AUDIOLOGY AND SPEECH-LANGUAGE PATHOLOGY

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Audiology and Speech-Language Pathology

INTRODUCTION

In Canada, audiology (AUD) and speech-language pathology (SLP) are autonomous professions in the area of communication health. Audiologists have expertise in preventing, identifying and managing hearing problems, tinnitus (ringing in the ears), balance problems and other auditory difficulties. Speech-language pathologists have expertise in preventing, identifying and managing speech, language, voice, fluency (stuttering) and swallowing problems. Both professions provide assessment and treatment in their respective areas in a variety of settings and with patients of all ages. They also advocate for the prevention of communication disorders (Speech-Language & Audiology Canada [SAC], 2016a, 2016b).

HISTORY OF THE PROFESSION

AUD and SLP are relatively new professions in Canada compared to other parts of the world, such as the United States, the United Kingdom and Europe. SLP services preceded AUD services by about 20 years; during that time, speech-language pathologists performed some services now typically carried out by audiologists, such as hearing tests. Today, AUD and SLP are two distinct professions with different scopes of practice and training programs.

TABLE 1: First Canadian Speech Language Pathology service programs

Year	Agency	Province
1933	Montréal Children's Hospital	Quebec
1937	Hospital for Sick Children	Ontario
1938	Winnipeg School Division	Manitoba
1940	Victoria schools	British Columbia
1949	Mental health clinics	Saskatchewan
1950	Private practice (Calgary)	Alberta
1952	Dalhousie Public Health Clinic	Nova Scotia

Source: Martin, 2011.

In the late 1800s, speech-language pathologists were known as "speech correctionists" and they provided treatment focused on the mechanics of articulation. The title later transitioned to "speech therapist". The term "pathologist" gradually came to be included in the title, as it captured the roles of providing treatment and managing communication issues that have been deemed "pathological". Finally, there was a push to include the word "language" in the title, as language disorders were gradually becoming another important part of the clinical focus. "Speech-language pathologist" became the official title for the profession in Canada in 1983 (Martin, 2011).

The first SLP services in Canada were provided by internationally trained professionals from the United States and the United Kingdom, followed by professionals from Australia, the Netherlands and South Africa. In the 1930s, SLP services were available only in Quebec, Ontario and Manitoba, and were offered exclusively in schools and government-funded hospitals, primarily to children (see Table 1; Martin, 2011) . In the 1950s, service availability began to expand to other provinces, including British Columbia, Saskatchewan, Alberta and Nova Scotia. These post-war services were offered in rehabilitation clinics for injured war veterans, representing a shift in clinical focus to include adults.

Canada's first audiologists arrived mainly from the United States in the 1950s (Martin, 2011). They initially practised in government-funded clinics and schools such as the Interprovincial School for Education of the Deaf in Amherst, Nova Scotia. The Canadian Speech and Hearing Association's first published members' directory included 149 members, only 16 of whom were listed as "audiologists" (Martin, 2011). Most members reported practising in both professions, with speech therapists (the designated title at the time) also administering hearing tests and audiological-related therapies. AUD services opened in various hospital and clinic settings across the country in the 1960s.

TABLE 2: Founding dates of Canadian educational programs in speech-language pathology and audiology

Founding date	University	Programs
1956	Université de Montréal	SLP and AUD (French)
1958	University of Toronto	SLP
1963	McGill University	SLP and AUD*
1969	University of Alberta	SLP
1969	University of British Columbia	SLP and AUD
1970	University of Western Ontario	SLP and AUD
1976	Dalhousie University	SLP and AUD
1993	University of Ottawa	SLP and AUD (French)
2001	Université Laval	SLP (French)
2011	Université du Québec à Trois- Rivières	SLP (French)
2011	Université Laurentienne	SLP (French)
2019	McMaster University	SLP

* McGill's AUD program was suspended in 1994 and terminated in January 2003.
Source: Martin, 2011.

EDUCATIONAL PROGRAMS

The first educational SLP and AUD programs were established in 1956 at the Université de Montréal. Two years later, the first English SLP program opened its doors at the University of Toronto (See Table 2 for the dates of establishment of other programs). Both the University of Toronto and the Université de Montréal programs awarded graduate diplomas.

The University of Western Ontario and the University of Alberta were among the first programs to offer four-year bachelor's degrees. The entry-to-practice requirement became a master's degree in AUD or SLP (or equivalent) in 1993 and all programs now award graduate diplomas (Martin, 2011).

Despite calls to graduate a larger number of audiologists to address anticipated shortages (Employment and Social Development Canada [ESDC], 2019), the number of admissions in the five AUD programs has not changed significantly in recent years. The response from universities has been better to the anticipated shortage of speech-language pathologists (ESDC, 2019), with four new master's degree programs in SLP created within the last 10 years.

NATIONAL AND PROVINCIAL ASSOCIATIONS

National association

The Canadian Speech and Hearing Association was founded in 1964 as a national association for audiologists and speech-language pathologists. Its purpose was "to establish and maintain high national standards of training and practice for the professions, develop

TABLE 3: Founding dates for provincial and territorial associations

1955	Corporation professionnelle des orthophonistes et audiologistes du Québec (now Quebec Association of Speech-Language Pathologists and Audiologists) https://qaslpa.ca/
1957	British Columbia Association of Speech-Language Pathologists and Audiologists (now Speech and Hearing BC) https://speechandhearingbc.ca/
1958	Ontario Association of Speech-Language Pathologists and Audiologists Association https://www.osla.on.ca
1958	Saskatchewan Association of Speech-Pathologists and Audiologists http://www.saslpa.ca/
1958	Manitoba Speech and Hearing Association (now defunct)
1964	Speech and Hearing Association of Alberta (now replaced with a regulatory body with dual function)
1965–1976	Atlantic Provinces Speech and Hearing Association, which split into three separate associations in 1976: • Newfoundland and Labrador Association of Speech-Language Pathologists and Audiologists http://www.nlaslpa.ca • Speech and Hearing Association of Nova Scotia https://www.shans.ca • New Brunswick Association of Speech-Language Pathologists and Audiologists https://www.nbaslpa.ca
1979	Prince Edward Island Speech and Hearing Association http://www.peispeechhearing.ca/
1994	Yukon Speech-Language Pathology and Audiology Association http://www.yslpaa.org/
2000	Association of Northwest Territorial Speech-Language Pathologists and Audiologists

ties with existing provincial associations, and build the membership" (Canadian Association of Speech-Language Pathology and Audiology [CASLPA], 1999). The association started with 12 members and had grown to 149 by the time it released its first directory in 1965, which provided the earliest record of practising professionals. In the last 50 years, both professions have grown considerably along with recognition of the broad range of work in these disciplines. The national association, now called Speech-Language & Audiology Canada (SAC), has more than 6,650 members and associates, including 5,000 speech-language pathologists and 800 audiologists.

