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The Aphasia Friendly Business Campaign: Program Expansion and Evaluation

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By

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ABSTRACT

The Aphasia Friendly Business Campaign (AFBC) is a training program that was created to address the lack of public knowledge of aphasia. Previous work has demonstrated that the in-person delivery of the AFBC was efficacious in achieving training outcomes (i.e., improve trainee's knowledge of aphasia and perceived ability to communicate with people with aphasia; Borsatto et al., 2021). This dissertation describes the expansion of the AFBC training program to a virtual platform, assesses its efficacy, and investigates how the virtual delivery compared to its in-person counterpart. In addition, outcome and impact program evaluations (i.e., post-tests and semi-structured interviews [SSI], respectively) were conducted to assess virtual training retention and transfer. Results of this multi-method study showed that the virtual AFBC training significantly improved aphasia knowledge (AK) and perceived self-efficacy (SE) in trainee's ability to use supportive communication skills. Comparing modalities, the virtual trainees outperformed in-person group on the post-training AQ outcome measure. Investigation of SE showed that the in-person trainees felt significantly more comfortable and confident using communicative skills than the virtual group. Program evaluation results suggested that trainees were satisfied overall with the AFBC virtual training. Analysis of SSI data generated four themes: (1) knowledge and skill acquisition, (2) knowledge translation, (3) accessibility awareness, and (4) considerations for future. The content was perceived as relevant and comprehensive, and trainees reported that they remembered and translated communication skills into their daily lives. This efficacious online aphasia training program has implications for increasing communicative accessibility for people with aphasia and more broadly, individuals with communication challenges in general.

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I have been surrounded by brilliantly intelligent, empowering, and kind individuals throughout my time in grad school. Without them, I would have never seen this success.

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Cherished family and friends from coast to coast, your support (whether it was joining in on chaotically, unplanned, and spontaneous adventures, sending encouraging voice notes, or laughing with and/or at me), I appreciate you all more than words can express.

And finally, Mom, your name should be alongside every accolade that I've ever achieved. This is dedicated to you.

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CHAPTER 1

1.1 Introduction to Disability

Defining disability is a complex, evolving matter. The World Health Organization (WHO) has conceptualized disability with a broad lens, stating that it is "part of the human condition; almost everyone will be temporarily or permanently impaired at some point in life and those who survive to old age will experience increasing difficulties in functioning" (WHO, 2001b, p.3). Indeed, disablement impacts many, with congenital, acquired, invisible (e.g., aphasia), and/ or episodic (e.g., epilepsy) etiologies (OHRC, 2016). More frequently however, the term disability is used in a narrower context to describe people who experience a broad range and degree of conditions that cause impairment and create societal barriers in many different ways (OHRC, 2016; Silver, 2003).

Historically, people with disabilities have been ostracized and excluded from society through restrictive immigration policies, segregation through inappropriate and harmful institutionalization, and involuntary sterilization (OHRC, 2016; WHO, 2001b). Although there have been some significant gains for people with disabilities in recent years, the unfortunate reality is that they continue to experience abuse, neglect, marginalization, and discrimination (Donovan, 2023; OHRC, 2016). People with disabilities continue to face major barriers accessing education and employment, experience exclusion from everyday life activities, are more likely to have low-income status, and are less likely to live in adequate housing (OHRC, 2016; Silver, 2003). Many of these barriers result from societal structures and negative attitudes premised upon *ableism*.

Ableism refers to attitudes in society that devalue and limit the potential of people with disabilities (Goering, 2015; OHRC, 2016). For example, many people with disabilities are

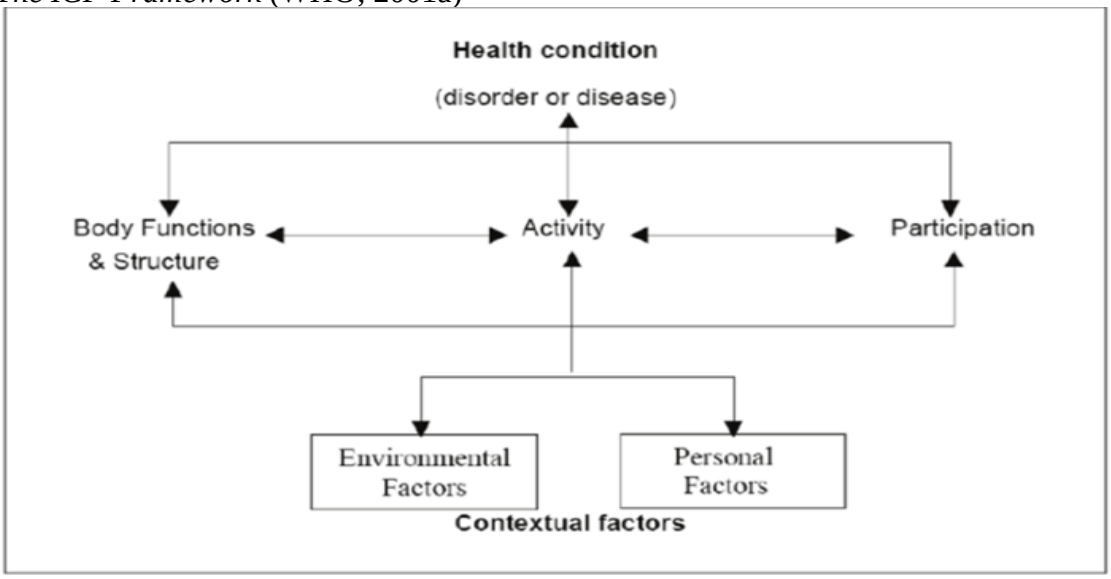
denied employment due to negative assumptions about their skills or abilities. Ableist assumptions often frame disability as an "anomaly to normalcy, rather than an inherent and expected variation in the human condition" (OHRC, 2016, p. 3). Further, ableism is often exacerbated when disabilities are conceptualized within the theoretical framework of the medical model. In this model, disability is viewed as a functional limitation of the body (Goering, 2015). As such, accessibility can only be achieved by curative medical treatment. Indeed, some individuals with disabilities look for a cure or treatment to help alleviate their condition (e.g., multiple sclerosis) but, as seen in neurodegenerative and chronic conditions, curative treatments or complete symptom relief may not exist (Donovan, 2023; Goering, 2015). Further, many individuals with congenital disablements understand their condition as a neutral way of being, rather than as a deficit that needs a cure (e.g., congenital blindness; Goering, 2015).

Recognizing inequities in the medical model, disability advocates have called for the more equitable *social model* of disability to conceptualize a state of disablement. The social model shifts emphasis away from treating illness (as seen in the medical model) and promotes the idea that disability is a socially constructed ideal that is consolidated by environmental barriers (McVicker, 2009; Simmons-Mackie, 2001). Individuals are not disabled by impaired bodies, but rather by institutional norms and physical and/or social barriers (e.g., stairs vs. ramps; verbal presentations without closed captions, restrictive job requirements vs. accommodations/ alternative ways to perform tasks; Goering, 2015). This understanding of disability as a construct of societal barriers (rather than bodies) has brought more awareness to the need for accessible environments and as such, represents a step in the positive direction. However, the WHO (2001a) asserts that disability should not be viewed dichotomously in either the medical or social framework, but rather, as an amalgamation of both. People with disabilities may be disabled by

environmental factors as well as their bodies (WHO, 2001a). The publication of the International Classification of Functioning, Disability and Health (ICF; see Figure 1) illustrates this biopsychosocial conceptualization and defines disability as "a dynamic interaction between health conditions (diseases, disorders, injuries, traumas, etc.) and contextual factors (personal and environmental factors"; WHO, 2001a, p. 8). This framework provides a meaningful and comprehensive way to describe the impact of a health condition, such as aphasia, on the many facets of an individual's everyday life. The following sections will introduce aphasia as a health condition, conceptualize its impact on disablement through the ICF lens, and introduce the current study objectives to reduce the impact of aphasia on an individual's functioning.

Figure 1

The ICF Framework (WHO, 2001a)



1.2 Introduction to Aphasia

Aphasia is defined by the National Institute of Neurological Disorders and Stroke (NINDS) as an acquired language disorder caused by damage to areas in the brain that are responsible for language production and/or processing (i.e., Wernicke's area, Brocas's area, angular gyrus, supramarginal gyrus; NINDS, 2021). Its onset is typically sudden, often resulting

from a stroke or traumatic brain injury (TBI), but may also develop slowly, as in the case of a brain tumour, infection, or dementias impacting cortical language networks (called primary progressive aphasia [PPA]; NINDS, 2021). The atrophy or impairment to these cortical language areas impacts a person's speech expression and comprehension, and/or their ability to read and write (Dickey et al., 2010; NINDS, 2021). These sequelae are what define aphasia.

Although any form of aphasia is incredibly devastating for both the person with aphasia and their loved ones, the characteristics and severity of language disruption can vary from person to person (Simmons-Mackie, 2017). For example, one individual may have severe global language impairment that restricts verbal and written expression entirely, whereas someone else may have mild errors in word finding or selection. The latter presentation of aphasia is more common and is often characterized by the use of semantic paraphasias (using semantically related words, e.g., 'dog' for 'cow'), phonemic paraphasias (substituting sounds in the word, e.g., saying 'force' for 'horse' or using a non-word, 'porse'), neologisms (non-words), and/or circumlocutions (using a description for the word, e.g., 'white in the sky' for 'cloud'; Hillis, 2022). The variability seen in aphasia arises from many factors, such as (1) type, location, and severity of insult/atrophy, (2) course and duration of medical treatment (i.e., administration of tissue plasminogen activator for stroke-acquired aphasia), and (3) quality and type of rehabilitative efforts (i.e., therapeutic programs and/or pharmacological interventions; AAEM, 2007; Barisa et al., 2013).

When considering the location of damage, in most people, impairment to an area called Wernicke's area in the left posterior temporal lobe results in a fluent aphasia called Wernicke's aphasia (Marshall, 2008). This area of the brain is largely responsible for the comprehension of speech. As such, people with Wernicke's aphasia often use neologisms and speak using long,

fluent, but content-less sentences (Hillis, 2022; Marshall, 2008). Their speech is typically rapid, with preserved rhythm and articulation (Levine et al., 2003; Marshall, 2008). For example, someone with Wernicke's aphasia might say, "You know that smoodle pinkered and that I want to get him round and take care of him like you want before" (NIDCD, 2020). Unfortunately, given their poor comprehension, these individuals are often unaware that their speech does not make sense (Marshall, 2008).

An alternative pattern of speech characterized by non-fluent, short, and effortful phrases, is seen in people with Broca's aphasia. Broca's area is typically located in the third gyrus of the left frontal lobe and damage to this area of the brain is associated with impairments in expressive language production (Nadeau & Gonzalez-Rothi, 2008). An individual with Broca's aphasia may say "book book two table" to express that there are two books on the table, or "walk dog" to indicate they would like to take the dog for a walk (NIDCD, 2020). These individuals are often aware of their expressive difficulties and may become easily frustrated while speaking (NIDCD, 2020).

These two general categories of aphasia; fluent (Wernicke's) and non-fluent (Broca's), define the boundaries of the language disorder, but the majority of people with aphasia do not fall neatly into such specific behavioural profiles (Rapp & Caramazza,1997). Some individuals experience mixed non-fluent aphasia, which follows language patterns associated with both Broca's aphasia (sparse and effortful speech) and Wernicke's aphasia (limited comprehension; Simmons-Mackie, 2017). Other individuals may experience the most severe type of aphasia, called global aphasia. It is caused by damage to multiple language-processing areas of the brain, including both Wernicke's and Broca's area (Simmons-Mackie, 2017). Consequently, these people can only produce a few recognizable words and have impaired comprehension (Simmons-

Mackie, 2017). Despite this significant language barrier, individuals with global aphasia, like those with the milder forms of aphasia, may still have fully preserved cognitive capabilities (Simmons-Mackie, 2017).

1.2.1 Demographics and Prevalence

The language impairments of aphasia are widely variable, as is the population aphasia affects. Aphasia does not discriminate- it impacts both men and women, as well as all ethnic, socioeconomic, and age groups (with a growing prevalence in younger populations; Simmons-Mackie, 2017). As such, millions of people have aphasia. Precise statistics of the prevalence across the multiple etiologies are challenging to capture, but the current conservative estimate of people living with aphasia due to stroke, TBI, or brain tumour in North America is around 2.6 million people (Simmons-Mackie, 2017). The total prevalence of people with aphasia in Canada, is estimated to lie within the range of approximately 165,761 to 384,861 people (Simmons-Mackie, 2017).

Despite its prevalence, aphasia is relatively unknown to the public. In a review of international workers' awareness and knowledge of aphasia, Code (2020) identified aphasia *awareness* (typically defined as 'having heard the word'; Simmons-Mackie et. al, 2002) across studies ranged from 11% in India to 66% in Sweden. Similarly, a lack of aphasia *knowledge* was identified globally with ranges from 5% - 17% (Code, 2020). Canadian studies were not an anomaly to these statistics. Only 5.7% of respondents from the Greater Toronto Area (GTA) in Ontario endorsed knowledge of aphasia (Patterson et al., 2015). The consequences of this lack of public awareness and knowledge are highly prevalent and personally devastating for individuals with aphasia. Frequently, they are suspected of being under the influence of substances, and other times, assumptions of cognitive impairment result in public-facing entities treating people

with aphasia at developmentally and intellectually inappropriate levels. Such experiences have been reported by people with aphasia in our own community and by others in the literature (e.g., Brown et al., 2006; Simmons-Mackie, et. al, 2020). These public misunderstandings of aphasia are associated with a corresponding lack of awareness of supportive communication strategies (e.g., accessible written or pictorial information) that may be necessary to respond appropriately in conversation (Dalemans et al., 2010; Howe et al., 2004). As such, communicative access to social settings, resources, and services is restricted for people with aphasia (Brown et al., 2006; Simmons-Mackie & Damico, 2007). This communal isolation and loss of autonomy elicits emotional stress, psychosocial disturbance, and negatively impacts quality of life (QoL; Code et al., 2001; Code & Herrmann, 2003). In fact, in a survey of the impacts of health-related QoL amongst 75 different diseases and health conditions, aphasia was reported to have the largest negative impact, followed by cancer and Alzheimer's disease (Lam & Wodchis, 2010). Society's inability to address the needs of people with aphasia exacerbates the consequences of their language disruption and unfortunately increases the disablement they experience.

1.3 Aphasia and Disability

Within the ICF framework, disablement consequent to a health condition (e.g., aphasia) is expressed in terms of a person's 'Body Function and Structure', 'Activity' and 'Participation' (WHO, 2001a). When conceptualizing the impact of aphasia on an individual's functioning, it is evident that disablement is complex and multi-faceted. In the '*body functions and structure*' domain, we see that the etiology of aphasia (neurophysiological insult/atrophy) creates impairments in language abilities. As described in the sections above, production and comprehension of speech, as well as associated linguistic communication skills across modalities (e.g., spoken, written, and gestural communication) may be impaired in people with aphasia due

to damage at the anatomical level. Other domains related to functional communication (i.e., pragmatics, self-monitoring) may also be impaired (Galletta & Barrett, 2014). These language impairments negatively impact communication, limit life activities, and restrict participation in society for people with aphasia.

