _____

Laryngeal default? Circle expected: [-voiced] Other: _____

Additional Page: Vowels

A. The forms used by the client **B.** Comparison with adult forms

Colour code as: Strength, absent, inconsistent, present but not for adult target

A. Vowels Used	Specific V Needs?	
	Stressed	Unstressed
Oral vowels : i ɪ e ɛ a y ʏ ø œ ɶ ə ʌ ɔ u o ɑ Nasal vowels : ɛ̃ œ̃ ɑ̃ ɔ̃ Autres:		

Features	Vowels	Mismatch patterns by feature	
		Stressed	Unstressed
Dorsal [+back]	ʌ ə ɔ u o ɑ ɑ̃ ɔ̃		
Coronal [+front]	i ɪ e ɛ a y ʏ ø œ ɶ ɛ̃ œ̃		
Dorsal [+high]	i ɪ y ʏ u		
Dorsal [-high] & [-low]	e ɛ ø œ o ɔ ɛ̃ œ̃ ɔ̃		
Dorsal [+low]	a ɶ ɑ ɑ̃		
Labial [+round]	y ʏ ø œ ɶ u o ɔ œ̃ ɔ̃		
[+tense]	i e a y ø u o ɑ ɑ̃ ɛ̃ œ̃ ɔ̃		
[-tense]	ɪ ɛ ʏ œ ɶ ə		

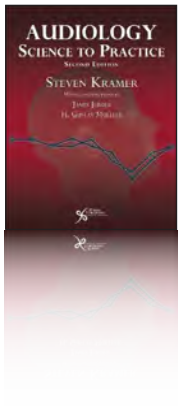
Notes :
a) Sequences that contain /w/ **et** /ɥ/ **are included in consonant sequences page**
b) Include prosody, intonation, rhythm, speech rate, voice, resonance factors

Enter major vowel strengths and needs on Page 8.

Additional Page: Strengths and Needs/Goals (Immediate Goals P. 1)

Strength or Need?	Word Structure	Word Positions Sequences (from p. 4 and 5)	Features and segments (from p. 4 and 6)
Clear strength to use a treatment strategies	Syllables per word : CV word shapes : Stress patterns	Single Cs by word position (matches p. 4) WI: WM: WF: **Sequences (from p. 5)** C_C: CC: V_V:	Cs by type or feature (from p. 4 and 6) Manner: Place: Laryngeal: Vowels:
All needs / Potential Goals	Syllables per word : CV word shapes : Stress patterns :	Singles Cs : Word position needs (from p. 4) WI: WM: WF: **Sequences (from p. 5)** C_C: CC: V_V:	Cs : Individual features (from p. 4 and 6) Manner: Place: Laryngeal: Vowels: **Cs : Feature combinations within one segment** Manner - Place Manner - Laryngeal Place - Laryngeal Vowel features or combos :
Other factors to consider (from p. 2) :			

BOOK REVIEW
ÉVALUATION DE LIVRE



Title: *Audiology Science to Practice, Second edition*

Author: *Steven Kramer with contributions by James Jerger and H. Gustav Mueller*

Publisher: *Plural Publishing, San Diego, CA, 2013*

Cost: *$ 98.60- textbook. $131.70 -textbook and workbook together.*

Available from: *Amazon*

Reviewer: *Carmen Barreira-Nielsen*
Affiliation: Federal University of Espírito Santo -Brazil and University of Ottawa, Canada.

"Audiology Science to Practice" is a textbook for undergraduate and graduate students in Audiology that incorporates up to date scientific and clinical knowledge. It provides a broad overview of audiologic terms and a firm understanding of the concepts of basic training and clinical practice. The textbook is divided into three parts, with a total of thirteen chapters, which address several important topics. Each topic is supplemented with key objectives and also a good synopsis summarizing the key points of each concept.