SAC membership was expanded in 2006 to include communication health assistants, who work collaboratively under the supervision of speech-language pathologists or audiologists. The term "communication health assistant" covers AUD assistants, SLP assistants, and speech and hearing assistants who have completed a formal educational training program from a community college or university (SAC, 2015a).

A national association, the Canadian Academy of Audiologists, was established in 1996 solely for audiologists, and incorporated in 1998. Its mission is to enhance the role of audiologists as primary hearing healthcare providers through advocacy, education and research.

Provincial and territorial associations

Most of the provincial associations were established before 1964 and, in the early years, they were larger, more integrated and stronger than the national association (Martin, 2011).

It is important to acknowledge that there is limited historical information available about the professions of AUD and SLP in Canada. The national association's archives were not estabished until long after its founding and there are only few archives in provincial associations. In addition, the associations' archives and histories focused primarily on the organizations, rather than on services and clinical practice.

EMERGENCE OF A NATIONAL CERTIFICATION PROGRAM

Between 1985 and 1987, CASLPA (now SAC) implemented a voluntary national certification program, which contributed to the strength of the AUD and SLP professions in Canada. Practising Canadian clinicians who applied were automatically grandfathered into certification until 1987. Subsequently, new graduates and professionals who wanted to be recognized as certified speech-language pathologists or audiologists were required to pass a national exam, specific to each profession. Professionals holding any related degree—bachelor's or master's—from a Canadian university were eligible for certification until 1993, when the degree required for certification was changed to a master's. At the time of writing this document, the national certification is not mandatory to practise as an audiologist or speech-language pathologist in Canada [1], but it has been recognized as a standard of practice by many employers, the public and peers for many years.

International recognition of certification

National certification has also been internationally recognized, leading to the signing of the Mutual Recognition Agreement (MRA) in 1997. This bi-lateral agreement stated that speech-language pathologists and audiologists holding certification by either the American Speech-Language-Hearing Association or CASLPA were considered to have met the academic course work, clinical practicum and examination requirements of the other association (American Speech-Language-Hearing Association, n.d.).

In 2004, the Royal College of Speech and Language Therapists (United Kingdom) and Speech Pathology Australia joined the MRA. The Irish Association of Speech and Language Therapists and the New Zealand Speech-Language Therapists' Association have since also signed the agreement.

1 AUD and SLP will join the ranks of other regulated health care professions in Canada that require successful completion of a national entry-to-practice examination as a necessary, non exemptible condition of licensure, in the fall 2020.

PROFESSIONAL DOCTORATE DEGREES IN AUDIOLOGY

A doctorate degree, such as a professional doctorate degree in AUD, became the entry-to-practice level for audiologists in the United States in 2012 following an analysis of practice and curriculum review of the profession by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the United States. The analysis determined that master's degree programs did not adequately prepare graduates for clinical practice (SAC, 2015b). Although, there is no information available about the impact of that change, SAC released a position paper in 2015, endorsing the implementation of professional doctorate degree programs in AUD in Canada. The expanding scope of practice that had emerged in the preceding decades was the main driver behind the endorsement. A survey of audiologists conducted in 2014 found that 20% of respondents had completed a professional doctorate degree in AUD in the United States, compared to 8% in 2006 (SAC, 2015b).

The agreement ended for certified audiologists in 2012. While the entry-to-practice level for AUD remained a master's degree in Canada, the United States began requiring a professional doctorate degree in 2012. There has been no MRA for internationally trained audiologists since then.

Currently, the MRA applies only to speech-language pathologists who hold full credentials from one of the signatory associations. It does not guarantee professional licensing, immigration or employment, but it facilitates professional recognition.

EDUCATION AND TRAINING

AUDIOLOGY

Program organization and duration

Core foundations and skills in all AUD programs in Canada include:

- Audiological assessment, including (electro) physiological and behavioral diagnostic measurements;
- Amplification concepts (systems, selection, fitting, verification and validation) and implantable hearing devices;
- Calibration and maintenance of instrumentation;
- Auditory and vestibular disorders involving both peripheral and central pathways of the hearing system;
- Assessment and management of tinnitus, including hyperacusis;
- Speech acoustics; and
- Concepts in speech science pertinent to AUD; and
- Professional practice issues specific to AUD

Additionally, all programs must provide students with a minimum of 350 hours of supervised clinical practicum in a variety of settings. Clinical programs generally take two to three years to complete (Council for Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology [CACUP-ASLP], 2019).

Admission requirements

Applicants to AUD programs must have academic prerequisites in linguistics, acoustical physics, developmental psychology, research methods and statistics. A minimum grade point average (GPA) of around 3.0 on a 4.3-point scale (B+ average) is also required. However, applicants' GPAs are usually much higher, in the A to A+ range. See Appendix A for more details about the specific admission requirements for each of the five Canadian AUD programs.

SPEECH-LANGUAGE PATHOLOGY

Program organization and duration

Core foundations and skills in all SLP programs in Canada include:

- Articulation/phonological disorders;
- Preschool/school-aged language development and literacy;
- Developmental and acquired language and speech disorders;
- Cognitive communication disorders;
- Voice disorders;
- Resonance disorders or structurally related disorders (e.g., cleft lip or palate);
- Fluency disorders;
- Augmentative and alternative communication;
- Dysphagia; and
- Concepts in hearing science pertinent to SLP; and
- Professional practice issues specific to SLP

Additionally, all programs must provide students with a minimum of 350 hours of supervised clinical practicum in a variety of settings. Clinical programs generally take two to three years to complete (CACUP-ASLP, 2019).

Admission requirements

Applicants to SLP programs must have academic prerequisites in linguistics, developmental psychology, human anatomy and physiology, research methods and statistics. A minimum GPA of around 3.0 on a 4.3 point scale (B+ average) is required to enter most programs. Similar to AUD, however, SLP applicants usually have GPAs in the A to A+ range. See Appendix B for more details about the specific admission requirements for each of the 12 Canadian SLP programs.