Unfortunately, aphasia is often accompanied by coexisting health disorders that broaden the impact of disablement. For example, approximately 33% to 50% of those with aphasia have a chronic motor deficit such as weakness or paralysis of one side of the body (Coderre et al., 2010). Motor speech disorders such as dysarthria (weakness, slowness, or reduced range of movement of the speech articulators) and apraxia (impairment of the cortical motor planning pathways impacting speech articulators) are also common in those with aphasia (Hillis, 2022; Simmons-Mackie, 2017). Further, individuals with PPA, by nature of the etiology (atrophy of cortical areas), will have some form of underlying dementia (typically Alzheimer's or frontotemporal dementia; Hillis, 2022). In addition to their language problems, people with PPA also experience associated neurocognitive outcomes of dementia (e.g., challenges with episodic memory, visuospatial skills, and/or executive functions; Hillis, 2022). Evidently, participation in meaningful activities, events, and life situations becomes even more challenging for someone with aphasia that has co-occurring health-conditions. The increase in disablement has markedly negative implications for an individual's health and QoL.

1.3.1 Activity and Participation

The '*activity*' and '*participation*' domains of the ICF consider how a health condition affects engagement in life activities and participation in social situations, respectively (Galletta & Barrett, 2014). Aphasia impacts these domains significantly. Talking on the phone, ordering at restaurants, or simply sharing stories are just a few examples of activities in which people with

aphasia may struggle. Cruice and colleagues (2006) quantify these restrictions to life activities and communicative participation in their comparison of the everyday communication activities of older people with and without aphasia. These authors found that 58% of people with aphasia indicated a desire to participate in more activities, compared to only 16% of the non-aphasic group (Cruice et al., 2006). People with aphasia reported watching television and attending family parties as social activities but expressed a desire to participate in activities involving other members of the community (e.g., museum visits, card games, classes or lectures; Cruice et al., 2006). Davidson and colleagues (2003) corroborate these findings. In their observations of communication activities of people with aphasia and those without, they observed that people with aphasia have fewer communication partners and are more limited in social situations (Davidson et al., 2003). Indeed, aphasia significantly restricts participation in activities, access to social settings, resources, and services. Given that participation in meaningful activities is essential for physical, cognitive, and emotional well-being (Ahmed et al., 2017), direct consequences of this reduced involvement in everyday living and leisure activities include: social isolation, loss of friendship, and depression (Code et al., 1999; Code et al., 2001; Code & Herrmann, 2003). Considering that the impact of social isolation and loneliness have adverse health risks that are comparable to, or exceed the risks of cigarette smoking, sedentary lifestyle, or obesity (Gerst-Emerson & Jayawardhana, 2015), it is clear that increasing opportunities for participation in social activities should be a major target for aphasia intervention/rehabilitation.

Indeed, the "Life Participation Approach to Aphasia's" (LPAA) core values and ideas for intervention reiterate the sentiment described above. LPAA emphasizes the "attainment of re-engagement in life by strengthening daily participation in activities of choice" (Duchan et al., 2001, p.1). Improvements to the incidence of accessible activities would increase participation,

presumably leading to increases in community support and services that encourage improved QoL for people with aphasia (Elman et al., 2000; Patterson et al., 2015; Worrall et al., 2007). To accomplish this goal, researchers have explicitly called for the provision of aphasia-friendly environments (Brown et al., 2006; Howe et al., 2004; Sherratt, 2022). These highly supportive and accessible environments can significantly lessen the communicative consequences of aphasia (Duchan et al., 2001). A reduction of communication barriers and an increase in aphasia-friendly policies and environments are key to effectively broaden the scope of accessible activities and increase participation for people with aphasia. The focus of this project was precisely that: alleviation of communication barriers and provision of aphasia-friendly environments.

1.3.2 Environmental Factors

In the ICF framework, environmental factors are defined as the physical, social, and attitudinal environment in which people live and conduct their lives (WHO, 2001a). Negative environmental factors (barriers) hinder societal participation, while positive environmental factors (facilitators) support participation (Brown et al., 2006; WHO, 2001a). Without a clear understanding of the barriers to participation for people with aphasia, it is impossible to identify how to enhance and/or provide facilitators. Brown and colleagues (2006) answered this. They identified three environmental domains that influence people with aphasia's access to the community as: (1) people factors, (2) physical factors, and (3) business/organizational factors. Common barriers relating to other people included: a lack of awareness about aphasia, misassumptions about the cause of communication difficulty, and negative attitudes/actions towards people with aphasia (Brown et al., 2006). Physical environmental barriers (e.g., use of automated technology and need for written output) were described to be exacerbated by business/organizational barriers to service, such as time pressure

and financial constraints (Brown et al., 2006; Howe et al., 2004). Similar findings were described in Kim and authors' (2023) study which examined environmental factors that impact people with aphasia's access to goods and services. These authors identified that a lack of supportive communication strategies, low aphasia awareness and education, and disrespectful behavior/ internalized negative attitudes were the main barriers impacting communicative access to businesses and services (Kim et al., 2023). Environmental barriers often intersect with each other, and together, reflect a breakdown of accessibility at the level of the service provider and organizational infrastructure. The tangible consequences of these accessibility breakdowns are that businesses and organizations are ill-equipped to accommodate people with aphasia. For example, on the National Aphasia Association's (NAA) discussion forum, a wife shared that her husband who has aphasia was required by the DMV to take a written test to renew his license (NAA, n.d.). He had many years of experience driving post-stroke and a note from his neurologist exempting him from the written test; however, the DMV worker had to follow policy: no exceptions. He could not renew his license, and the wife described that all parties involved became frustrated and angry (including herself, her husband, and the DMV worker). In this case, it is clear how the intersection of all environmental factors (physical- writing; organizational- no exemptions; people- attitudinal) limited someone with aphasia's access to services. Unfortunately, this is not a novel situation. In a recent investigation of communication access in the retail environment for people with complex communication needs, environmental barriers were described among all participants, with no differences observed among participants based on age or gender (Taylor et al., 2021). To repair these accessibility breakdowns and reduce barriers to service, we know environmental facilitators must be increased, enhanced, and/or provided. Organizations and businesses can be made more aphasia-friendly through systemic

efforts to increase communicative access through the provision of funds and resources for appropriate services (e.g., educational staff training; Howe et al., 2004; Simmons-Mackie et al., 2020).

Indeed, the literature is rife with evidence supporting educational training and awareness campaigns as effective tools to impart knowledge and improve community access and social interaction for individuals with many disorders, including Alzheimer's and Parkinson's disease (e.g., Curtin, 2011; Dassel et al., 2020; Thomas, 2006). While there has only been a handful of small-scale educational aphasia training programs, similar efficacious results have been observed. For example, Baig (2011) offered 47 emergency responders a brief training session on aphasia that showed a significant post-training improvement in participant's level of aphasia knowledge and communicative techniques. Similarly, Ranta (2013) presented a 2-hour aphasia awareness training session for first responders (e.g., police, fire-fighters, emergency medical providers) that included a guest speaker with aphasia. Results also showed significant improvement in post-training aphasia awareness. These studies extend the knowledge that targeted educational training can effectively raise awareness and improve understanding of disorders to include aphasia. Notably, both training courses were targeted to first responders. Recognizing that the provision of aphasia training across broader occupational disciplines might translate to more accessible frontline services, hearing that services such as shops, restaurants, and pubs are places outside the home that are most frequented by people with aphasia (Code, 2003), and knowing that community participation and accessibility of services is largely influenced by front-line workers in businesses (Brown et al., 2006; Parr, 2007); the Aphasia Friendly Business Campaign (AFBC) was created (Borsatto et al., 2021).

1.4 The AFBC

The AFBC was created as a knowledge mobilization program that offered in-person aphasia training and personalized toolkits/resources to service providers and businesses in the Windsor-Essex community. Resources and information provided by the Aphasia Institute (AI) and the March of Dimes Canada (MODC), such as material regarding supportive communication strategies, was instrumental in formulating the curriculum for the AFBC training. The AFBC team took this clinically relevant content and carefully adapted it to meet the needs of businesses and organizations. The goal was to educate employees in the community about aphasia and teach them supportive communication strategies to facilitate conversations (Borsatto et al., 2021). Pre- and post-training questionnaires assessed changes in employees' declarative knowledge regarding aphasia and their perceived self-efficacy translating their newly acquired skills into the workplace. Results found that across 15 organizations, employees' declarative knowledge and perceived ability to effectively communicate with people with aphasia or other communication disorders significantly improved after training (Borsatto et al., 2021). In addition, the AFBC team created pictographic toolkits to meet the needs of individual businesses or organizations. Participants also reported that the toolkits were adequate and helpful (Borsatto et al., 2021). The increase in public knowledge regarding aphasia and the perceived ability of local employees in Windsor-Essex to use supportive communication strategies set the stage for increasing the autonomy of people with aphasia in other communities. Armed with this information on the efficacy of the AFBC in-person training strategies, the next step was to expand the training program to an online platform and assess its efficacy.

1.5 AFBC Program Expansion

As previously indicated, reintegration into social and community networks following the acquisition of aphasia is a significant hurdle that many people face (Code et al., 1999; Code & Herrmann, 2003; Parr, 2007). The consequences of limited reintegration into society (e.g., depression, social isolation, loss of friendship; Simmons-Mackie, 2017) cannot be overstated. To mitigate these consequences, researchers have called for an increase in life activities and participation for people with aphasia through the provision of aphasia-friendly environments (Brown et al., 2006; Howe et al., 2004). The AFBC in-person training program answered this call and filled the void in community reintegration for people with aphasia in the Windsor-Essex region. Although we have seen the extent to which the training program has improved lives locally, people with aphasia in other regions of Canada, North America, and internationally continue to find their problems misunderstood and unaddressed by extant services. To fill this reintegration void in a wider capacity, the AFBC training program was adapted to an online platform. For a multitude of reasons (e.g., COVID pandemic, rapid technological advancements) recent emphasis has been placed on the provision of online services (Regmi & Jones, 2020). Whether it's a virtual healthcare visit, telerehabilitation, e-learning modules, or permanent remote work, online services are now very much a part of mainstream daily living (Regmi & Jones, 2020; Vyas, 2022).

1.5.1 Online Training

Specifically focusing on online learning (interchangeably referred to as computer-based instruction, virtual education, web/internet/e-based learning), its robust and rapid growth over the last decade has transpired a new era of education (Aldowah et al., 2017; Regmi & Jones, 2020). Regardless of the nomenclature used, online learning is defined by an educational approach that

facilitates learning and teaching through information and communications technologies (ICT; Golband et al., 2014). Educational and academic centers across the world have adopted online learning opportunities create more efficient, expansive, and attractive learning experiences (Aldowah et al., 2017; Wolor et al., 2020). In the same vein, organizations and businesses have leveraged technology to deliver online training programs for their employees (Ozturan & Kutlu, 2010). Online training and learning are synonymous in many ways, except that online training refers to a much shorter learning timeframe and is typically targeted to achieve a specific goal or skill (Wolor et al., 2020).

There is wide variability in the design and logistics of online training delivery. For example, its delivery method could be synchronous (virtually face to face) or asynchronous (independently led, text-based course), the assessment system could be based on learning activities, tests of declarative knowledge, or self-evaluation, and/or the location of the trainees might vary (in same place vs distributed; Regmi & Jones, 2020). Regardless of the formatting specifics, literature consistently reports that online training overcomes many barriers to in-person delivery and access. It increases flexibility in pace and delivery, reduce costs (in travel expenses, training time, etc.), provides standardization and consistency in delivery, extends geographical reach (to distant and remote locations), and benefits areas where time constraints and waitlists may limit accessibility (Cameron et al., 2019; Dankbaar et al., 2014; Ozturan & Kutlu, 2010). Literature also suggests that the learning outcomes of online training can be equally as effective traditional in-person methods of learning or teaching (Regmi & Jones, 2020). While there is currently no evidence on the effectiveness of online aphasia training programs for service providers, it has been demonstrated that online communication partner training (CPT) for healthcare providers can be equivalent to, or no less effective than, traditional in-person formats

(e.g., Cameron et al., 2019, Heard et al., 2017; Power et al., 2020). For example, Power and colleagues (2020) delivered an online and face-to-face CPT program to a group of 30 student occupational therapists. These authors compared learning outcomes between groups and found no significant differences related to attitudes and knowledge of aphasia. Similarly, in a pre/post study examining health professionals' confidence communicating with people with aphasia and their knowledge of strategies to facilitate communication, no difference in learning outcomes based on modality of training delivery (e.g., virtual vs in-person) were observed (Cameron et al., 2019). Another study focusing on healthcare professionals working in various settings also found improved learning outcomes after receiving either in-person or online training, with neither approach superior (Heard et al., 2017). Across studies, online communication training to healthcare providers proved to be efficacious in translation of training outcomes and produced equally successful outcomes when compared to in-person delivery. Even though the AFBC would provide aphasia and communication training to a broader range of occupations, it was hypothesized that similar outcomes would be observed. That is, the AFBC online training would be, at minimum, equally as efficacious in translating aphasia knowledge and self-efficacy of communication skills as its in-person counterpart.

The AFBC's online program expansion had the potential to develop a wider network of service providers with the skills to increase communication access, facilitate community reintegration, and improve the quality of services provided for people with aphasia. To quantify these Pollyanna-like assumptions, the program underwent a comprehensive evaluation to assess the extent to which the AFBC training transcended the virtual space and was retained and translated into meaningful changes by trainees.

1.6 Program Evaluation

Effective training programs (both in-person and virtual) have the potential to increase employee's knowledge, skills, and job satisfaction (Blume et al., 2010; Heydari et al., 2019; Wolor et al., 2020). When satisfied employees leverage newly acquired skills post-training, there are additional benefits for organizations, such as job retention, leadership development, and employee engagement (Allen et al., 2019; Saks & Belcourt, 2006). As such, large financial sums are invested into workplace training programs. In the 2021- 2022 fiscal year alone, American training expenditures passed the $100 billion-mark for the first time (Freifeld, 2022). Similarly, in a survey of hiring managers from 95 of Canada's largest companies, 51% reported spending over $1000 per employee each year on training and learning development (Cotsman & Hall, 2018). Considering the global COVID-19 pandemic, the average spending per-employee on learning and development worldwide did fall slightly in 2020; however, has increased again due to large companies' continuing to invest in virtual training technologies, as well as the associated costs of returning to some in-person training (e.g., travelling, inflation; Freifeld, 2022). Despite these large financial investments in educational training, the overall organizational benefit, and the extent that employees perform differently once back on the job is often left unclear to stakeholders (Blume et al., 2010). Program evaluations can elucidate these questions and quantify the yield of organizational training expenditures.

Program evaluation is defined by a systematic and routine collection of information about a program's characteristics and outcomes (Milstein et al., 2000). Meaningful evaluation must consider the training's input, process (e.g., educational programs, assessment method), and output (e.g., behaviour of participants; Heydari et al., 2019). Through both formative (during the program) and summative (after the program) methods, program evaluations ultimately measure,

monitor, and assess how learning outcomes/objectives are accomplished to inform program improvement (Heydari et al., 2019; Milstein et al., 2000). An effective training program would show that trainees took away key information and implemented this learning on the job. This learning translation is called training transfer.