The first part of the book introduces the reader to the science of hearing by covering anatomy and physiology of the ear as well as fundamentals of acoustics, to improve one's understanding of the auditory system. The second part of the textbook presents procedures and methods used in Clinical Audiology, by describing basic audiologic tests, speech tests and admittance measures. It is important to point out, that a whole new chapter about clinical masking has been added to this new edition of the textbook. In this section, one can find an introduction to the physiological methods commonly used for the assessment of hearing loss, such as instrumentation, procedures, and interpretation of clinical tests. A positive characteristic of the textbook is its widespread use of examples, which facilitate an easier interpretation of the information being presented. For example, an interesting table highlighted in the second part of the textbook, provides a summary of the most expected acoustic reflex thresholds for different types of pathology. Also in part two, the authors include a general description of selected auditory disorders by describing symptoms, underlying causes, treatment options, and typical results from an audiologic test of a patient that presents these disorders. The authors conclude part two with a focus in the last chapters on two aspects: screening and hearing aid amplification. Various methods used in screening newborns, school age children, and adults are described and a comprehensive description of hearing aids and cochlear implants, along with many updates that have taken place in amplification options over the past few years, are included. The hearing aid chapter is written in an organized and easy-to-ready fashion, providing readers with a historical perspective of hearing aid development while also including recent market trends. It also presents several steps in the overall process of fitting amplification to the patient's needs. In addition, there is supplemental information about electroacoustic and real-ear verification. Overall, this section of the text is useful for those wishing to remain up to date with digital hearing aid technology. Part three, the final section of the book, is divided into two chapters and provides considerable and specific advice on how to join the profession of audiology. It includes information about scope of practice and also presents a brief history on the practice of Audiology in the United States.

The textbook contains a complete glossary of terms and a subject index. Additionally, to facilitate the learning described in this textbook, a supplementary companion workbook can be used. This workbook contains numerous sets of related questions and activities, which complement the textbook.

In short, the second edition of "Audiology Science to Practice" provides the reader with new chapters on clinical pure tone masking and hearing screening while expanding and updating the content in others chapters. I highly recommend this book for both students and professionals, since it covers all the basic concepts of the study of audiology while providing many clinical examples and details related to hearing issues.

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SAC | OAC 20
HALIFAX 16

CALL FOR PAPERS

SAC Conference 2016

Halifax, NS | Apr. 27 – 30, 2016

Deadline for receipt of all program submissions:
September 30, 2015

Submit abstracts online.

The Speech-Language and Audiology (SAC) 2016 conference will be held in Halifax, NS. SAC invites program submissions for the national conference.

Clinicians from all practice settings are encouraged to share their insight, experience, methods and research. SAC invites submissions based on evidence-based practice, as well as evidence-formed practice including papers, mini-seminars and posters. Research submissions should advance the evidence base for the treatment of speech, language, communication, and feeding disorders. Clinical practice submissions should involve science-based principles used by S-LPs OR cross-discipline dissemination of accurate information about speech pathology. Multidisciplinary presentations will be considered. Sessions will be scheduled daily from April 28-30, 2016.

SESSION TYPES

Paper Presentations	A paper presentation should be based on current/ recent research, evidence-based practice clinical experience, or published/unpublished single case design studies.	45 minutes in duration
Mini-Seminar Presentations	These sessions are designed to provide opportunity for interactive discussion of clinical practice and professional issues	90 minutes in duration
Poster Presentations	Posters should stand alone in conveying information. Each display should contain title and author(s), statement of purpose, methodology, results (including graphed data) and conclusions. Posters must be in landscape format, no larger than 2.4 m x 1.2 m.	Authors are required to be present at designated times to respond to questions and discussion.

The complete call for papers including conditions for acceptance, instructions and request for presentation form, can be downloaded from our website.

APPEL DE COMMUNICATIONS

Congrès d'OAC 2016

Halifax (Nouvelle-Écosse) | Du 27 au 30 avril 2016

SAC | OAC 20
HALIFAX 16

Date limite de réception des propositions :
le 30 septembre 2015

Présenter les résumés analytiques en ligne.

Le congrès national 2016 d'Orthophonie et Audiologie (OAC) se tiendra à Halifax en Nouvelle-Écosse. OAC invite les contributions au programme pour le congrès national.