ACCREDITATION OF UNIVERSITY PROGRAMS IN AUDIOLOGY AND SPEECH-LANGUAGE PATHOLOGY

CACUP-ASLP is the accrediting body for graduate AUD and SLP programs in Canada. In collaboration with SAC and the Canadian Alliance of Audiology and Speech-Language Pathology Regulators (CAASPR), CACUP-ASLP promotes excellence in the education of audiologists and speech-language pathologists to ensure the continued growth and development of the professions. CACUP-ASLP also evaluates the effectiveness of university programs at providing education that allows graduates to achieve entry-level competency requirements and supports the growth and development of programs. As of 2019, there were 12 accredited programs in Canada:

- University of Alberta (SLP, English)
- University of British Columbia (AUD & SLP, English)
- Dalhousie University (AUD & SLP, English)
- Université Laval (SLP, French)
- Université Laurentienne (SLP, French)
- McGill University (SLP, English)
- Université de Montréal (AUD & SLP, French)
- Université d'Ottawa (AUD & SLP, French)
- Université du Québec à Trois-Rivières (SLP, French)
- University of Toronto (SLP, English)
- University of Western Ontario (AUD & SLP, English)
- McMaster University – candidate status (SLP, English)

RESEARCH-BASED MASTER'S PROGRAMS

Some schools and programs allow students with varied learning objectives to pursue health-related master's degrees while developing expertise related to their program of research. For audiology, these schools include Dalhousie University, Université de Montréal and University of Western Ontario. For SLP, they include Dalhousie University, McGill University, Université de Montréal, University of Western Ontario, Université Laurentienne and University of Alberta. Working alongside a research supervisor, students select one field of study and complete their degree requirements through a combination of coursework, seminars and an original thesis. The addition of the master's thesis to the program may extend the time to graduation by an extra year, or more until the thesis is completed. Clinical training may still be provided as part of the requirements to graduate.

DOCTORATE DEGREE PROGRAMS

Academic doctorate degree (PhD) programs are offered at all universities that offer clinical/professional master's degrees in AUD or SLP in Canada. Some universities offer combined master's/PhD programs in AUD or SLP, including Dalhousie University, University of Alberta and University of British Columbia. These programs generally include coursework and clinical training required for certification as an audiologist or speech-language pathologist.

Although the minimum entry-to-practice level in AUD in Canada is a master's degree, many audiologists find value in completing a professional doctorate degree (SAC, 2015b), which is required to practise as an audiologist in the United States. Unlike a PhD, a professional doctorate degree in AUD does not require a dissertation and is not intended to prepare a student for a research career. No universities in Canada currently offer professional doctorate degrees in AUD.

SPECIALIZATIONS

Training programs in AUD and SLP are designed to give students broad knowledge and experience in all practice areas, rather than focus on a specialization. While there are specialization programs in the United States, this extension of professional education in Canada is in its infancy and opportunities are limited. To become a qualified specialist in a subfield of AUD or SLP, clinicians must complete the requirements for certification in the particular area. British Columbia is currently the only province to have begun this type of specialized education, which it refers to as "advanced certification" (College of Speech and Hearing Health Professionals of British Columbia, n.d.).

Despite the lack of official recognition of specialization for audiologists and speech-language pathologists in Canada, greater involvement or specialized expertise in particular settings or with specific clinical populations has led to the development of a number of special interest groups.[2]

REGULATION OF THE PROFESSION

While professional associations exist to support professionals and membership in these associations is voluntary, provincial regulatory bodies have been established to protect the public. The first Canadian legislation to regulate AUD and SLP was passed in Manitoba in 1961. The bill was the first legislation to regulate the professions of "speech and hearing therapy" in North America, and it covered all practice in all settings (Martin, 2011). The second legislation in Canada was passed in Quebec in 1964. Today AUD and SLP are regulated in eight Canadian provinces (see Table 4)[3].

In designated Canadian provinces, licensing is mandatory to work as an audiologist or speech-language pathologist. In provinces and territories without regulatory bodies, clinicians can practise without a license or choose to join their provincial/territorial/national association, which enforces standards of practice as membership requirements. Some employers in these provinces/territories require membership or national certification as a condition of employment.

2 See https://canadianaudiology.ca/what-we-do/special-interest-groups

3 Nova Scotia College of Audiologists and Speech-Language Pathologists (NSCASLP) will be created on November 5, 2019. Licensing by NSCASLP will be required to work as an audiologist or speech-language pathologist in Nova Scotia after that date.

TABLE 4: Provincial/territorial regulatory bodies for audiologists and speech-language pathologists

Province	Regulatory body
British Columbia	College of Speech and Hearing Health Professionals of British Columbia https://www.cshhpbc.org
Alberta	Alberta College of Speech-Language Pathology and Audiology https://acslpa.ab.ca
Saskatchewan	Saskatchewan Association of Speech-Language Pathologists and Audiologists (association and regulatory body combined) http://www.saslpa.ca
Manitoba	College of Audiologists and Speech-Language Pathologists of Manitoba https://caslpm.ca
Ontario	College of Speech-Language Pathologists and Audiologists of Ontario http://www.caslpo.com
Quebec	College of Audiologists and Speech-Language Pathologists of Quebec http://www.ooaq.qc.ca/index.html
New Brunswick	New Brunswick Association of Speech-Language Pathologists and Audiologists (association and regulatory body combined) https://www.nbaslpa.ca
Newfoundland and Labrador	College of Audiologists and Speech-Language Pathologists of Newfoundland and Labrador http://www.caslpnl.ca

Although there is considerable congruency across the country, each province and territory has the discretion to set its own entry-to-practice standards and, until 2001, it was quite difficult to move from one jurisdiction to another (Martin, 2011). In 2001, provinces with legislation and provinces with voluntary associations signed the *Agreement on Internal Trade* to support the portability of audiologists and speech-language pathologists across Canada. The *Canadian Free Trade Agreement* replaced the *Agreement on Internal Trade* in 2017, but its mandate is the same. Since the agreement, members of the signatory bodies have an established method for audiologists and speech-language pathologists who are moving to another jurisdiction. They can apply to the other provincial regulatory body for licensure, or to the voluntary association, without undue barriers.