Training transfer is formally defined by the generalization (extent that knowledge and skills acquired in training are applied) and maintenance (extent that changes persist over time) of learning to the job context (Blume et al., 2010; Hutchins & Burke, 2007). A positive transfer of training indicates that a training experience has been generalized and maintained by employees, which leads to meaningful changes in work performance (Blume et al., 2010). This positive transfer is what organizations hope to see after investing in training programs. However, in a survey of 150 organizations, training professionals reported that less than 50% of employees successfully maintain the knowledge and skills acquired in training in a six-month follow-up (Saks & Belcourt, 2006). To mitigate this, these authors advise that evidence-based training inputs and facilitators of transfer (e.g., targeted trainee/trainer characteristics, opportunity for peer conversation) should be at the forefront of decision-making processes and subsequently incorporated into the program design (Saks & Belcourt, 2006). Likewise, successful implementation of online training requires an understanding of the factors that promote and support its effective use (Aldowah et al., 2017). Across in-person and online modalities, many factors that positively influence training transfer are similar, and as per Saks and Belcourt's (2006) suggestion, were meaningfully considered and included in the AFBC program and evaluation design.

1.6.1 Training Input

Factors such as training design, trainee/trainer characteristics, and the work environment itself are 'inputs' that have been found to directly influence training transfer across modalities (Aldowah et al., 2017; Burke & Hutchins, 2007; Ford & Weissbein, 1997; Lim & Morris, 2006). Focusing on trainee characteristics, Burke and Hutchins (2007) describe that a person's intellectual ability, self-efficacy regarding the training task, and motivation level can influence the transfer from training to the work environment. Self-efficacy (the belief in one's capability to perform a specific task; Bandura, 1977), in particular, has been observed to be highly correlated with occupational training transfer (e.g., Chiaburu & Marinova, 2005; Kozlowski et al., 2001). Further, pre-training self-efficacy has been identified as a significant indicator of training mastery (Burke & Hutchins, 2007; Holladay & Quinones, 2003). That is, an individual with high occupational self-efficacy is more likely to use and understand the techniques/skills acquired in training over time. As such, the AFBC online program continued to include both a pre-and post-training occupational self-efficacy measure to capture employee's baseline and post-training self-efficacy regarding communication.

In terms of trainer characteristics, a trainer's knowledge of the subject matter, professional experience, and knowledge of teaching principles (e.g., adult learning strategies) have been identified as factors that support in-person training transfer (Burke & Hutchins, 2008). In fact, transfer of knowledge has been significantly associated with a trainers' education level, training certification, and job level (Burke & Hutchins, 2008; Hutchins & Burke, 2007). Yelon and colleagues (2004) corroborated this notion and showed that a trainer can impact a trainee's intentions to transfer skills through their role- modelling, and how they treat and make the trainees feel. Similarly, in virtual instructional settings, trainer's attitudes are considered a major

predictor of the transfer of new skills (Aldowah et al., 2017). These factors guided the decision to continue to have the creator, and subsequent trainer of the online AFBC program (who has completed in-depth supportive communication training [Kagan, 1998], and has consulted with speech language pathologists, as well as people with aphasia to ensure comprehensive knowledge) provide the audio recording of the training. Further, post-training questionnaires continued to include opportunities for trainees to offer feedback and rate characteristics of the trainer (e.g., knowledgeable, enthusiastic) to directly assess the 'trainer characteristics' impact of transfer.

With the intent to have AFBC trainees successfully maintain the knowledge and skills acquired in training, it was also important to consider organizational environmental factors that might inhibit, reduce, and/or promote training transfer (Lim & Morris, 2006). Burke and Hutchins (2007) elucidate aspects of this and identify important stakeholders within the in-person work environment that influence transfer. More consistently than not, collaboration with peers and colleagues has been shown to have a greater influence on training transfer than supervisory support (Burke & Hutchins, 2007). Indeed, Regmi and Jones (2020) describe learning as a social phenomenon where interaction and collaboration between learners is an important process that fosters academic dialogue and learning retention. In these authors' systematic review of enablers and barriers impacting e-learning, opportunities to interact with and receive feedback from trainers and peers was identified as an enabler to learning (Regmi & Jones, 2020).

Recognizing that one of the unavoidable differences between the AFBC in-person and online trainings would be the provision of a collegial training environment, it was encouraging to see Dobrovolny (2016) used online conversations to solidify learning of adults who participated

in self-guided, technology-based training. Albeit online, peer dialog and discussion clearly remains an important factor that influences training transfer. As such, the AFBC online training included a virtual opportunity for trainees to discuss the training with other learners and/or members from the AFBC. The incorporation of evidence-based factors that support training transfer into our program design increased the likelihood that the training content would be translated into meaningful changes in trainee's work environment. The next step would be to evaluate if these changes were realized.

1.6.2 Training Process and Output

The Centers for Disease Control (CDC) describes that program development and evaluation should: (1) engage stakeholders, (2) describe the program, (3) focus the evaluation design, (4) gather credible evidence, (5) justify conclusions, and (6) ensure use and share lessons learned (Milstein et al., 2000). As per the framework, steps one through three were completed during the creation of the AFBC in-person training and were transferable to the online training. The next step, to *gather credible evidence* (Milstein et al., 2000) relating to the efficacy of our online program was guided by the new Kirkpatrick Model, which is a commonly used framework to assess the effectiveness of training programs at four levels: (1) reaction; (2) learning; (3) behaviour, and (4) results (Kirkpatrick & Kirkpatrick, 2019).

Level 1 and 2 assessments are colloquially called 'outcome' assessments and evaluate the quality of a training and the degree that it results in acquisition of knowledge, skills, and/or changes in attitude/confidence, respectively (Heydari et al., 2019; Kirkpatrick & Kirkpatrick, 2019). Outcome measures (e.g., level 1 and 2 assessment) of the ABFC were captured by pre-test and post-test data. More specifically, the AFBC training was preceded and followed by questionnaires that measured changes in declarative knowledge of aphasia and perceived

occupational self-efficacy, as well assessed the quality and pertinence of the training content and trainer. Evidenced by the fact that 78% of training events measure level 1 or 2 outcomes in some fashion, it is apparent that the quantification and understanding of *training outcomes* are important (Kirkpatrick & Kirkpatrick, 2019). However, to gather information related to overall *training effectiveness* (e.g., training generalization and maintenance), higher-level assessments (level 3 and 4), also called 'impact' assessments, should be conducted (Kirkpatrick & Kirkpatrick, 2019). Possible level 3 and 4 evaluation options include: behavioural observation of trainees conducted by colleagues, supervisors, or trained evaluators, longitudinal repetition of post-training surveys, and/or self-or-informant interviews. Impactful, or successful training, would be indicated by the extent to which trainees retained knowledge and skills, and/ or demonstrated goal or competency-based behaviours post-training. Despite the invaluable information these assessments yield, they are only conducted 25% and 15% of the time, respectively (Kirkpatrick & Kirkpatrick, 2019). Evidently, higher-level evaluation was required to elucidate whether the AFBC online training transcended its virtual modality and translated into meaningful changes on the frontline. Guided by the six-month post-training findings (i.e., less than half of trainees maintain training acquired knowledge and skills) of Saks and Belcourt (2006), an impact evaluation was conducted to answer questions related to AFBC training transfer, outlined below.

1.7 Study Objectives

This project had two distinct components (program expansion and evaluation) aimed to improve the delivery and understanding of the AFBC program. Our program expansion explored:

1) Does the AFBC's online training impact declarative knowledge of aphasia and perceived self-efficacy to apply communication skills in the workplace/daily life?
2) How does the AFBC's online delivery compare to its in-person efficacy related to its learning outcomes?

Hypotheses predict that our online AFBC training will (1) show significant improvements in participants' knowledge of aphasia and perceived occupational self-efficacy, and (2) produce equally successful outcomes as compared to our in-person delivery.

The AFBC's program expansion was complemented by program evaluations that assessed training design, retention, and transfer six-months post-training. Specifically looking at:

1) Do participants remember and use communication skills introduced in training on the job? In daily life?
2) Have participants retained, shared, or trained others in about aphasia and/or supportive communication?

An additional aim of the program evaluation was to examine participants' experience with AFBC training. Namely, to understand what the perceived benefits were, which aspects were most helpful and what changes, if any, need to be made prior to future implementation of the training.

CHAPTER 2: METHODS

Preamble

This project was originally designed to (1) be disseminated to groups of employees at a business/organization, and (2) have people with aphasia go into these businesses to conduct impact program evaluations. They would assess the communicative techniques (e.g., assess the use of closed ended questions, visual aids, rate of speech) and materials used by the employees. Though recruitment was successful, most trainees participated in the online training independently of their workplace/organization. This individualistic nature of participation, in combination with social distancing requirements throughout the COVID-19 pandemic, impacted our ability to complete the planned program evaluation involving those with aphasia. Instead, semi-structured interviews (SSI) with a subset of training participants were conducted to evaluate training generalization and maintenance (e.g., transfer). See *Section 2.2* below for more detail.

2.1 PROGRAM EXPANSION

2.1.1 Training Procedure

Despite unavoidable differences between in-person and online training (e.g., presence of peers/colleagues, in-vivo question and answer period), all training content (PowerPoint presentation [PPT] and video) along with the commentary provided was identical across modalities. The AFBC training was accessible to participants through the project website (aphasiafriendlycanada.ca). Under the website's '*Training for Businesses and Individuals*' section, a brief description of the training, its duration, and the steps to participate were outlined. Steps 1 and 3 requested participants complete brief questionnaires prior to, and following training, respectively. Those who opted to participate were re-directed to the Qualtrics website (the University's web-based survey tool) where the questionnaires were hosted. Participation in

pre/post questionnaires was not mandatory and many trainees declined to do one or both but still received the training.

Step 2 on the project website outlined the steps to access the training module itself. Interested participants would click on a link (app.xpresslab.com/Enroll) that would re-direct them to a teaching platform used by the Ontario's Ministry of Education, the University of Windsor, and the University of Ottawa called XpressLab (XpressLab, 2023). Once on XpressLab, the training module could be accessed using the appropriate course key (found on the AFBC website). The module was comprised of a PPT with accompanying audio recording and video examples. Opportunities to download pictorial toolkits/ resources, receive a certificate of completion, and participate in virtual role-play and discussion were also available to participants. These components of the training module are described below:

PowerPoint: The online module used the same PPT as our in-person training, with the addition of one slide that contained information to access virtual discussion sessions, described below. The PPT was self-developed using information, theories, and techniques provided by the AI and MODC. Accompanying audio was recorded by the author and followed the same script that was used for in-person trainings. See Appendix B for PPT.

Video: Video footage across modalities of training delivery was the same. Volunteers from the Windsor community who have non-fluent aphasia discussed their day-to-day challenges living with aphasia and explain how they acquired the language disorder.

Certificate of Completion: Participants had the option to input their email address to receive a certificate of completion and follow-up communication from the AFBC email (aphasiafriendlycanada@gmail.com).

Toolkits and Resources: Under the project website, *Resources* section, toolkits that pictorially display services that are provided at a wide range of organizations (e.g., pharmacies, grocery stores, libraries) were available for download. While a wide range of toolkits were available, there was also opportunity for organizations and individuals to request that a toolkit be designed by the AFBC. In addition to the toolkits, YES/NO and alphabet cards were open access on the program's website.

Discussion / Question & Answer Sessions: Throughout the early dissemination of our online program (e.g., first 4 months), an AFBC team member was available via Microsoft Teams on Fridays from 12-2 EST to discuss the training, answer any questions, or role-play supportive communication skills with trainees. Due to limited participation (N = 1), drop-in participation was amended to be by request only. To request a session, trainees were provided the program's email at the conclusion of the online training program. There were no additional requests received.

2.1.2 Testing Measures

The questionnaires that preceded and followed the training module were the same as our in-person study, albeit online. They were designed to assess changes in participant's declarative knowledge of aphasia and their perceived self-efficacy to use communicative techniques. In addition, participants could evaluate the quality and pertinence of the training and trainer.

Declarative knowledge of aphasia was evaluated through a modified version of the NAA's '*Aphasia Quiz*' (NAA, 1988). This measure has been used in many other studies to measure pre- and post-training knowledge of aphasia (e.g., Baig, 2011; Ganzfried & Symbolik, 2011; Ranta, 2013), as well as our AFBC in-person training (Borsatto et al., 2021). The original version of the quiz consisted of ten true/false questions; however, we modified the response

options to include an additional category of "don't know" to gauge the baseline knowledge of participants by preventing random selection. In addition, we added the statement "If a person has difficulty with speech it also means they have intellectual deficiencies" to our quiz to further disseminate education about misconceptions about aphasia. The NAA used this true/false statement in a survey they conducted in 2016 to emphasize that aphasia affects speech and language, but not intellectual capabilities (NAA, 2016).

To assess changes in perceived occupational self- efficacy, Rigotti and colleague's (2008) abbreviated version of Schyns and Von Collani's (2002) Occupational Self-Efficacy Scale (OSES) was used to capture employee's ratings prior-to and after training. This six-item measure was preceded by a prompt that was added to inform participants to consider the questions in regard to their general communication skills. Items were rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree) with higher values corresponding to higher occupational self-efficacy. Reliability coefficients (Chronbach's alpha) for the short version of the OSES are between .85 and .90 and support a good internal consistency (Rigotti et al., 2008).

The AFBC's pre-test also contained questions to probe participant's general awareness and knowledge of stroke and aphasia (e.g., aphasia is a: heart, circulatory, language, or spinal condition). These questions come from the *Awareness of Aphasia Survey* which has been internationally and extensively used to gauge aphasia awareness (Code et al., 2001; Code et al., 2016; Patterson et al., 2015).

In the post-training questionnaire, participants had the opportunity to evaluate the quality and pertinence of the training and trainer, using a 5-point Likert scale (1= poor, 5= excellent, e.g., the training session is useful in my job; the trainer was knowledge). This evaluation was informed by the MODC's educational program feedback form and was modified to include

questions regarding the overall satisfaction of the participant's online training experience. Further, participants were able to provide open-ended responses regarding improvement to the training.

2.1.3 Recruitment & Participants

Participants could access the online AFBC program as of April 2021 and it continues to remain available through the project website (aphasiafriendlycanada.ca). Similar to the AFBC in-person training, recruitment occurred through word of mouth (e.g., networking, business-centered cold calls/ emails, receiving referrals through the website), as well as promotion through media and social media platforms, and community outreach (e.g., presentations in academic and medical institutions). As of April 2023, a total of 258 individuals participated in the training. Training was available to any interested individual; however, only those who were 18 years and older and completed the pre and post questionnaires were included in the statistical analysis (N = 192). Participants consisted of 126 females, 64 males, and 2 non-binary individuals, with a mean age of 42.54, *SD* = 19.76. To allow for interpretation of respondent characteristics, participants' data were compiled in their respective occupational category based on the National Occupational Classification (NOC; Statistics Canada, 2021). The NOC is the national system used for structuring and reporting occupational statistics in the Canadian labour market (Statistics Canada, 2021). For example, a participant who was a nurse was assigned to NOC 3, Health Occupations. See *Figure 2* for category descriptions, *Figure 3* for participant flow, and Table 1 in *Section 3.1.2* for respondent characteristics.