Les cliniciens de tous les contextes de pratique sont invités à partager leurs intuitions, expériences, méthodes et recherches. OAC sollicite des contributions de pratiques fondées sur des données probantes, ainsi que des pratiques documentées, notamment des articles, des mini-séminaires et des affiches. Les contributions de recherches doivent faire évoluer la base des données probantes pour le traitement des troubles de la parole, du langage, de la communication et de la déglutition. Les contributions de pratiques cliniques doivent regrouper les principes scientifiques appliqués par les orthophonistes OU la diffusion interdisciplinaire de renseignements exacts en orthophonie. On envisagera des exposés multidisciplinaires. On organisera des séances tous les jours du 28 au 30 avril 2016.

TYPES DE SESSION

Articles contribués	Une présentation d'article doit reposer sur une recherche actuelle / récente, une expérience clinique fondée sur des données probantes ou des études de conception de cas uniques publiées / inédites.	durée de 45 minutes
Présentations de mini-séminaires	Ces séances sont conçues de manière à susciter des discussions interactives au sujet de la pratique clinique et de problèmes professionnels.	durée de 90 minutes
Présentations d'affiches	Les affiches doivent permettre, à elles seules, de transmettre les renseignements. Chaque kiosque doit contenir le titre et l'auteur ou les auteurs, l'énoncé de l'objectif, la méthodologie, les résultats (y compris les données illustrées) et les conclusions. Les affiches doivent être en format paysage et d'au plus 2,4 m sur 1,2 m.	Lors de périodes établies à l'avance, les auteurs devront être présents pour répondre aux questions et participer aux échanges (discussions)

Le formulaire pour soumettre les propositions de communications, les conditions et les instructions peuvent être téléchargés à partir du **site Web d'OAC**.

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://powerreview3.aptaracorp.com/journals/sac-oac/** to submit articles. If you are unable to use the electronic system, please send a file containing the manuscript, including all tables, figures or illustrations, and references in Word via e-mail to the editor at **elizabeth.fitzpatrick@uottawa.ca**.

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

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

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

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

Organization of the Manuscript

All copies should be typed, double-spaced, with a standard typeface (12 point, non-compressed font) on 8 ½ x 11 paper size. All margins should be at least one (1) inch. An electronic copy of the manuscript should be submitted directly to the editor. Author identification for the review process is optional; if blind-review is desired, the documents should be prepared accordingly (cover page and acknowledgements blinded). Responsibility for removing all potential identifying information rests solely with the author(s). All submissions should conform to the publication guidelines of the most current edition of the Publication Manual of the American Psychological Association (APA), 6th Edition. The APA manual is available from most university and commercial bookstores. Generally, the following sections should be submitted in the order specified.

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

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

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

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

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

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

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

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

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

Potential Conflicts of Interest and Dual Commitment

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

Participants in Research Humans and Animals

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

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

Renseignements à l'intention des collaborateurs

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

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

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

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

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

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

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

Courrier des lecteurs : Forum de présentation de divergences de vues scientifiques ou cliniques concernant des ouvrages déjà publiés dans la Revue. Le courrier des lecteurs peut avoir un effet sur notre façon de penser par rapport aux facteurs de conception, aux confusions méthodologiques, à l'analyse ou l'interprétation des données, etc. Comme c'est le cas pour d'autres catégories de présentation, ce forum de communi-cation est soumis à une révision par des collègues. Cependant, contrairement aux autres catégories, on recherchera la réaction des auteurs sur acceptation d'une lettre.

Présentation de manuscrits

Pour soumettre un article, les auteurs doivent utiliser le système de soumission électronique de l'ACOA à l'adresse **http://powerreview3.aptaracorp.com/journals/sac-oac/**. Si vous ne pouvez pas utiliser le système électronique, veuillez envoyer par courriel un fichier Word contenant le manuscrit, y compris tous les tableaux, les figures ou illustrations et la bibliographie. Adressez le courriel au rédacteur en chef à l'adresse **elizabeth.fitzpatrick@uottawa.ca**.

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

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

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

Organisation du manuscrit

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

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

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

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

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

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

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

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

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

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

Conflits d'intérêts possibles et engagement double

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

Participants à la recherche – êtres humains et animaux

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

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

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