NATIONAL COALITION OF PROVINCIAL REGULATORS

In 2012, the Canadian Alliance of Audiology and Speech-Language Pathology Regulators (CAASPR) was established as a national coalition to address common AUD and SLP regulatory issues at the national level. Since then, CAASPR has worked on a centralization and capacity-building project[4] to harmonize the assessment and registration of speech-language pathologists and audiologists working across regulated jurisdictions in Canada, and to standardize outcomes, enhance public safety and improve labour mobility. One of the project's major outcomes was the development of the *National Audiology and Speech-Language Pathology Competency Profiles*[5] which were approved by the CAASPR board in 2018.

4 Read about the project at http://caaspr.ca/wp-content/uploads/2017/01/Project_Update_Spring_2017.pdf
5 See http://caaspr.ca/wp-content/uploads/2018/06/National-Speech-Language-Pathology-Competency-Profile.pdf

A second key component of this project was the implementation of a national, standardized, competency-based entry-to-practice exam for each profession. The Canadian Entry-to-Practice (CETP) exams are regulatory examinations based on SLP and AUD competency profiles and sub-competencies. Under a 2018 agreement between the regulatory bodies and SAC, new graduates wishing to work in any of the eight regulated provinces must write the CETP exam, which will replace the SAC certification examination starting in fall 2020.[6] CAASPR has also developed a national CETP assessment process for international graduates to harmonize the requirements across regulated jurisdictions in Canada.

SCOPE OF PRACTICE

AUDIOLOGY

Audiology involves identifying, diagnosing and managing hearing problems, tinnitus, balance problems and other auditory related communication disorders across the lifespan (SAC, 2016a). Using a variety of methods and technology, audiologists can determine the type and location of a hearing impairment and then help the affected person and their loved ones manage the problem. AUD care helps facilitates language acquisition in infants with hearing loss and is crucial to healthy cognitive, communicative and social development of children, adults and older adults.

The roles and responsibilities of audiologists include a broad range of clinical services with individuals of all ages, such as:

- Hearing assessments;
- Balance and tinnitus assessments;
- Selection, prescription, verification and servicing of hearing aids and other assistive devices;
- Planning and provision of rehabilitation services to improve communication or functional skills in cases of hearing loss, balance disorder, tinnitus, hyperacusis and misophonia; and
- Cerumen management.

Audiologists are also involved in prevention, promotion and advocacy roles, and have responsibilities in education, training, research and administration of programs or staff.[7]

AUDIOLOGISTS VS. HEARING INSTRUMENT PRACTITIONERS

Two healthcare professions—audiologists and hearing instrument practitioners—offer services such as hearing tests for the purpose of selecting, fitting and dispensing hearing aids and other assistive listening devices (SAC, 2016c). However, there are differences in their scopes of practice.

Audiologists are trained and regulated in most provinces to assess, diagnose and identify hearing and balance disorders, and to provide care and rehabilitation for individuals with such disorders.

Hearing instrument practitioners, also known as hearing instrument specialists, conduct hearing tests specifically to fit and dispense hearing aids and other assistive devices, typically to an adult clientele.

In many clinics, audiologists and hearing instrument practitioners work together to provide optimal services to clients. Currently in Canada, there is no minimum entry-to-practice education requirement for hearing instrument practitioners, but most do have formal training: usually a two- to three-year diploma program with a focus on hearing testing and hearing technology.

6 See http://caaspr.ca https://www.sac-oac.ca

7 A more exhaustive list of the roles and responsibilities of audiologists can be found at https://www.sac-oac.ca/professional-resources/resource-library/scope-practice-audiology-canada

Audiologists work in a variety of health and education settings, including:

- Hospitals;
- Public health units;
- Community health centres;
- Schools;
- Private practice;
- Nursing homes and long-term care facilities;
- Patient or client homes;
- Industrial settings;
- Hearing aid and cochlear implant manufacturers;
- Professional associations;
- Regulatory bodies;
- Universities and colleges; and
- Government departments.

Audiologists may also provide services via telepractice when appropriate.

SPEECH-LANGUAGE PATHOLOGY

Speech-language pathology involves identifying, diagnosing and treating communication and swallowing problems (SAC, 2016b). Speech-language pathologists serve individuals s of all ages with a large concentration in the early developmental years and in the older years. The roles and responsibilities of speech-language pathologists include:

- Screening and assessment of communication and swallowing abilities;
- Treatment of communication and swallowing problems;
- Evaluation of treatment outcomes; and
- Consultation with and referral to other professionals to provide comprehensive treatment to individuals with communication or swallowing problems.

THE SHIFT TO PRIVATE PRACTICE

Changes in healthcare funding across the country over the last 20 years have resulted in shifting audiology practice from the public sector to the private sector in many provinces. In the late 1970s, there were about 25 audiologists in private practice in Canada (Lagacé & Pichora-Fuller, 2006). By 2003, 38% of audiologists were working in private practices, manufacturing or consulting, and 47% were working in the public sector, including schools and government positions. The public-private distribution of audiologists varies across provinces. For example, in Quebec, approximately 75% of audiologists work entirely or partly in the public sector, while in Ontario, 70% of audiologists work primarily in the private sector (Fournier, 2017).

Many speech-language pathologists are also electing to form private practices as an option for parents and patients looking for earlier or more extensive therapy in the face of long waiting lists, limited services and cutbacks in education and health settings. In a survey of 1032 speech-language pathologists conducted by SAC (2018), 10 different work environments were reported and one other category (7%). Three settings accounted for 67% of all speech-language pathologists work environments, the largest groups were working in schools (33%), hospitals (17%) and private practice (17%).

In the early eighties1980s, many of the private practices were begun started by experienced audiologists and speech-language pathologists. Today, an increasing number of new graduates are taking jobs as employees in private practice settings. Educational programs must adapt to accommodate to these shifts in work setting and the accompanying demands that are being placed on new graduates.

In addition to direct clinical services, speech-language pathologists may also be involved in prevention and promotion programs, education, research, administration, consultation (e.g., to government and insurers) and industry-related activities (e.g., product development).[8]

Speech-language pathologists work in a variety of settings, including:

- Hospitals;
- Public health units;
- Community health centres;
- Schools;
- Private practice;
- Nursing homes and long-term care facilities;
- Childcare centres;
- Patient or client homes;
- Corporate settings;
- Correctional facilities;
- Professional associations;
- Regulatory bodies;
- Universities and colleges; and
- Government departments.