Figure 2

The NOC (Statistics Canada, 2021)

Code	Broad Category
0	Legislative and senior management occupations
1	Business, finance, and administration occupations
2	Natural and applied sciences and related occupations
3	Health Occupations
4	Occupations in education, law and social, community and government
5	Occupations in art, culture, recreation, and sport
6	Sales and service occupations
7	Trades, transport and equipment operators and related occupations
8	Natural resources, agriculture, and related production occupations
9	Occupations in manufacturing and utilities
N/A	Did not disclose

2.1.4 Data Analysis

To investigate the objectives of our program expansion, a between subjects by repeated measures ANOVA modelling a between-group factor (online vs in-person) and within factor of time (pre vs post) was conducted for each learning outcome (declarative aphasia knowledge [AK] and perceived self-efficacy [SE]). Data pertaining to the in-person group was obtained from Borsatto and colleagues' (2021) study. As learning outcomes varied by objectivity (AK) and subjectivity (SE) and group sample sizes were not equivalent (measures of self-efficacy were included later in our in-person training; see *Figure 3*), it was important to investigate effects of the factors on outcomes separately.

Additional data obtained from the post-tests (e.g., trainer/ training ratings) provided information for the outcome program evaluation. These results were summarized, described, and interpreted using descriptive statistics (see '*Program Evaluation', Section 3.2.1*).

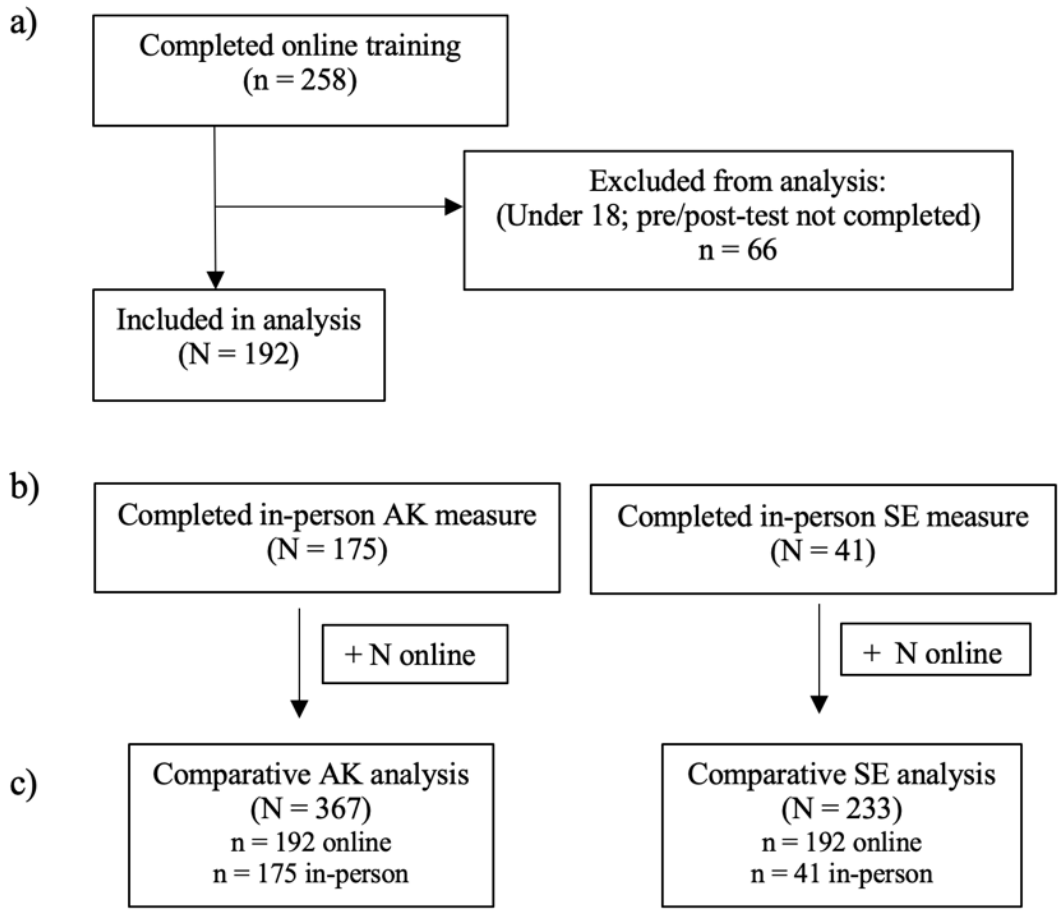


Figure 3. *(a) Participant flow of online AFBC training; (b) In-person sample size of learning outcomes; (c) Sample sizes of current comparative analysis*

2.2 PROGRAM EVALUATION

2.2.1 Recruitment & Participants

Trainees who participated in AFBC online training more than 6 months from the onset of SSI recruitment (i.e., February 2023), were 18+ years old, completed the pre and post questionnaires, and opted-in for further communication by the AFBC team following training were invited to participate in a SSI (N = 129). Information regarding the logistics and purpose of the SSI (e.g., understand experiences with AFBC training and its content translation) were sent

via the program email. A total of 11 individuals across occupational disciplines participated (6 females, 5 males, with a mean age of 41.2).

2.2.2 Procedure and Measure

SSIs were conducted using Microsoft Teams or over the telephone throughout April 2023. Informed verbal consent was obtained, and audio was recorded for transcription purposes. Interviews ranged in length from 16 to 55 minutes (mean duration = 28 min.) and were conducted by members of the AFBC team who have knowledge of qualitative methodology.

SSI guides were developed based on theoretical frameworks (Kirkpatrick & Kirkpatrick, 2019; Milstein et al., 2000) and previous work examining training maintenance and generalization (e.g., Covas, 2022). Questions focused on exploring: (a) trainee's experience participating in the training, (b) information retention (e.g., assessing present knowledge of aphasia and communication tools), as well as post-training communicative impact (e.g., the degree to which training outcomes had been integrated into daily life). Trainees were also afforded the opportunity to share any suggestions for improving training (see Appendix A for SSI guide). Informed by Turner (2010), most questions were open-ended and single-faceted to generate rich, in-depth discussion. The interviewers used prompts such as "tell me more about that" to to elicit detail and clarity, when necessary.

2.2.3 Data Analysis

SSIs were transcribed verbatim and reviewed for accuracy. Following transcription, data were analyzed using an inductive reflexive thematic analysis, a qualitative methodology that uses an interpretive framework to express the experiences of participants according to their own perspectives (Braun & Clarke, 2006). Dedoose (Version 9.0.17) software was used to organize and assist with coding data. Codes were first compiled into themes at the semantic level (within

the surface meaning of the data; Braun & Clarke, 2006) and then analyzed using a latent approach (underlying ideas concepts, patterns; Braun & Clarke, 2006) to generate fully realized themes. Recognizing that researcher's differences in experiences and perspectives (e.g., clinical vs industry-based work experience) might influence coding, coders (the author and a remote member of the AFBC team) met to refine themes and subthemes in an iterative and rigorous manner (Braun & Clarke, 2019). Disagreements in coding were to be resolved by consultation with another AFBC team member, if needed. To ensure a variety of perspectives were represented, quotes from participants across all occupational disciplines represented in our sample were included.

CHAPTER 3: RESULTS

3.1 PROGRAM EXPANSION

The AFBC program expansion is a dynamic and fluid process. The current results reflect data collected up to and inclusive of April 2023. Looking at sample characteristics (See Table 1, for a comprehensive breakdown), the majority of participants identified as female (n = 126, 65.6%) and worked in healthcare (n = 56, 29.2%). While most participants were located in Ontario (e.g., Windsor, GTA), geographical reach extended across Canada (e.g., British Columbia, Alberta, Nova Scotia), The United States (e.g., Washington, Ohio, Florida), and internationally (e.g., Turkey). Results from the online training, as well as comparisons to our in-person training are discussed in greater detail, below.

3.1.1 Pre-Training Findings

Pre-training results indicated that 92.7% (n = 178) of participants had heard of stroke and 63.5% (n = 122) had heard of aphasia prior to AFBC online training. Of those that indicated they were aware of aphasia, 84.4% (n = 103) were correctly able to identify that it was a language disorder. Others indicated that despite hearing of aphasia, they were unsure of what it was (n= 9), implied it was a heart condition (n = 5), or implied it was a condition not listed (e.g., it was not a heart, circulatory, language, or spinal condition; n = 4). Descriptive analysis across occupational sectors showed trainees in healthcare occupations (NOC 3) had the highest baseline knowledge of aphasia (M = 8.02, *SD* = 2.58), compared to those in occupations involving natural resources and agriculture (NOC 8) who had lowest baseline aphasia knowledge (M = 1.33, *SD* = .58).

In comparing these findings to our in-person training results, many similar patterns were observed. Trainee characteristics also consisted of mostly females (65.6%) who worked in healthcare (28%), although their mean age was younger at, 29.91 years old. Across 175 employees in various occupational disciplines, including industries such as food and beverage

(considered NOC 6), healthcare (NOC 3), community and recreation services (NOC 4 and 5, respectively), 55.4% indicated they had heard of aphasia prior to training (Borsatto et al., 2021).

Table 1
Learning Outcomes of Online Training Across Occupational Disciplines

*NOC Code (*n*)	Mean Age	**Pre AK-Mean (*SD*)	**Post AK-Mean (*SD*)	***Pre SE-Mean (*SD*)	***Post SE-Mean (*SD*)
0 (*7*)	42.71	6.14 (*2.34*)	10.00 (*.82*)	4.09 (*.29*)	4.14 (*.44*)
1 (*12*)	51.46	5.46 (*3.78*)	9.69 (*1.25*)	3.97 (*.44*)	4.13 (*.31*)
2 (*10*)	43.73	5.17 (*2.98*)	10.17 (*.83*)	3.74 (*.57*)	4.03 (*.41*)
3 (*56*)	44.06	8.02 (*2.58*)	10.25 (*1.05*)	4.27 (*.52*)	4.43 (*.47*)
4 (*38*)	40.61	6.37 (*2.61*)	9.53 (*1.70*)	3.94 (*.61*)	4.18 (*.45*)
5 (*34*)	24.29	5.58 (*3.25*)	9.97 (*1.16*)	4.28 (*.55*)	4.55 (*.46*)
6 (*9*)	39.67	7.78 (*2.99*)	10.44 (*.73*)	4.35 (*.54*)	4.55 (*.43*)
7 (*7*)	62.57	4.43 (*2.64*)	8.71 (*1.80*)	4.00 (*.36*)	4.01(*.27*)
8 (*3*)	49.33	1.33 (*.58*)	11.00 (*0*)	3.78 (*.48*)	4.22 (*.10*)
9 (*4*)	61.75	5.00 (*1.41*)	10.00 (*.82*)	4.04 (*.21*)	4.25 (*.29*)
N/A (*12*)	67.41	4.83 (*4.20*)	9.42 (*1.93*)	4.13 (*.57*)	4.13 (*.36*)

*****Occupations: 0- Legislative & senior management; 1- Business, finance & administration; 2- Natural & applied sciences; 3- Health; 4- Education, law, social, community & government; 5- Art, culture, recreation, & sport; 6- Sales & service; 7- Trades, transport & equipment operators; 8- Natural resources & agriculture; 9-Manufacturing
****** AK- Aphasia Knowledge; scores are an average out of 11
*******SE-Self-Efficacy; scores are an average out of 5

3.1.2 Aphasia Knowledge Findings

Prior to conducting analysis, assumptions were checked. Studentized residuals identified three total outliers (pre-AK scores were higher than post-AK). Assessment of impact (e.g., analysis with and without outliers) indicated no appreciable effects on analysis, so the outliers remained. Aphasia knowledge was normally distributed (assessed by QQ plot), and Levene's test

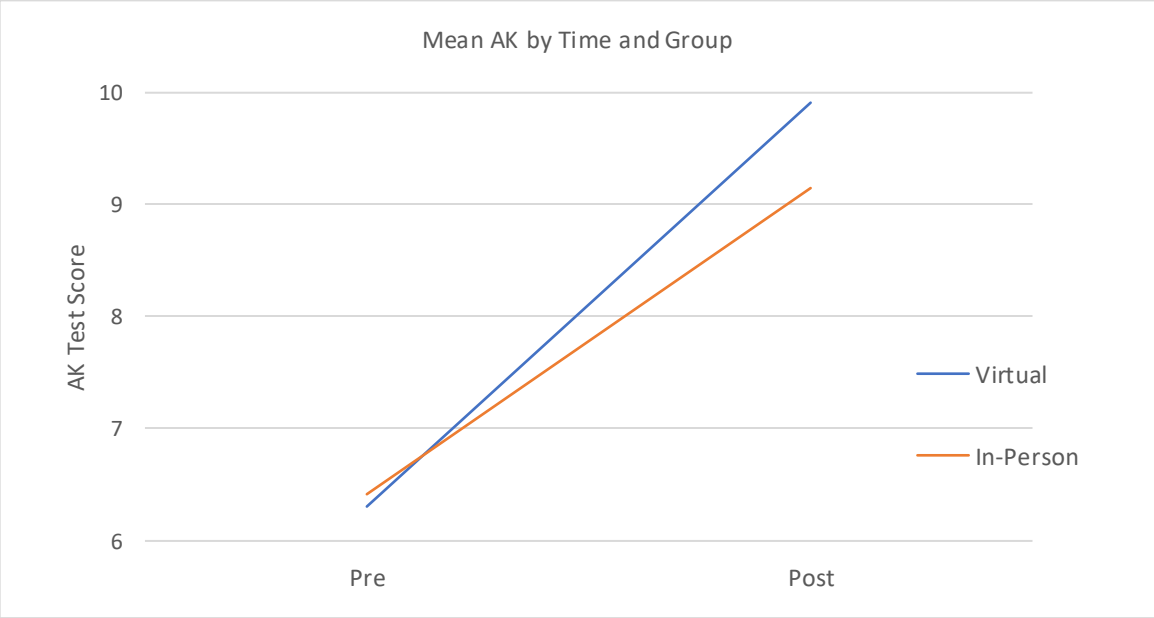
indicated there was homogeneity of variances ($p > .05$). Homogeneity of covariance, per Box's M test was significant. However, given that this test is sensitive to large samples, robustness was expected due to the roughly equal sample size of our groups (Tabachnick & Fidell, 2007).

To address objective 1, results indicate that post-training aphasia knowledge ($M = 9.91$, $SD = 1.33$) was significantly greater than pre-training ($M = 6.31$, $SD = 3.16$), $F(1, 191) = 216.34$, $p < .001$, $d = 1.48$. That is, online training significantly increased declarative knowledge of aphasia.

Aim 2 was to determine whether there were differences in pre/post aphasia knowledge between the virtual and in-person training groups. Results indicate a significant interaction between group and time on aphasia knowledge, $F(1, 365) = 7.28$, $p=.007$, $\omega^2 = 0.08$, such that virtual group outperformed the in-person group.