Speech-language pathologists may also provide services via telepractice when appropriate.

DEMOGRAPHICS

NUMBER OF REGISTERED CLINICIANS

Audiologists

In 2017, there were 1,924 registered audiologists in Canada (CIHI, 2017). As illustrated in Figure 1, the number of registered audiologists has steadily increased in most provinces since 2005. Ontario, Quebec, Alberta and British Columbia are home to the greatest number of audiologists.

The lowest numbers of audiologists are found in Prince Edward Island, Newfoundland and Labrador, the territories and Saskatchewan. Except for Saskatchewan, these trends may appear to reflect each province's population. However, the ratio of audiologists to population shows this is not the case. As shown in Figure 2, Saskatchewan, Prince Edward Island, Newfoundland and Labrador, Manitoba and Alberta have the lowest ratios, with 3 to 4 audiologists per 100,000 residents. New Brunswick and Nova Scotia

THE ROLE OF SPEECH-LANGUAGE PATHOLOGISTS IN SCHOOLS

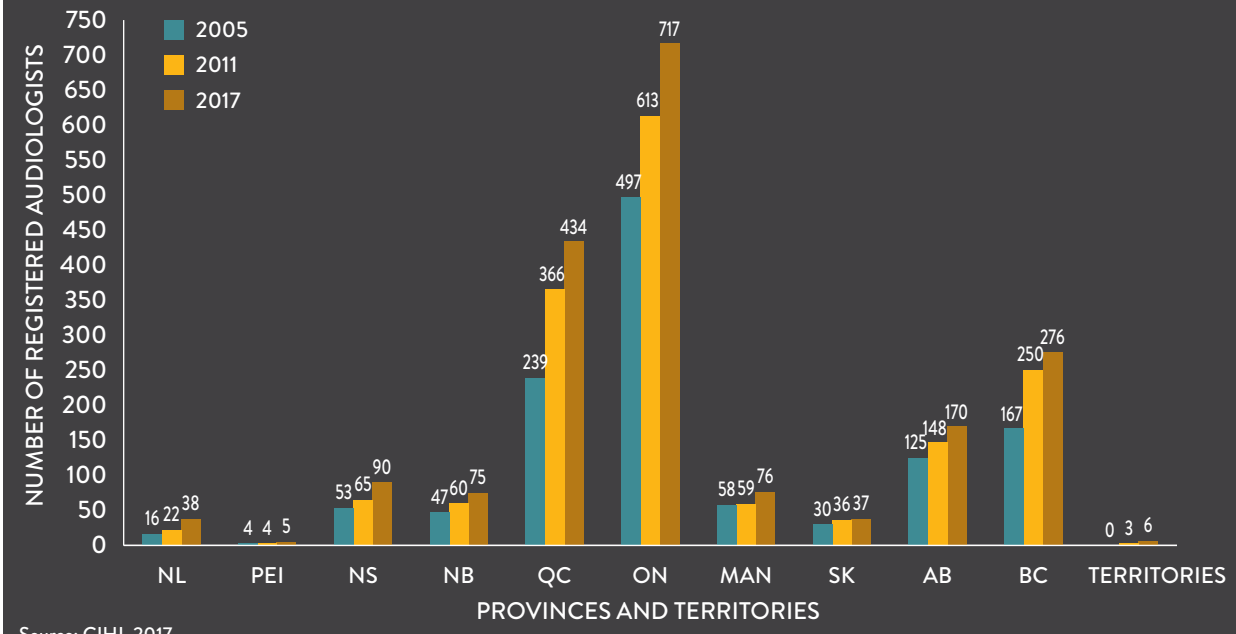
Research has shown that there are not enough speech-language pathologists employed in Canadian schools to meet the needs of the students who require their services (SAC, 2019). These health professionals have expertise in developing oral and written language skills, supporting successful learning, and helping students make social connections in and out of the classroom. They also have specialized training in augmentative and alternative communication. Speech-language pathologists can help students with communication challenges reach their full potential. Speech, language and communication skills are foundations of academic and social achievement, and students of all ages need appropriate access to specialized SLP services.

The current lack of speech-language pathologists in schools complicates the choices they must make about how to provide the best possible services to youth and what roles they can have in individual schools.

A position statement advocating that communication is a basic human right and that speech-language pathologists are essential to promoting it was recently published by SAC (2019).

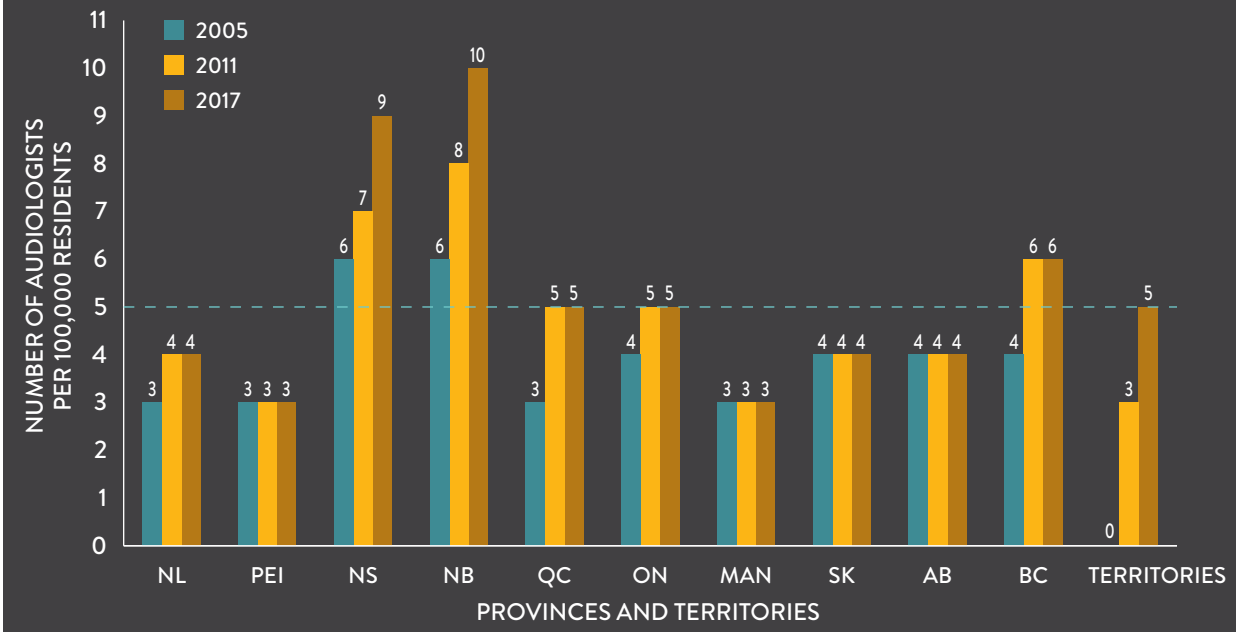
8 A more exhaustive list of the roles and responsibilities of speech-language pathologists can be found at https://www.sac-oac.ca/sites/default/files/resources/scope_of_practice_speech-language_pathology_en.pdf

Figure 1: Number of registered audiologists per province and territory, 2005–2017



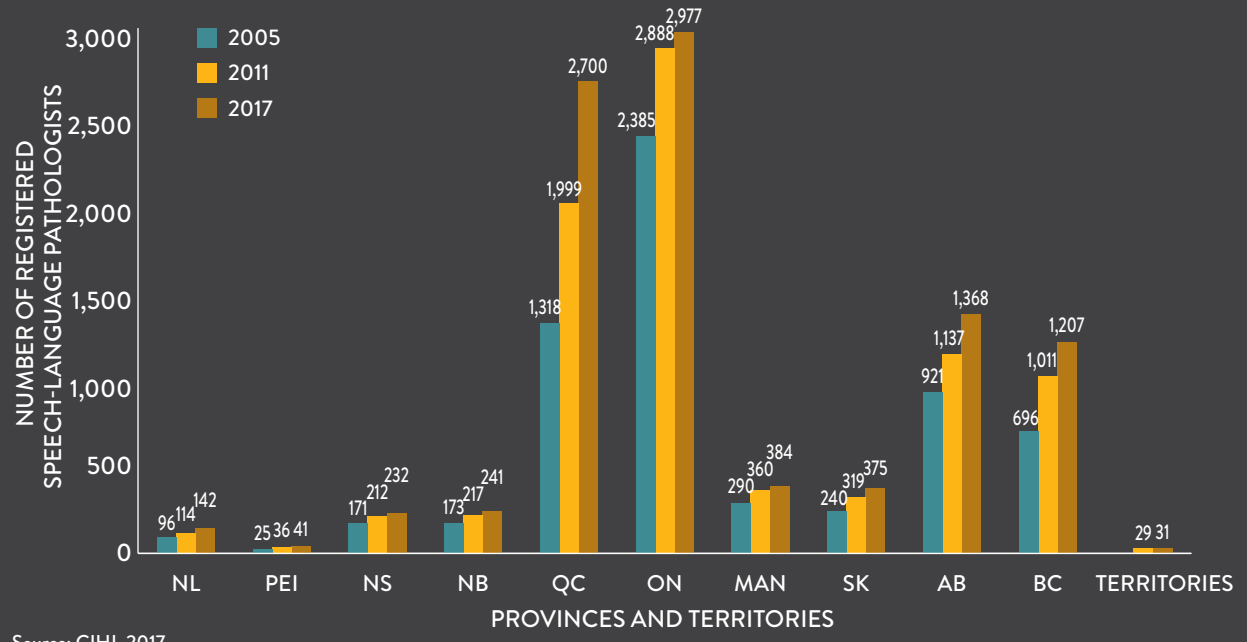
Source: CIHI, 2017

Figure 2: Number of audiologists per 100,000 residents for each province and territory, 2005–2017



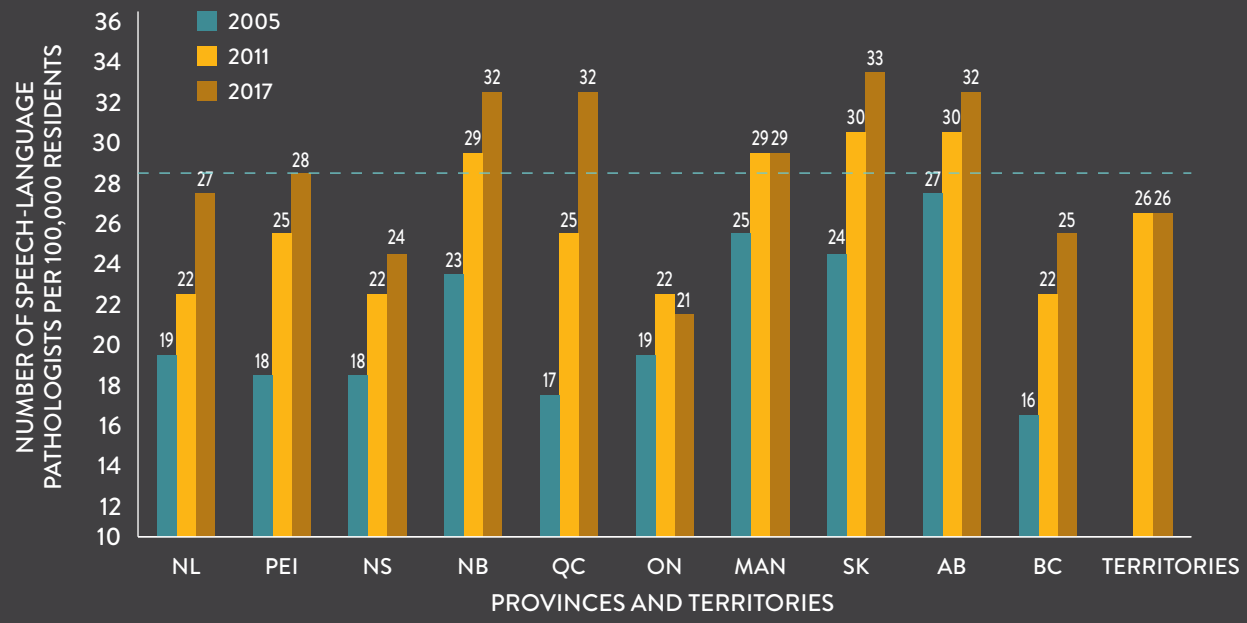
Note: Dotted blue line represents the national average number of audiologists per 100,000 residents in 2017.