Figure 4

Mean Aphasia Knowledge by pre/post (time) and Group

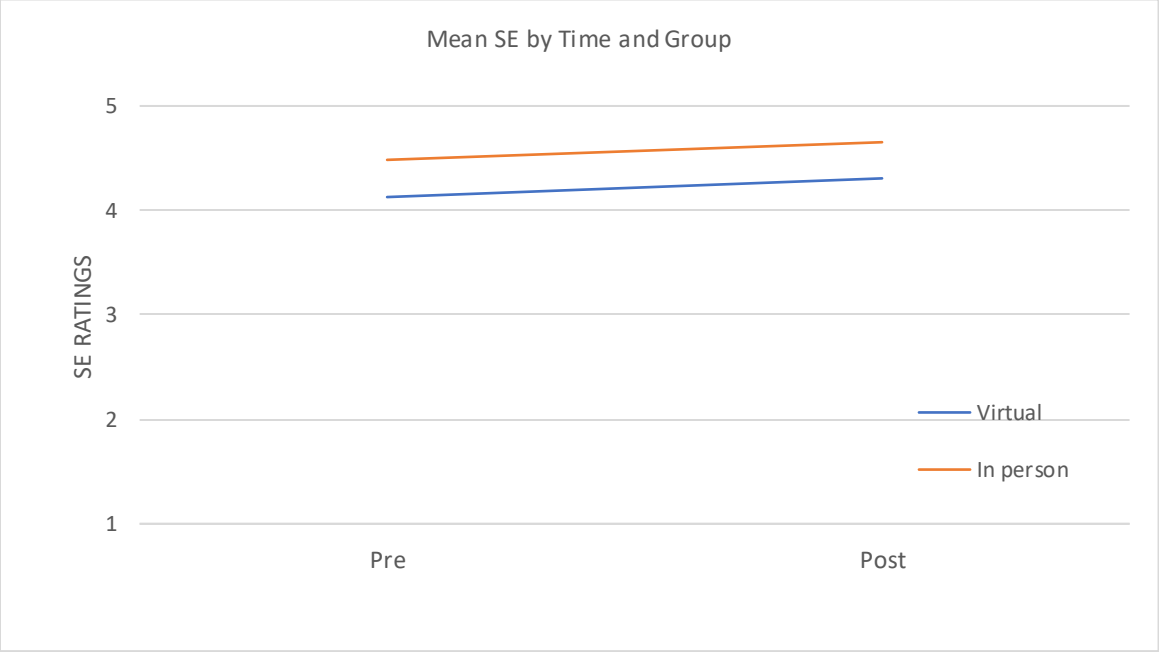


3.1.3 Self- Efficacy Findings

Assumptions were satisfied prior to outcome analysis. Assessment of impact (e.g., analysis with and without outliers) indicated no appreciable effects of inclusion of the 2 outliers. Normality was approximately normally distributed on QQ plots and there was homogeneity of variances ($p > .05$) and covariances ($p > .001$) per Levene's and Box's M tests, respectively.

Results indicate a significant difference in online trainee's perceived pre ($M = 4.13$, $SD = .55$) and post-training occupational self-efficacy ($M = 4.31$, $SD = .47$), $F(1,191) = 12.34$, $p < .001$, $d = 0.35$. Investigation of interaction between factors (in-person/online and pre/post) on self-efficacy outcome revealed no difference, $F(1, 231) = .009$, $p = .93$. However, group main effects showed in-person training perceived SE was significantly higher than the online group, $F(1,231) = 32.39$, $p < .001$, $d = 0.74$. Further, post-training SE was significantly different than pre-training across groups, with a main effect, $F(1, 231) = 8.92$, $p = .003$, $d = 0.39$.

Figure 5
Mean Self-Efficacy Ratings by pre/post (time) and Group



3.2 PROGRAM EVALUATION

3.2.1 Outcome Evaluation (Post-Training) Findings

The post-training questionnaire asked participants to evaluate the training considering its content, pertinence, and relevance to their personal and professional lives on a scale of 1 to 5 (1-strongly disagree, 5-strongly agree). On the same scale, they could also rate trainer characteristics (e.g., was knowledgeable, spoke clearly, enthusiastic). Cumulatively considering both the training session and trainer characteristics, 74.8% of participants (n = 183) rated the training as excellent overall. Looking at training content itself, 75.1% of participants strongly agreed that the training was informative, and with a cumulative rating of 90.3% strongly agreed or agreed that it adequately prepared them to communicate with people with aphasia and other communication difficulties. Table 2 summarizes the distributions of item-level responses.

Table 2

Distribution of Likert Scale Responses

	N	5 *n* (%)	4 *n* (%)	3 *n* (%)	2 *n* (%)	1 *n* (%)
The Training Session						
Informed you about aphasia	185	139 (*75.1*)	35 (*18.9*)	11 (*5.9*)	0	0
Prepared you to communicate with people with aphasia	185	125 (*67.6*)	42 (*22.7*)	17 (*9.2*)	1 (*.5*)	0
Appropriate length of time	185	156 (*84.3*)	23 (*12.4*)	6 (*3.2*)	0	0
Useful for my job	182	87 (*47.8*)	62 (*34.1*)	21 (*11.5*)	10 (*5.5*)	2 (*1.1*)
The Trainer						
Knowledgeable about subject matter	185	144 (*77.8*)	38 (*20.5*)	3 (*1.6*)	0	0
Clear and organized explanation of material	183	139 (*75.9*)	41 (*22.4*)	3(*1.6*)	0	0
Conveyed enthusiasm	182	124 (*68.1*)	50 (*27.5*)	7 (*3.8*)	1(*.5*)	0
**Overall Satisfaction*	183	137 (*74.9*)	42 (*23*)	3 (*1.6*)	1(*.5*)	0

*Likert scale: 5-excellent; 4-very good; 3-good; 2-fair; 1-poor

Participants were also offered an open-ended opportunity to provide comments, feedback and/or suggestions on the training (summarized in Table 3, below). Many shared positive comments regarding the content and length of the training (e.g., "enjoyed the pacing, the length, and the video interview with people with aphasia - that made it real"). When considering ways to improve the training, the most common feedback was to include additional video footage. Suggestions included incorporating footage of: "a skilled customer service person helping someone with aphasia"; "a drive-thru situation"; "a role play of someone ordering a coffee/meal at a restaurant and the ideal way to interact"; "include a [video of] a female who has aphasia".

The provision of additional information (e.g., copies of the PPT, summary brochures, links to podcasts and books), as well as information regarding communication with masks (COVID-19 related) were also suggested by trainees as ways to improve the training. One participant offered that "skills like empathy/patience/emotional intelligence/mindfulness would be great additional information to provide people with". Further, suggestions about technology and comments about technological access to training were offered. A request for the "option to increase the speed of voiceover and provide a transcript option for reading" was made. Some trainees shared there were: "problems with background noise", and suggested clarification regarding the steps to access the training (e.g., "when logged on the instructions not clear about whether I was supposed to create an account").

Table 3

Feedback and Suggestions to Improve Training

Broad Feedback Themes	**Samples of Suggestions**
Positive	• Very enlightening and definitely will access the slides for my patients. • Informative. Can place situations where I've come across someone with aphasia. Very good learning program.

	• Training good. Aphasia just needs a PR boost. • Alan and John were one of the most impactful pieces of the training. Visuals/experiences of people with aphasia helped to translate the information about aphasia to real life.
Video-related	• Video of one (or more) of the communication techniques in action. • More video of skilled customer service person helping someone with aphasia. • Enjoyed real people examples. Perhaps another case study to give further examples. • Have a few examples of, say, a drive-thru situation. • Perhaps a role-play/video of someone ordering a coffee/meal at a restaurant and the ideal way to interact with someone in that setting would be great. It would also be great to have specific examples that are customized to industry/job, i.e., service industry examples or healthcare settings and how these interactions might be different. • Maybe include a video of someone using a visual guide or multiple closed ended questions to communicate with someone with aphasia. • If possible, it may be beneficial to show more videos that include those with aphasia so that those who are taking this course can get a better understanding of how it is to live with aphasia. I found the video with the two gentlemen beneficial to this training. • Bring in a Wernicke's aphasia patient like Alan and John, who from my understanding both have Broca's aphasia.
More Information	• Additional sessions that provide more in-depth information and local services for those with aphasia. • More info about what is happening inside the brain that causes communication difficulties. More specificity overall. • Links to more resources with practical tools businesses/caretakers can easily implement to improve communication. • I appreciate the invitation to contact you and the link to the Friday sessions and links to MS etc. Additional links to more reading and media material would be helpful. I am really enjoying podcasts and if there are links that would be nice too.

	• A handout would be helpful. Honestly though, it was really good. Much less painful than other training modules I've done.
COVID-related	• Suggestions to communicate with masks. • Please explain if computer/technology communication includes phones. • More examples for virtual communication.
Technological Considerations	• Some problems with background noise. • Option to increase the speed of voiceover and provide a transcript option for reading. • When logged onto the course the instructions not clear about whether I was supposed to create an account.
Other	• Be able to ask questions and receive answers. • Some language in the training could be simplified. For example, comprehension could be understanding, fluent could be explained differently like fluid, free-flowing or effortless. • PPT could be more aesthetically pleasing. • Examples of how to create aphasia friendly resources for various topics. • Excellent introduction. It would be helpful to have direct contact with someone with aphasia to see how to put this into practice. • For those that are interested in doing more extensive training, skills like empathy/patience/emotional intelligence/mindfulness would be great additional skills to train people on.

3.2.2 Impact Evaluation (Semi-Structured Interview) Findings

Four overarching themes, (1) knowledge and skill acquisition, (2) knowledge translation, (3) accessibility awareness, and (4) considerations for future, as well as corresponding sub-themes were generated from the data. They are summarized in Table 4 and described below.

Theme 1: Knowledge and Skill Acquisition

This theme was constructed to reflect the common training motivations and learning outcomes described by participants. The related two sub-themes are (a) awareness and knowledge of aphasia, and (b) awareness of communication tools.

Awareness and Knowledge of Aphasia

Many interviewees expressed that occupational and familial impact of aphasia, as well as the increased media coverage following actor Bruce Willis' diagnosis sparked awareness of the disorder and motivated their participation in training.

> My mother has had two strokes and was having trouble trying to figure out what word she was supposed to use... I was asking [doctors] for more details because I wanted to know what this was called, what was the medical condition called?... With the limited amount of time they have available to explain it, I felt like 'I've got to go do my research'. You just don't have half an hour with the doctor is what it boils down to, right? [NOC N/A; Retired]

> I'm a contractor by profession, so I've done a lot of kitchens that make it easy for wheelchair accessibility. People are in wheelchairs for a lot of reasons, and maybe suffered from strokes or something like that. So, I thought having this little extension of knowledge was just going to make my life easier for future jobs. [NOC 7; Occupation in trades/transport/equipment operator]

Further, participants across occupations identified a desire to obtain comprehensive knowledge of aphasia, including information related to its sequalae, prevalence, outcome, and treatment.

> I was left with a good understanding of what aphasia was. Something that stuck out was the statistics piece... I remember that it was more prevalent than Parkinson's. That was surprising for me. And the other thing is, what I probably have used the most, is that encouraging ways forward. That was the biggest thing, I think understanding that

> [aphasia] is definitely life changing, but it's not life ending. [NOC 3; Occupation in health]

Awareness of Communication Tools

When considering learning outcomes, many participants identified that they acquired additional communication techniques, or felt validated in the use of their current repertoire of communication strategies following training.

> When I'm talking to a customer or selling them lessons on the phone, I'm now asking yes or no questions just to make sure they're understanding what we're offering. I'm making sure that I'm understanding what they want and can deliver what they're asking for. [NOC 5; Occupation in art/ culture/ recreation/ sport]

> I do have two autistic cousins, so like visual cues and pointing... or just showing them a photo of what they're trying to ask of you helps...I understand that it's a similar process for people with aphasia... So, it wasn't all that brand new to me. [NOC 2; Occupation in natural and applied sciences]

Further, sentiments of increased awareness of the general importance of communication were shared and can be summarized by: "I think what this training reminded me of was that piece about being intentional, really thinking about who you're sending messages to, how you want them to be received, and the best vehicles in which to do that." [NOC 0; Occupation in legislation/ senior management]

Theme 2: Knowledge Translation

The second major theme examines trainee's observations of how they integrated AFBC training content into their lives, both personally and professionally. Two factors were echoed by multiple participants, comprising subthemes of: (a) transfer of skills to other populations and (b) educating others.

Transfer of Skills to Other Populations

While only a handful of participants described awareness of communicating with someone that has aphasia, it was commonly articulated that the communication techniques reviewed in training were generalizable to other populations, including English-second language (ESL) speakers, geriatric populations, and children, evidenced by the following quotes:

> I worked with people from different countries and there were some people that English was not their first language. So I mean, one of the strategies that we would use is [taking] a little slower. We all have a tendency in the workplace to talk quickly because your time is very limited... But sometimes you have slow down. [NOC N/A; Retired]

> I have two senior parents, and my father's really hard of hearing and my mom's 83...some of those really basic strategies around slowing down and repetitiveness were really good ones for me because I am a fast talker and quite impatient. So, I found that was helpful...and sending them emails, remembering to enlarge the font... that was good. [NOC 5; Occupation in art/ culture/ recreation/ sport]

> The things we do when teaching children with autism or any disorders where they have trouble speaking or communicating is just to speak very slowly for them to understand and use different types of hand gestures. I have the kids nodding yes, 'I understand', or giving thumbs down, 'I don't understand'. [NOC 4; Occupation in education/ law/ community/ government]

Educating Others

Many interviewees shared sentiments that they disseminated training-related information with others, including family members, friends, and colleagues.

> Actually, at hockey Bruce Willis' name came up and someone says, "I heard he's got aphasia", you know, like 'what's that?'. So, I gave my little speech... I let them know what I learned from the training, and they found it interesting because no one in the room knew what it was. [NOC 7; Occupation in trades/transport/equipment operator]

In addition to translating knowledge to others, several participants described incorporating actionable changes into their professional and personal lives post-training. For example:

> I shared the training with my colleagues at UBC when I was working there. I don't know if any took it, but I shared informal tips... And for students that wanted to come in for appointments, I made sure that we had a pen and pencil in all the rooms for any folks that find it easier to write things down or show it visually... we didn't have that previously. [NOC 4; Occupation in education/ law/ community/ government]

Theme 3: Accessibility Awareness

A theme was generated to capture interviewees' heightened awareness of accessibility barriers and facilitators in their lives following training. Commentary regarding (a) increased awareness of overall accessibility, (b) visible versus non-visible disability, and (c) virtual work necessitating innovations in communication are captured in the follow quotes:

Increased Awareness of Overall Accessibility

A common thread amongst interviewees was engagement in self-reflection about accessibility and ableism following training. Barriers to accessibility in workplaces at both the environmental and individual level were commonly identified and are evidenced below:

> A lot of people like to show off using words...They're gonna use this word, 'nebulous', for example. And people are googling 'what's nebulous' on their phone. So I've been staying away from language that is not common. It maybe helps you with your ego, but you know, it's OK to talk in layman's terms. It's good to talk simply and clearly. [NOC 3; Occupation in health]

> I think from a management perspective, it's important to consider that there are a lot of field level workers that have difficulties taking the extra step to help other people because of their [job] demands... I certainly think there are aspects of my job that would be very difficult for somebody with aphasia, but I think there's also a lot of ways that you can

> adapt my workplace and the tasks that I do so that it wouldn't ever really be an issue. There's a lot of stuff that I do on a day-to-day that anybody with aphasia could do. [NOC 0; Occupation in legislation/ senior management].

'Visible' verses 'Non-Visible' Disability

Further, when considering the content of previous accessibility trainings, many participants described observing a disparity between content focused on visible disabilities versus invisible disabilities. As one occupational therapist described:

> I've done a couple brief accessible design lectures and whatnot... It's something that I'm interested in, but it's certainly an area that I have a lot to learn, and invisible disability hasn't been mentioned at all. It was basically all just revolving around wheelchair accessibility and bariatric accessibility. That was it. [NOC 3; Occupation in health]

The perceived challenges that people with disabilities commonly face in the workplace were described. Following identification of these barriers, many participants noted engagement in self-reflection on how individual changes might encourage broader changes to organizational barriers:

> There are definitely times where I've noticed I get a little bit impatient. And then I give myself a reality check, like 'they're doing the best they can with the tools they have'. I need to be more patient. But I think how our work culture is set up, it isn't accessible for people to easily work as efficiently as those who are able bodied... I'm thinking if someone with aphasia was on my team, it would definitely be more difficult for them. [NOC 5; Occupation in art/ culture/ recreation/ sport]

> For me, [accessibility] has become more important and just learning about those different ways that people are disabled and how my work, in terms of physical accessibility, is pretty poor...which is shocking because I work with the government so it's kind of disappointing. I know there is a committee that is trying to improve that, but it's slow. [NOC 4; Occupation in education/ law/ community/ government]

Virtual Work Necessitating Innovations in Communication

Lastly, regarding accessibility awareness, many participants recognized the increased challenges of communication as part of virtual/hybrid work environment. Interviewees described needing to flexibly adapt and/or modify their communication techniques to adequately deliver service in the virtual workspace, as evidenced by the following quote:

> I think a lot of these techniques are essential in a virtual workplace. I find it even more necessary to have different ways of communicating and making sure communication is clear...I've made the accommodation for paper and pen, and we've implemented a software called Miro which essentially is like a paper and pen, but online and in real time. So we use that a lot actually." [NOC 0; Occupation in legislation/ senior management].

Challenges with the absence of non-verbal communication, cues, and gestures in the virtual space were also highlighted. Many participants reflected on how these challenges would be exacerbated by disability. One participant described working with a colleague who has low vision:

> I've learned so much about how to make communication more accessible online. She really needs bigger font, higher contrast, so like yellow versus black on PowerPoint slides... and when sharing slides over zoom meetings, it's been helpful to know that when I want to make fonts look pretty, they're actually less accessible for people with low vision... so just using arial font... putting [words] in a larger font, have been things I've been doing. [NOC 4; Occupation in education/ law/ community/ government]

Theme 4: Considerations for Future

The final theme captures the suggestions and feedback related to optimizing the training, as well considerations to ensure training content transcends its online modality and is incorporated into peoples' lives. Relatedly, the subtheme focuses on recommendations for knowledge retention and communication mastery.

Recommendations for Knowledge Retention and Communication Mastery

Responses from interviewees tended to suggest that although the video footage was valued, most perceived that additional footage and follow-up would be beneficial for retention of skills, summarized by: "I know people hate getting a lot of emails, but an e-mail every couple of months with a refresher video, like, 'Here's us talking to Jim in a new way', or with a mask on. So, you can keep those skills top of mind and see them in action." [NOC 2; Occupation in natural and applied sciences]

Further, it was echoed that videos of AFBC team-members using supportive communication skills in action would be helpful. Interviewees also suggested that in-vivo experience communicating with someone with aphasia, and/or discussions with professionals who frequently use communication techniques would have solidified their learning:

> The training was a good start and basis to understanding aphasia. Obviously for further learning or connection, if you're actually working with a client who has aphasia, you would need to see what works and what doesn't in real time through practice. [NOC 3; Occupation in health]

> I think it would have gotten a stronger point across if there were more videos in the training to show what it's like communicating with someone with aphasia. Like, having [an AFBC member] actually using and applying skills with someone [NOC N/A; Retired]

> Because of my interactions with so many speech and language pathologists, it was helpful after the training to have some conversations with some of them around aphasia and the different strategies they use. That made it real. [NOC 3; Occupation in health]

Lastly, despite feeling knowledgeable, some participants described anticipatory hesitation to use supportive communication techniques with people with aphasia.

> There's obviously going to be a bit of discomfort with the learning curve. I think it might change depending on the person. There might be more challenges with some people and like, who am I to know if someone has aphasia, you know? But I'd be more open to trying. [NOC 7; Occupation trades/transport/equipment operator]

Table 4

Themes and Subthemes Generated From SSI

Theme	Subthemes
Knowledge and Skill Acquisition	• Awareness and knowledge of aphasia • Awareness of communication tools
Knowledge Translation	• Transfer of Skills to Other Populations • Educating Others
Accessibility Awareness	• Increased awareness of overall accessibility • 'Visible' verses 'Non-Visible' Disability • Virtual work necessitating innovations in communication
Considerations for Future	• Recommendations for Knowledge Retention and Communication Mastery

CHAPTER 4: DISCUSSION

4.1 General Discussion

The present study aimed to assess the efficacy of the online AFBC program, as well as investigate factors related to training design, retention, and transfer through two components: program expansion and program evaluation. Hypotheses related to the program expansion predicted that online AFBC training would (1) show significant improvements in participants' knowledge of aphasia and perceived occupational self-efficacy, and (2) produce equally successful learning outcomes as compared to our in-person delivery. Information regarding the AFBC's expansion was complimented by program evaluation, predicting that around six-months post-training participants would (1) retain aphasia knowledge and use the communication skills introduced in training, and (2) share knowledge/train others in supportive communication and/or aphasia. An additional aim of the program evaluation was to examine participants' experience with the training. Namely, to understand what the perceived benefits were, which aspects were most helpful and what changes, if any, should be made prior to future implementations of the training.

4.1.1 Program Expansion: Hypothesis 1

Results indicated the 20–30-minute online AFBC training significantly improved participant's overall knowledge of aphasia, as well as perceived occupational self-efficacy regarding communication ($p \leq .05$). The marked improvement in aphasia knowledge following training corroborates the growing body of literature suggesting that educational awareness campaigns and targeted training programs are effective tools to impart aphasia knowledge, recognition, and understanding (Baig, 2011; Brown et al., 2006; Ranta, 2013). Increased awareness and knowledge of the language disorder has many benefits. Funding for services,

rehabilitation programs, and research is largely influenced by public awareness (Sherratt, 2011, 2022; Simmons-Mackie et al., 2020). Internationally, current public awareness and knowledge of aphasia is low and it remains poorly funded compared to other disorders with similar prevalence (e.g., Parkinson's receives more than 5 times the funding aphasia does; NINDS, 2021). With no naivety that our sample size may not have a resounding impact on the global level of aphasia awareness, more direct community-based benefits might be realized. That is, improved community understanding of aphasia should reduce stigma surrounding the disorder (i.e., impaired or lacking intellect; Brown et al., 2006), and support reintegration efforts (Worrall et al., 2007). Unlike disorders or diseases where treatment is predominantly medically based and rehabilitation only requires allied health services, analogous reintegration efforts for aphasia also requires a comprehensive understanding of the disorder that includes awareness and use of communication strategies (Sherratt, 2022). Individuals with knowledge of aphasia will therefore be better equipped to facilitate communication to assist with vocational, social and community reintegration accommodations (Simmons-Mackie et al., 2002; Threats, 2007). On the ground, this study's improvements in aphasia knowledge means that there are more service providers and stakeholders in various communities with a deeper understanding of the disorder and relevant communication strategies. Therefore, the current findings that participant's perceived self-efficacy regarding the use of communication strategies increased following training are encouraging.

Trainees felt more comfortable and confident in their communication skills post-training and suggested they were adequately prepared to work with people with aphasia or other communication disorders. These results directly address the environmental 'people factors' that Brown at al. (2006) describe as negatively impacting access to the community (e.g., a lack of

awareness about aphasia/communicative strategies, misassumptions). The decrease in environmental barriers and subsequent increase in facilitators (e.g., trainees with aphasia knowledge and comfort in using communicative techniques), should facilitate greater communicative access to social settings, services, and resources where AFBC trainees are engaged. Additionally, recognizing that self-efficacy is highly correlated to training transfer (Chiaburu & Marinova, 2005; Kozlowski et al., 2001), the current results are encouraging when considering the likelihood that our training would transcend its virtual modality to create meaningful changes in daily life (discussed in '*program evaluation*' section, below).

4.1.2 Program Expansion: Hypothesis 2

Evidently, results support the efficacy of the online AFBC training. When compared to our in-person training outcomes, some interesting patterns of learning emerged. First, the online AFBC program was found to outperform the in-person training in overall post-test aphasia knowledge. Even though Power et al. (2020) and Cameron et al. (2019) found no significant differences in learning outcomes related to attitudes and knowledge of aphasia between training groups (e.g., virtual and in-person), this study's results can corroborate their findings that online aphasia and communication training can, at minimum, achieve similar learning outcomes to its in-person counterpart. One likely cause of the online participants' superior post-test performance might relate to training motivation. Findings from the impact evaluation (discussed more in sections below) suggest that trainees sought online AFBC training for information about aphasia for their family members, their work, or themselves. That is, they were intrinsically motivated to participate. Intrinsic motivation is considered one the most important factors impacting learning in the virtual environment, such that motivated students tend to demonstrate deeper approaches towards learning and higher performance (Cerasoli et al., 2014; Firat et al., 2018). Given that the

in-person participation in training was largely influenced by organizational and managerial motives, the differentiation in training motivation between groups might account for this disparity in knowledge acquisition. Another factor that may have impacted knowledge attainment is the age of trainees in each modality. The average age of participants in the online AFBC training was approximately 12 years older than the mean age of the in-person trainees. While literature examining associations between trainees' age and learning outcomes across training modalities offers contrasting results, many studies have demonstrated that older learners put more effort into e-learning, report higher satisfaction and academic performance as compared to younger peers (Boyte-Eckis et al., 2018; Rizvi et al., 2019).

In contrast, further comparison of learning outcomes between groups showed that in-person training resulted in significantly higher self-efficacy ratings than the online group. As discussed, unavoidable differences between the modalities include the presence of peers/colleagues and in-vivo question and answer periods. Knowing that collaboration with peers and colleagues has a large impact on training retention, mastery, and self-efficacy regarding the training task (Aldowah et al.,2017; Kozlowski et al., 2001; Burke & Hutchins, 2007), I hoped that the provision of online activity-based role-play and discussion with AFBC team members might enhance learning and perceived competence. Uptake on this opportunity was minimal, yet in the program evaluation it was reported that practice using supportive communication strategies and/or discussions with professionals who frequently use them would solidify learning. This feedback is consistent with other studies that suggests participants learn communication techniques best through experience (as opposed to standalone training; Taylor et al., 2021), and will be important to consider in future implementation of AFBC training (e.g., consideration of hybrid training model).

4.1.3 Program Evaluation

The AFBC program evaluation consisted of an outcome evaluation (e.g., post-test), as well as an impact evaluation (e.g., SSIs). Outcome evaluation results suggested that trainees were satisfied overall with the AFBC online program. That is, the training content was perceived as relevant and comprehensive, and the trainer was rated as engaging. This information, in combination with the noted increases in declarative knowledge of aphasia and self-efficacy, supports the AFBC as an effective training program, according to Kirkpatrick's model of evaluation (Kirkpatrick & Kirkpatrick, 2019). Indeed, per the model, both level 1 and 2 outcomes have been satisfied given the highly rated quality of the training, and the demonstrated changes in knowledge and confidence. Notwithstanding these encouraging results, many trainees provided feedback regarding improvements to the training. The most frequent suggestion was to include more video footage and aphasia-related information, as well as address communication techniques while wearing masks (related to the COVID pandemic). Despite the growing body of literature offering insight into the latter suggestion (e.g., Knollman-Porter & Burshnic, 2020), such timely information could not be incorporated into the training to ensure treatment fidelity between groups. Moving forward, these invaluable suggestions will be considered and implemented on a case-by-case basis to enhance training content.

While the results of the outcome evaluation were encouraging, it was necessary to assess the training's impact. As per Kirkpatrick and Kirkpatrick (2019), impactful training meets the outcomes that were set at the onset of training and results in changes to trainee behaviours on the job. Considering the AFBC's desired outcomes were to have trainees remember and use supportive communication skills, as well as share information with others, our results suggest the AFBC was an impactful training. Thematic analysis highlighted four main themes related to the

AFBC's training generalization, maintenance, and overall effectiveness: (1) knowledge and skill acquisition (2) knowledge translation, (3) accessibility awareness, (4) considerations for future.

Key findings in the first theme were related to participant-identified learning outcomes and training motivation. Trainees sought AFBC training for information about aphasia for their family members, their work, or themselves. Family members, in particular, typically provide physical and emotional care to their loved one with aphasia and take on an unfamiliar advocacy role (Simmons-Mackie, 2017). Especially notable if the person with aphasia cannot drive, or has restricted mobility, family members also become crucial in fostering and maintaining their loved one's social activity (Code, 2003). Obtaining information related to the sequalae, prognosis, and treatment/reintegration about aphasia is necessary for many allies taking on these new roles and is a common goal of those directly and/or indirectly impacted by the disorder. Worrall and colleagues (2011, p.314) describe that on a practical level, they need this information "to access services and to explain difficulties to friends or people in the community". Although this may seem relatively intuitive, gathering credible, accurate, and relevant information is not as easy as anticipated. Information related to aphasia and reintegration support is sparse and often inaccurate (Elman et al., 2000; Sheratt, 2011, 2022). This reality is even more notable for ESL speakers. As noted, aphasia impacts all ethnic, socioeconomic, and age groups (Simmons-Mackie, 2017). Society's multicultural and multilingual makeup guarantees that individuals from diverse racial, ethnic, and linguistic backgrounds will experience aphasia's impacts (Fabbro, 2001; Peñaloza et al., 2021). Like care-partners of monolingual people with aphasia, multilingual aphasia allies seek information and services in their native languages. Peñaloza and colleagues (2021) describe that there is an even greater scarcity in bilingual aphasia-related services, further contributing to the healthcare disparities seen in diverse populations. Indeed, looking at the

American Congress of Rehabilitation Medicine's (ACRM) '*Bilingual Aphasia Resources*' additional information and resources for those directly and/or indirectly impacted by aphasia were scarce and only offered in Spanish (ACRM, 2022). In thinking of ways to ameliorate the widespread lack of aphasia-related information and services, many individuals have suggested leveraging media awareness (e.g., Code, 2020; Elman et al., 2000; Sheratt, 2011, 2022; Simmons-Mackie et al., 2020).