Figure 3: Number of registered speech-language pathologists per province and territory, 2005–2017



Source: CIHI, 2017

Figure 4: Number of speech-language pathologists per 100,000 residents for each province and territory, 2005–2017



Note: Dotted blue line represents the national average number of audiologists per 100,000 residents in 2017.
Source: CIHI, 2017

THE ROLE OF AUDIOLOGISTS AND SPEECH-LANGUAGE PATHOLOGISTS WITH FIRST NATIONS CHILDREN AND ADULTS

In 2015, the Truth and Reconciliation Commission of Canada called for action in many areas of health and education as part of advancing Canadian reconciliation with First Nations communities. First Nations people of all ages require linguistically appropriate and culturally competent services in all areas of health and education, including AUD and SLP. It has been well documented that hearing disorders are particularly prevalent in First Nations children and adults (Bowd, 2005) and speech-language difficulties are a major concern for children (Findlay & Janz, 2012). There is a need for additional training in cultural competency for non-Indigenous professionals, the training of First Nations professionals with expertise in communication disorders, and research with these populations (SAC, 2018).

have the highest numbers, with ratios of 10 and 9 audiologists per 100,000 residents, respectively (CIHI, 2017). The remaining provinces and territories have 5 to 6 audiologists per 100,000 residents, which is similar to the national average (5 audiologists per 100,000 residents). The audiologist-to-population ratios have remained stable for the last six years in all regions except Nova Scotia, New Brunswick and the territories, which have seen growth in their ratios.

Speech-language pathologists

In 2017, there were 9,698 registered speech-language pathologists across the country (CIHI, 2017). Figure 3 shows a steady increase over time in the number of working speech-language pathologists in most provinces. Ontario, Quebec, Alberta and British Columbia are home to the greatest number of speech-language pathologists.

Figure 3 also shows that Prince Edward Island, the territories and Saskatchewan have the lowest numbers of registered speech-language pathologists, which may reflect the provinces' populations. However, as shown in Figure 4, the ratio of speech-language pathologists to population suggests this does not necessarily reflect access to SLP services. Ontario, Nova Scotia and British Columbia have the lowest ratios, at 21, 24 and 25 speech-language pathologists per 100,000 residents, respectively. New Brunswick, Quebec, Saskatchewan and Alberta have the highest ratios, at 32 to 33 speech-language pathologists per 100,000 residents. The speech-language pathologists-to-population ratios have increased for the last six years in most regions, except Manitoba and the territories, which have remained stable, and Ontario, where the ratio has decreased.

FUTURE OF THE PROFESSIONS

According to Employment and Social Development Canada (2019), the number of speech-language pathologists and audiologists seeking employment between 2014 and 2016 was insufficient to fill all job openings. This labour shortage is expected to persist and even become more severe as the number of job openings is projected to be substantially larger than the number of job seekers. One of the reasons for this growth in jobs is the anticipated increase in the Canadian population over the next 50 years. Based on medium-growth scenarios, the population will increase from 37.3 million in 2019 to 51 million in 2063. Increases in the number of Canadians aged 65 years and older will be even more significant, with this segment making up 43% of the population by 2063 (Statistics Canada, 2019). This population is particularly susceptible to hearing loss and other ear-related conditions (such as tinnitus), as well as acquired speech and language disorders and swallowing problems (e.g., following a stroke or chronic disease). As a result, the growth of this population will lead to higher demand for AUD and SLP services, and the employment growth rate for audiologists and speech-language pathologists is expected to be among the strongest of all occupations through 2017–2026 (ESDC, 2019). Around 5,900 new job openings are expected from expansion and replacement demand over this period, while only 5,100 speech-language pathologists and audiologists are expected to graduate from university or immigrate into Canada to fill them (ESDC, 2019).

CONCLUSION

The AUD and SLP professions in Canada have grown and developed since the introduction of the first clinical services in the 1930s, and services are now available in all provinces and territories. There are 1,924 audiologists and 9,698 speech-language pathologists working across the country, and 12 accredited AUD and SLP university programs.

Despite the challenges each profession is facing, they remain among the top-rated professions, offering good pay, challenging work, career advancement opportunities and satisfying work-life balance. Audiologists and speech-language pathologists are in high demand and paid an average of about $72,000 per year, with experienced workers earning up to $104,754 per year (Neuvoo, 2019).

The growth of professionals entering the field is also extremely timely. The Canadian population is aging: thanks to advances in medical care and awareness, global average life expectancy has increased by five years since 2000 (World Health Organization, 2016), and the number of people in Canada aged 65 years or older will surpass the number of children under 14 years by 2021 (Statistics Canada, 2015). These changes will increase the number of people with hearing loss—especially related to age and noise exposure—speech and language disorders, and swallowing problems.

ACKNOWLEDGEMENTS

We are tremendously grateful to Virginia Martin for her tireless work compiling information about the history of audiology and speech-language pathology in Canada. This chapter would not have been possible without her incredible work.

ACRONYMS

AUD	Audiology
CAASPR	Canadian Alliance of Audiology and Speech-Language Pathology Regulators
CACUP-ASLP	Council for Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology
CASLPA	Canadian Association of Speech-Language Pathology and Audiology
CETP	Canadian Entry-to-Practice
CIHI	Canadian Institute for Health Information
ESDC	Employment and Social Development Canada
GPA	Grade point average
MRA	Mutual recognition agreement
SAC	Speech-Language and Audiology Canada
SLP	Speech-language pathology