In most countries, "those with knowledge of aphasia gain their knowledge mainly from the media, which can reach large audiences and exploit awareness" (Code, 2020, p.100). Improvements to the incidence of publicly available media presumably increases awareness, leading to increases in research, community support, and services (Elman et al., 2000; Sheratt, 2011; 2022; Worrall et al., 2007). Having a renowned figure publicly speak about a disease/disorder from a first-hand perspective directly supports this ideology (Sheratt, 2011; 2022). For example, Michael J. Fox and Muhammed Ali have significantly raised the awareness and funding for Parkinson's Disease. This unfortunate reality squarely aligns with our findings that Bruce Willis' aphasia diagnosis was also reported as a common motivation for participation in the AFBC training. Per Sheratt (2022), international interest in aphasia was sparked by this announcement. Similarly, the prevalence of aphasia in the media in 2019 was increased with Emilia Clarke (actress), Randy Travis and Edwyn Collins (musicians) announcing they had aphasia (Sheratt, 2022). While this increase in coverage raised aphasia's public profile, there are important caveats to consider. First, PPA has been the most described type of aphasia (Sheratt, 2022). Unlike other aphasia etiologies, PPA results from dementias that atrophy cortical language networks (Hillis, 2022; NINDS, 2021). Individuals with PPA often have co-occurring deficits in episodic memory, visuospatial skills, and/or executive functions (e.g., organization,

planning, decision making; Hillis, 2022), which might affect the public's understanding of aphasia (or rather misunderstanding) and its associated sequalae. Secondly, the severity of language impairment in stroke-acquired aphasia was often downplayed, as in the case of Randy Travis (e.g., described as "struggling with speech", when his aphasia was severe), or was described as something that one could completely 'recover' from (as seen in Emilia Clarke's experience). These narratives emphasize the aforementioned notion that aphasia-related publicly available information is often inaccurate, or misleading (Elman et al., 2000; Sheratt, 2011, 2022). It also highlights the importance of providing accurate and detailed descriptions of aphasia to increase actual knowledge. While the overall global impact (e.g., funding, services) of increased media coverage from recent celebrity advocacy is not yet clear, on a smaller scale, the finding that increased coverage led to AFBC participation corroborates the notion that more publicity leads to increased public awareness and knowledge-seeking.

Taken together, it is apparent that AFBC training was largely motivated by intrinsic trainee factors (e.g., media driven curiosity, desire to learn for family or work). Daly and colleagues (2019) found that similar factors impacted participation in their research, such that those with personal vested interest were more willing to participate. Extrinsic factors were also identified as impacting recruitment (Daly et al., 2019), and as such, future AFBC program expansion should investigate both intrinsic and extrinsic influences on participation and recruitment.

Knowledge Translation

The second theme elicited from the impact evaluation data relates to training maintenance (extent that knowledge and skills persist over time) and generalization (extent that skills are applied). Results indicate that most trainees remembered and used communication skills

introduced in training, and shared aphasia-related knowledge with others. Transfer of training was successful.

Identified at the onset of program design, successful training transfer was the main goal of AFBC training. Guided by Burke and Hutchins (2008) claim that facilitators of transfer should be at the forefront of the decision-making process when designing a program, the AFBC incorporated evidence-based training inputs and facilitators of transfer (e.g., targeted trainee/trainer characteristics, opportunity for peer conversation), when possible. Despite the underwhelming engagement in our peer conversation opportunities, trainees described sharing training-related education with others in their own networks. Indirectly, this sharing of knowledge lends support for peer discussion and dialogue as a factor that solidifies learning and supports training transfer and maintenance (Burke & Hutchins, 2007; Dobrovolny, 2006). Post-training retention of knowledge is certainly a step in the right direction towards meaningful changes in accessibility for people with aphasia; however, on the ground, the impacts of training are realized through the generalization of its content to participant's daily lives.

As described, a common barrier to accessibility in public spaces for those with aphasia is low awareness and knowledge of the disorder and communication strategies to support conversation (Brown et al., 2006; Simmons-Mackie & Damico, 2007). Communication access can be improved by service providers who are prepared to make appropriate communicative accommodations *and* incorporate these strategies during business and service interactions (Kim et al., 2023; Taylor et al., 2021). While our results suggest that only a few participants used communication strategies with someone with aphasia, many described using supportive communication techniques with other populations, such as the elderly, ESL speakers, children, and people with autism spectrum disorder (ASD). Indeed, having informed communication

partners can benefit a wide variety of 'communication vulnerable' individuals (Simmons-Mackie, 2017). Strategies shown to support communication for geriatric and autistic populations, such as the use of cues and pictures, clear annunciation, and being patient (Back et al. 2019; Mirenda, 2003) overlap with methods used for people with aphasia (Kagan, 1998). Similar strategies are also helpful for people with dementia, developmental disabilities, and ESL speakers (Simmons-Mackie, 2017). Thus, the findings that the AFBC training has been generalized by trainees suggests there are now a multitude of knowledgeable service providers who are using techniques to communicate more effectively. The wide applicability of these skills increases communication access for countless individuals. This was exactly the intent of the program- to improve accessibility and inclusion of people with aphasia and other communication disabilities in communities and workplaces through educational training.

Accessibility Awareness

Relatedly, the third major theme in our program evaluation captured participant's heightened awareness of disability and general accessibility post-training. Donovan (2023) describes that disability is most depicted by two images: someone in a wheelchair and/or a blind person wearing dark glasses with a white cane and service dog. These salient images of how the general population perceive disability are said to persist because they are the most visible forms of disability. Yet, visible disabilities represent a small portion the overall population of disabled individuals (Donovan, 2023). Of the 2.9 million Ontarians aged 15+ that are disabled, only 5-10% of these people use wheelchairs (Statistics Canada, 2022). The remaining majority have disabilities that are less visible, or invisible. Examples include aphasia, mental health diagnoses (e.g., depression, anxiety), neurodevelopmental disorders (e.g., ASD, ADHD, Learning Disorders), and hearing or vision impairments. Despite many expansive and complex legal

policies mandating equal access for people with disabilities (e.g., Accessibility for Ontarians with Disabilities Act [AODA]; Americans with Disabilities Act; United Nations Convention on the Rights of Persons with Disabilities [CRPD]), literature consistently reports that individuals with all forms of disablement find their needs are unaddressed by extant services (Kim et al., 2023; Simmons-Mackie, 2017). In fact, Donovan's (2023) interim report of the final assessment of the AODA suggests that without urgent intervention, it will fail to meet its goal of making Ontario accessible by 2025. Encouragingly, our results suggest that barriers to accessibility in the workplace (including virtual workplaces) became more apparent to participants post-training. Trainees engaged in self-reflection and described making changes in their daily lives to increase communicative access for peers and colleagues. These actionable steps answer Donovan's (2023) plea for individual level change and aligns with Threats (2007) finding that disability advocates and informed volunteers are often the ones who spearhead changes to community accessibility.

Considerations for Future

While the latter themes address the extent to which the AFBC program goals were realized, the fourth theme was generated based on the feedback and suggestions for improvement. As discussed, sentiments that communicating with someone with aphasia, or discussions with professionals who frequently use supportive communication would be beneficial to solidify learning. We also heard that the provision of refresher videos on communication strategies, or videos where people are using these skills across settings might bolster training maintenance. These suggestions align with literature that suggests videos effectively enhance learning (Choe et al., 2019), and will be invaluable in considerations for future implementation.

4.2 Limitations and Future Directions

This study demonstrates that online aphasia training can effectively increase declarative knowledge of aphasia and self-efficacy to use supportive communication strategies, and showed that trainees remembered and translated these skills into their daily lives. These findings are promising, but more needs to be accomplished as the limitations to the study are considered.

First, the generalizability of the results must be addressed. Our sample of participants largely consisted of females in intermediate professions (e.g., health, social, and educational occupations). Literature consistently demonstrates that individuals with these demographic variables have the highest levels of baseline aphasia awareness (Code, 2020). Further, many trainees sought our training because they heard about aphasia through their work, family, or the media. Thus, the high levels of pre-training aphasia awareness and knowledge in this study may not adequately reflect the public's baseline knowledge. Moving forward, it will be important to recruit a sample that more adequately represents the general population. Knowing that recruitment is influenced by the perceived value of the research, as well as the impact and/or potential burden on participants (Daly et al., 2019), it will be necessary to engage stakeholders across broader fields of occupational discipline to create relevant and targeted recruitment plans. Specifically, future recruitment efforts should consider putting particular emphasis on Human Resource (HR) departments. Affiliating with large scale organizations such as the National Human Resources Association (NHRA) to train HR professionals themselves and/or targeting organizational-level participation through HR departments across a variety of disciplines might expand the occupational reach of the AFBC program. Another prospective area of recruitment could be shopping malls. Malls are important hubs for social interaction, house a large number of

employees across disciplines, and it is known that people with aphasia interact with retail providers (e.g., cashiers, restaurant workers, bank tellers) more frequently than those in healthcare (Ahmed et al., 2017; Code, 2003, 2020). Collaboration with the stakeholders involved in the creation of the RehabMaLL (a multi-sectoral research project aimed to transform a mall in Montreal, Canada into an inclusive environment; Ahmed et al., 2017) would provide invaluable information for future targeted recruitment. Further, while this study focuses on aphasia, many participants generalized the AFBC training to other populations who experience language impairments. Promoting this training as beneficial and informative for those with communication barriers in general might also encourage broader organizational participation.

Limitations of generalizability are also notable for the findings of the impact program evaluation. The small sample size, in addition to potential social desirability in response, and participation bias (e.g., those that enjoyed training were more likely to opt-in for SSI), affords a level of caution in interpreting results. While SSIs provide rich insight into the 'lived experience' (i.e., the opinions, views, and experiences of trainees; Braun & Clarke, 2019), it will be important for more objective measures of program evaluation to be implemented in the future.

Having people with aphasia and other communication difficulties go into businesses and organizations with trained service providers would provide this objective data. Assessment of the communicative techniques (e.g., used closed ended questions, used visual aids, spoke with clear and slow speech) and materials used by the trainees would provide longitudinal information about training retention and generalization. For a variety of reasons (e.g., COVID distancing requirements, time restrictions), this objective evaluation could not be conducted as intended. As the AFBC program continues to expand, future program evaluations should be completed by those whom the program was intended for. This meaningful inclusion of people with aphasia in

research would also highlight the importance of involving typically marginalized groups in the research process and would provide invaluable information to inform program improvement (McMenamin et al., 2018; Worrall et al., 2011).

Relatedly, given the scarcity of publicly available multilingual aphasia related information and services (Peñaloza et al., 2021), future program expansion should include translating the AFBC online training to other languages. As the AFBC is part of a larger organization called Aphasia Friendly Canada (AFC), leveraging its Canada-wide network of organizations and employees, as well as its partnering organizations (i.e., March of Dimes Canada) will be invaluable to ensure translation of the training to many other languages.

Lastly, when considering future recruitment and program expansion, it will be important to optimize the influence organizational systems have as stakeholders in training engagement. Participation in our online training was largely individualistic in nature. Recognizing common barriers to participation in workplace research and training efforts are a lack of time and workload constraints (Daly et al., 2019), support for educational training at the organizational level might reduce these barriers. The provision of funds and protected time for professional development are direct examples of what this support might look like. Emphasizing that effective training may have substantial impacts on organizations (e.g., influence job retention, work engagement and satisfaction; Allen et al., 2019; Saks & Belcourt, 2006) might leverage organizational level participation and support program expansion efforts.

4.3 Implications and Conclusions

The importance of organizational and institutional level participation in accessibility-related education and training cannot be overstated. We are on the impetus of a transformation of our society. In Canada, there are currently more individuals aged 65+ than there are children

under 14 (Statistics Canada, 2022). By 2040, it is anticipated that 3.9 million people in Ontario alone will have one or more disability (Donovan, 2023). Aphasia's prevalence will surge. And the woeful reality that Ontario's AODA may not realize its goal is not an anomaly. People with aphasia across Canada (and internationally) continue to find their needs unmet by extant services (Kim et al., 2023; Sheratt, 2022; Simmons-Mackie, 2017). Thus, to enact meaningful change in a timely manner, it appears the task of supporting participation and facilitating access to services (per ICF framework) continues to fall to advocates and volunteers. This is not a new reality, and the hope remains that grass-root and individual level activism and programs will support system-level accessibility efforts. The AFBC online training program is one such example. It is cost-effective (free) and time-efficient (20-30 minutes), and results suggest that it is an efficacious aphasia training program that translates to real-world change. Its program expansion and evaluation is an ongoing story that we hope inspires others to enact meaningful changes to improve community accessibility for people with aphasia.

REFERENCES

Ahmed, S., Swaine, B., Milot, M., Gaudet, C., Poldma, T., Bartlett, G., Mazer, B., Le Dorze, G., Barbic, S., Rodriguez, A. M., Lefebvre, H., Archambault, P., Kairy, D., Fung, J., Labbé, D., Lamontagne, A., & Kehayia, E. (2017). Creating an inclusive mall environment with the PRECEDE-PROCEED model: a living lab case study. *Disability and Rehabilitation, 39*(21), 2198–2206.

Aldowah, H., Ghazal, S., Naufal Umar, I., & Muniandy, B. (2017). The Impacts of Demographic Variables on Technological and Contextual Challenges of E-learning Implementation. *Journal of Physics: Conference Series, 892*(1), 12013.

Allen, L., Palermo, C., Armstrong, E., & Hay, M. (2019). Categorising the broad impacts of continuing professional development: A scoping review. *Medical education*, *53*(11), 1087-1099.

American Academy of Emergency Medicine. (2007, March 11). *tPA for stroke: Potential benefit, risk and alternatives.* https://www.aaem.org/UserFiles/file/tpaedtool-AAEM.pdf

American Congress of Rehabilitation Medicine. (2022). *Bilingual Aphasia Resources*. https://acrm.org/resources/professional/aphasia-and-related-disorders/bilingual-aphasia-resources/

Back, A., Fromme, E., & Meier, D. (2019). Training clinicians with communication skills needed to match medical treatments to patient values. *Journal of the American Geriatrics Society (JAGS)*, *67*(S2), S435–S441. https://doi.org/10.1111/jgs.15709

Baig, M. I. (2011). *Aphasia awareness training for first responders*. [Unpublished MS Ed. Thesis], University of Nebraska at Kearney.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.

Barisa, M., Noggle, C., Salisbury, D., Meredith, K., & Boseck, J. (2013). Rehabilitation of aphasia. In Noggle, C., Dean, R., & Barisa, M. (Eds.), *Contemporary neuropsychology: Neuropsychological rehabilitation* (pp. 57–80). Springer Publishing Company.

Blume, B. D., Ford, J. K., Baldwin, T., & Huang, J. (2010). Transfer of training: A meta-analytic review. *Journal of management*, *36*(4), 1065-1105.

Borsatto, J., Buchanan, L., &, Pineault, L. (2021). Aphasia Friendly Canada: The Aphasia Friendly Business Campaign. *Aphasiology,* 1-20.

Boyte-Eckis, L., Minadeo, D. F., Bailey, S. S., & Bailey, W. C. (2018). Age, Gender, and Race as Predictors of Opting for a Midterm Retest: A Statistical Analysis of Online Economics Students. *Journal of Business Diversity*, *18*(1).

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597.

Brown, K., McGahan, L., Alkhaledi, M., Seah, D., Howe, T., & Worrall, L. (2006). Environmental factors that influence the community participation of adults with aphasia: The perspective of service industry workers. *Aphasiology, 20*(7), 595–615.

Burke, L., & Hutchins, H. (2007). Training transfer: An integrative literature review. *Human resource development review*, *6*(3), 263-296.

Burke, L., & Hutchins, H. (2008). A study of best practices in training transfer and proposed model of transfer. *Human resource development quarterly*, *19*(2), 107-128.

Cameron, A., McPhail, S., Hudson, K., Fleming, J., Lethlean, J., & Finch, E. (2019). Telepractice communication partner training for health professionals: A randomised trial. *Journal of Communication Disorders*, 81, 105914.

Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic Motivation and Extrinsic Incentives Jointly Predict Performance: A 40-Year Meta-Analysis. *Psychological Bulletin*, *140*(4), 980–1008. https://doi.org/10.1037/a0035661

Chiaburu, D., & Marinova, S. (2005). What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports. *International Journal of Training and Development*, *9*(2), 110-123.