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APPENDIX A. ADMISSION REQUIREMENTS FOR CANADIAN AUDIOLOGY PROGRAMS

University program	Degree requirements	Course requirements	Minimum GPA
University of British Columbia Master of Science Program in Audiology https://audiospeech.ubc.ca/prospective-students/msc-program/audiology	Four-year undergraduate degree from an accredited university	Three university units in each of the following subjects: • Introduction to physics • Developmental psychology • Sensation/perception • Research methods** • Introduction to linguistics • Neuroanatomy for audiology and speech-language pathology	B+ (76%) in third- and fourth-year courses
University of Western Ontario Master of Clinical Science in Audiology https://www.uwo.ca/fhs/csd/programs/admission.html	Four-year honours undergraduate degree	At least one half-credit course from each of the following areas (two credits in total): • Developmental psychology or normal lifespan development • Statistics • Human anatomy or physiology • Social science / psychology / linguistics	80% average in the previous two years of study
University of Ottawa Master of Health Sciences in Audiology https://catalogue.uottawa.ca/en/graduate/master-health-sciences-audiology/#Admissiontext	Honours bachelor's degree	Three university units in each of the following subjects: • Quantitative statistics or research methods • Human anatomy or physiology • Acoustics or analysis of sound or of speech sounds • Linguistics • Psychology	B or average of 70%
Université de Montréal Professional Master in Audiology (trans.) https://eoa.umontreal.ca/etudes/maitrise-professionnelle-en-audiologie-m-p-a	Bachelor's degree in audiology from Université de Montréal or Bachelor's degree in biomedical sciences, neurosciences, cognitive neurosciences or a similar field	The following courses (unless degree is in audiology): • Statistics in biomedical sciences • Psychology of normal development • Phonetics and phonology • Human physiology • Auditory and speech science	B+ or 3.3 on a 4.3-point scale
Dalhousie University Master of Science in Audiology https://www.dal.ca/faculty/health/scsd/scsd-admissions-info/scsd-admission-requirements.html	Four-year bachelor's degree	No specific course prerequisites required for admission	B+ or 3.3 on a 4.3-point scale in the last two years of full-time undergrad studies

APPENDIX B. ADMISSION REQUIREMENTS FOR CANADIAN SPEECH-LANGUAGE PATHOLOGY PROGRAMS

University program	Degree requirements	Course requirements	Minimum GPA
University of British Columbia Master of Science in Speech-Language Pathology https://audiospeech.ubc.ca/prospective-students/msc-program/admissions-requirements	Four-year undergraduate degree from an accredited university	Three university units in each of the following subjects: • Introduction to physics • Developmental psychology • Sensation/perception • Research methods • Introduction to linguistics • Neuroanatomy for audiology and speech-language pathology	B+ (76%) in third- and fourth-year courses
University of Alberta Master of Science in Speech-Language Pathology https://www.ualberta.ca/communications-sciences-and-disorders/msc-in-speech-language-pathology/admissions/admission-requirements	Four-year undergraduate degree	The following seven prerequisite courses: • Statistics • Child development or developmental psychology • Cognitive psychology • Neuroanatomy or neuropsychology • Introductory linguistics • Articulatory phonetics • Child language development/ acquisition	B+ or 3.3 on a 4.0-point scale
University of Western Ontario Master of Clinical Science in Speech-Language Pathology https://www.uwo.ca/fhs/csd/programs/admission.html	Honours degree	Six prerequisite half-courses: • Developmental psychology or child development • Introduction to linguistics • Statistics • Human anatomy/human physiology • Life/biomedical/general sciences • Social science/psychology/linguistics	75% average in last two years
Université Laurentienne Master of Health Sciences in Speech-Language Pathology https://laurentienne.ca/programme/orthophonie-mscs	Bachelor's degree in SLP or Bachelor's degree in speech and language science and disorders	If applying with a general degree (three years) or a specialized bachelor's degree (four years) in a related discipline, the pre-requisite courses are: • Linguistics • Psychology Applicants must also complete a qualifying year (30 credits) in SLP.	75%
University of Ottawa Master of Health Sciences in Speech-Language Pathology https://catalogue.uottawa.ca/en/graduate/master-health-sciences-speechlanguage-pathology/#Admissiontext	Honours bachelor's degree	Three university units in each of the following subjects: • Statistics or research methods • Human physiology or anatomy • Acoustics or analysis of sound or of speech sounds • Developmental psychology Nine university units in linguistics, including: • General phonics or phonetics/phonology • Syntax (or morphology) • Advanced-level units in linguistics	B average (70%)

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University program	Degree requirements	Course requirements	Minimum GPA
University of Toronto Master of Health Science in Speech-Language Pathology https://slp.utoronto.ca/admissions/mhsc-admission-requirements	Bachelor's degree	The following courses: • Child development • General linguistics • Phonetics • Elementary statistics • Human physiology • Research methods	B in the final year
McMaster University Master of Science in Speech-Language Pathology https://srs-mcmaster.ca/slp-admissions	Four-year bachelor's degree	One full course in each of the following subjects: • Human anatomy/physiology • Linguistics • Psychology • Statistics or research methods	Sub-GPA of 3.3 on a 4.0-point scale
McGill University Master of Science (Applied) in Communication Sciences and Disorders with specialization in Speech-Language Pathology https://mcgill.ca/scsd/programs/slp/how-apply/application	Bachelor's degree	Eighteen credits in courses related to linguistics and psychology, and three credits in statistics	B or 3.0 on a 4.0-point scale
Université de Montréal Professional Master of Speech-Language Pathology (trans.) https://eoa.umontreal.ca/etudes/maitrise-professionnelle-en-orthophonie-m-p-o	Bachelor's degree (preferably in SLP)	• Linguistics (6 credits) • Acquisition of language (3 credits) • Psychology of development (6 credits) • Basic neuroscience (3 credits) • Statistics (3 credits)	B+ or 3.3 on a 4.3-point scale
Université du Québec à Trois-Rivières Master of Speech-Language Pathology https://oraprdnt.uqtr.uquebec.ca/pls/apex/f?p=PGMA000:10:::NO:RP,10:P10_CD_PGM:3109	Bachelor's degree in health sciences, social sciences, psychology, education, linguistics or other	Eight credits in the following subjects: • Child development • Cognitive psychology I • Adult development or psychology of aging • Language and linguistic system • Phonetics and phonology • Exploration of the brain / laboratory of the central nervous system • Anatomy and neurobiology of phonation and language • Statistics	3.2 on a 4.3-point scale
Université de Laval Master of Speech-Language Pathology https://www.ulaval.ca/les-etudes/programmes/repertoire/details/maitrise-en-orthophonie-m-sc.html#description-officielle	Bachelor's degree or equivalent diploma	Fifteen credits in the following subjects: • Fundamental notions of phonetics and phonology • Cognitive lexicon and grammar • Cognitive processes • Cognitive development of the child • Neurosciences and language AND three credits in statistics	B+ or 3.3 on a 4.3-point scale

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University program	Degree requirements	Course requirements	Minimum GPA
Dalhousie University Master of Science in Speech-Language Pathology https://www.dal.ca/faculty/health/scsd/scsd-admissions-info/scsd-admission-requirements.html	Bachelor's degree from a recognized institution	No specific prerequisites required for admission	B+ or 3.3 on a 4.3-point scale in the last two years of study

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