Choe, R., Scuric, Z., Eshkol, E., Cruser, S., Arndt, A., Cox, R., Toma, S., Shapiro, C., Levis-Fitzgerald, M., Barnes, G., & Crosbie, R. (2019). Student satisfaction and learning outcomes in asynchronous online lecture videos. *CBE Life Sciences Education*, *18*(4), 55.

Code, C. (2003). The quantity of life for people with chronic aphasia. *Neuropsychological Rehabilitation*, *13*(3), 379–390. https://doi.org/10.1080/09602010244000255

Code, C. (2020). The implications of public awareness and knowledge of aphasia around the world. *Annals of the Indian Academy of Neurology*, *23*(8), 95–101.

Code, C., Hemsley, G., & Herrmann, M. (1999). The emotional impact of aphasia. *Seminars in speech and language*, *20*, 19-32.

Code, C., & Herrmann, M. (2003). The relevance of emotional and psychosocial factors in aphasia to rehabilitation. *Neuropsychological rehabilitation*, *13*(1-2), 109-132.

Code, C., Mackie, N. S., Armstrong, E., Stiegler, L., Armstrong, J., Bushby, E., ... & Muhleisen,

V. (2001). The public awareness of aphasia: An international survey. *International Journal of Language & Communication Disorders*, *36*(1), 1-6.

Coderre, A., Zeid, A., Dukelow, S., Demmer, M., Moore, K., Demers, M., ... & Scott, S. (2010). Assessment of upper-limb sensorimotor function of subacute stroke patients using visually guided reaching. *Neurorehabilitation and Neural Repair*, *24*(6), 528-541.

Cotsman, S., & Hall, C. (2018). *Learning Cultures Lead the Way: Learning and Development Outlook*. Ottawa: The Conference Board of Canada.

Covas, H. (2022). *Teaching the Teachers: A Modified Mixed Methods Case Study in Evaluating Allied Health Instructor Training with the New World Kirkpatrick Model* [Unpublished Doctoral dissertation], Baylor University.

Cruice, M., Worrall, L., & Hickson, L. (2006). Quantifying aphasic people's social lives in the context of non-aphasic peers. *Aphasiology*, *20*(12), 1210-1225.

Curtin, A. J. (2011). Individualized Skills Training Program for Community-Dwelling Adults with Mild Alzheimer's Disease. *Journal of Gerontological Nursing*, *37*(10), 20–29.

Dalemans, R., De Witte, L., Beurskens, A., Van Den Heuvel, W., & Wade, D. (2010). An investigation into the social participation of stroke survivors with aphasia. *Disability and Rehabilitation*, *32*(20), 1678-1685.

Daly, D., Hannon, S., & Brady, V. (2019). Motivators and challenges to research recruitment: A qualitative study with midwives. *Midwifery*, *74*, 14-20.

Dankbaar, M. E. W., Storm, D. J., Teeuwen, I. C., & Schuit, S. (2014). A blended design in acute care training: Similar learning results, less training costs compared with a traditional format. *Perspectives on Medical Education*, 3, 289–299.

Dassel, K., Butler, J., Telonidis, J., & Edelman, L. (2020). Development and evaluation of Alzheimer's Disease and Related Dementias (ADRD) best care practices in long-term care online training program. *Educational Gerontology*, *46*(3), 150–157.

Dedoose Version 9.0.17. (2023). Cloud application for managing, analyzing, and presenting qualitative and mixed method research data. Los Angeles, CA: SocioCultural Research Consultants, LLC www.dedoose.com

Dickey, L., Kagan, A., Lindsay, M. P., Fang, J., Rowland, A., & Black, S. (2010). Incidence and profile of inpatient stroke-induced aphasia in Ontario, Canada. *Archives of physical medicine and rehabilitation*, 91(2), 196-202.

Dobrovolny, J. (2006). How adults learn from self-paced, technology-based corporate training: New focus for learners, new focus for designers. *Distance Education*, *27*(20), 155-170.

Donovan, R. (2023, March 1). *Interim report: Independent 4th review of the Accessibility for Ontarians with Disabilities Act, 2005*. https://www.aodareview4.com

Duchan, R., Linda, J., Garcia, A. K., Lyon, J. G., & Simmons-Mackie, N. (2001). Life participation approach to aphasia: A statement of values for the future. *Language intervention strategies in aphasia and related neurogenic communication disorders*, 235, 279-289.

Elman, R. J., Ogar, J., & Elman, S. H. (2000). Aphasia: Awareness, advocacy, and activism. *Aphasiology*, 14(5-6), 455-459.

Fabbro, F. (2001). The bilingual brain: Bilingual aphasia. *Brain and language*, *79*(2), 201-210.

Firat, M., Kilinc, H., & Yuzer, T. V. (2018). Level of intrinsic motivation of distance education students in e-learning environments. *Journal of Computer Assisted Learning*, *34*(1), 63–70. https://doi.org/10.1111/jcal.12214

Ford, J. K., & Weissbein, D. A. (1997). Transfer of training: An updated review and analysis. *Performance improvement quarterly*, *10*(2), 22-41.

Freifeld, L. (2022, November). *2022 Training Industry Report*. https://trainingmag.com/2022-training-industry-report/

Galletta, E., & Barrett, A. M. (2014). Impairment and functional interventions for aphasia: Having it all. *Current physical medicine and rehabilitation reports*, *2*(2), 114-120.

Ganzfried, E.S. & Symbolik, S. N. (2011, May 31). *Aphasia Awareness Training for Emergency Responders: Train the Trainers*. [Paper]. Clinical Aphasiology Conference, Fort Lauderdale, FL. http://aphasiology.pitt.edu/2253/

Gerst-Emerson, K., & Jayawardhana, J. (2015). Loneliness as a public health issue: the impact of loneliness on health care utilization among older adults. *American Journal of Public Health*, 105 (5), 1013- 1019.

Goering, S. (2015). Rethinking disability: The social model of disability and chronic disease. *Current reviews in musculoskeletal medicine*, *8*(2), 134-138.

Golband, F., Hosseini, A. F., Mojtahedzadeh, R., Mirhosseini, F., & Bigdeli, S. (2014). The correlation between effective factors of e-learning and demographic variables in a post-graduate program of virtual medical education in Tehran University of medical sciences. *Acta Medica Iranica*, 860-864.

Gunawardena, C., Linder-VanBerschot, J., LaPointe, D., & Rao, L. (2010). Predictors of learner satisfaction and transfer of learning in a corporate online education program. *The American Journal of Distance Education*, *24*(4), 207-226.

Heard, R., O'Halloran, R. & McKinley, K. (2017). Communication partner training for health care professionals in an inpatient rehabilitation setting: A parallel randomized trial. *International Journal of Speech–Language Pathology*, 19, 277– 286.

Heydari, M., Taghva, F., Amini, M., & Delavari, S. (2019). Using Kirkpatrick's model to measure the effect of a new teaching and learning methods workshop for health care staff. *BMC research notes*, *12*(1), 1-5.

Hillis, A. (2022, July). *BMJ Best Practice: Evaluation of aphasia.* www.bestpractice.bmj.com

Holladay, C. L., & Quiñones, M. A. (2003). Practice variability and transfer of training: The role of self-efficacy generality. *Journal of applied psychology*, *88*(6), 1094.

Howe, T., Worrall, L., & Hickson, L. (2004). Review. *Aphasiology*, *18*(11), 1015-1037.

Hutchins, H., & Burke, L. (2007). Identifying trainers' knowledge of training transfer research findings–closing the gap between research and practice. *International Journal of Training and Development*, *11*(4), 236-264.

Kagan, A. (1998). Supported conversation for adults with aphasia: Methods and resources for training conversation partners. *Aphasiology*, *12* (9), 816-830.

Kim, E. S., Mauriks, K., Wilson, C., Auch, L., Koo, H., Swensrude, D., Laccett, J., & Ruelling, A. (2023). Barriers and facilitators to communication accessibility as perceived by people with aphasia. *Topics in Language Disorders*, *43*(1), 76–90.

Kirkpatrick, J., & Kirkpatrick, W. (2019). An Introduction to the New World Kirkpatrick Model. https://www.kirkpatrickpartners.com/wp-content/uploads/2021/11/Introduction-to-the-Kirkpatrick-New-World-Model.pdf

Knollman-Porter, K., & Burshnic, V. L. (2020). Optimizing effective communication while wearing a mask during the COVID-19 pandemic. *Journal of Gerontological Nursing*, *46*(11), 7–11. https://doi.org/10.3928/00989134-20201012-02

Kozlowski, S. W., Gully, S. M., Brown, K., Salas, E., Smith, E., & Nason, E. R. (2001). Effects of training goals and goal orientation traits on multidimensional training outcomes and performance adaptability. *Organizational behavior and human decision processes*, 85(1), 1-31.

Lam, J. M., & Wodchis, W. P. (2010). The relationship of 60 disease diagnoses and 15 conditions to preference-based health-related quality of life in Ontario hospital-based long-term care residents. *Medical Care*, 380-387.

Levine, R. L., Dulli, D. A., Dixit, S., Hafeez, F., & Khasru, M. (2003). Isolated Broca's area aphasia and ischemic stroke mechanism. *Journal of Stroke and Cerebrovascular Diseases*, 12(3), 127-131.

Lim, D., & Morris, M. (2006). Influence of trainee characteristics, instructional satisfaction, and organizational climate on perceived learning and training transfer. *Human Resource Development Quarterly*, *17*(1), 85-115.

Marshall, R. C. (2008). Early management of Wernicke's aphasia: A context-based approach. In Chapey, R. (5th ed.). *Language intervention strategies in aphasia and related neurogenic communication disorders*, 507-529.

McMenamin, R., Tierney, E., & MacFarlane, A. (2018). Using a participatory learning and action (PLA) research approach to involve people with aphasia as co-researchers in service evaluation: An analysis of co-researcher's experiences, *Aphasiology*, 32(1), 142-144, https://doi.org/10.1080/02687038.2018.1486380

McVicker, S., Parr, S., Pound, C., & Duchan, J. (2009). The Communication Partner Scheme: A project to develop long-term, low-cost access to conversation for people living with aphasia. *Aphasiology*, *23*(1), 52-71. https://doi.org/10.1080/02687030701688783

Milstein, B., Wetterhall, S., & CDC Evaluation Working Group. (2000). A framework featuring steps and standards for program evaluation. Health Promotion Practice, 1(3), 221-228.

Mirenda, P. (2003). Toward functional augmentative and alternative communication for students with Autism: Manual signs, graphic symbols, and voice output communication aids. *Language, Speech & Hearing Services in Schools*, *34*(3), 203–216.

Nadeau, S., & Gonzalez-Rothi, L. (2008). Rehabilitation of subcortical aphasia. In *Language intervention strategies in aphasia and related neurogenic communication disorders* (5th ed.) Lippincott Williams and Wilkins, 457-71.

National Aphasia Association. (n.d.). *Why we need more awareness about aphasia*. https://www.aphasia.org/stories/need-awareness-aphasia/

National Aphasia Association. (1998). *Aphasia Facts Quiz*. https://www.aphasia.org/quiz/

National Aphasia Association. (2016, June). *Aphasia Awareness Month.* https://www.aphasia.org/stories/3815-2/

National Institute on Deafness and Other Communication Disorders. (2020). *Aphasia: What types of aphasia are there?* http://nidcd.nih.gov/health/aphasia

National Institute of Neurological Disorders and Stroke. (2021). *Aphasia Information Page*. https://www.ninds.nih.gov/Disorders/All-Disorders/Aphasia-Information-Page

O'Connell, N. S., Dai, L., Jiang, Y., Speiser, J. L., Ward, R., Wei, W., ... & Gebregziabher, M. (2017). Methods for analysis of pre-post data in clinical research: a comparison of five common methods. *Journal of biometrics & biostatistics*, *8*(1), 1.

Ontario Human Rights Commission. (2016). *Policy on ableism and discrimination based on ability*. http://www.ohrc.on.ca/en/policy-ableism-and-discrimination-based-disability/1-introduction

Ozturan, M., & Kutlu, B. (2010). Employee satisfaction of corporate e-training programs. *Procedia-Social and Behavioral Sciences*, *2*(2), 5561-5565.

Paradise, A. (2007). *State of the Industry: ASTD's Annual Review of Trends in Workplace Learning and Performance*. Alexandria, VA: ASTD.

Parr, S. (2007). Living with severe aphasia: Tracking social exclusion. *Aphasiology*, 21(1), 98-123.

Patterson, R., Robert, A., Berry, R., Cain, M., Iqbal, M., Code, C., ... & Leonard, C. (2015). Raising public awareness of aphasia in southern Ontario, Canada: A survey. *International journal of speech-language pathology*, 17(2), 121-126.

Peñaloza, C., Scimeca, M., Gaona, A., Carpenter, E., Mukadam, N., Gray, T., ... & Kiran, S. (2021). Telerehabilitation for word retrieval deficits in bilinguals with aphasia: Effectiveness and reliability as compared to in-person language therapy. *Frontiers in Neurology*, 598.

Power, E., Falkenberg, K., Barnes, S., Elbourn, E., Attard, M., & Togher, L. (2020). A pilot randomized controlled trial comparing online versus face-to-face delivery of an aphasia

communication partner training program for student healthcare professionals. *International Journal of Language & Communication Disorders*, *55*(6), 852–866. https://doi.org/10.1111/1460-6984.12556

Ranta, A. L. (2013). *An enhanced aphasia awareness training program for emergency responders*. [Unpublished SLP Master's thesis], Ohio State University.

Rapp, B., & Caramazza, A. (1997). The modality-specific organization of grammatical categories: Evidence from impaired spoken and written sentence production. *Brain and language*, 56(2), 248-286.

Regmi, K., & Jones, L. (2020). A systematic review of the factors–enablers and barriers–affecting e-learning in health sciences education. *BMC medical education*, *20*(1), 1-18.

Rigotti, T., Schyns, B., & Mohr, G. (2008). A short version of the occupational self-efficacy Scale: Structural and construct validity across five countries. *Journal of Career Assessment, 16*(2), 238-255.

Rizvi, S., Rienties, B., & Khoja, S. A. (2019). The role of demographics in online learning: A decision tree-based approach. *Computers & Education, 137*, 32-47.

Saks, A. M., & Belcourt, M. (2006). An investigation of training activities and transfer of training in organizations. *Human Resource Management, 45*(4), 629-648.

Schyns, B., & Von Collani, G. (2002). A new occupational self-efficacy scale and its relation to personality constructs and organizational variables. *European Journal of Work and Organizational Psychology*, *11*(2), 219-241.

Sherratt, S. (2022). Written news media coverage of aphasia: An update. *Aphasiology*, 1-22. https://doi.org/10.1080/02687038.2022.2122241

Sherratt, S. (2011). Written media coverage of aphasia: A review. *Aphasiology*, *25*(10), 1132–1152. https://doi.org/10.1080/02687038.2011.577285

Silvers, A. (2003). On the possibility and desirability of constructing a neutral conception of disability. *Theoretical Medicine and Bioethics*, *24*(6), 471-487.

Simmons-Mackie, N. (2008). Social approaches to aphasia intervention. In Chapey, R. (5th ed.). *Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders*. Baltimore, MD: Williams & Wilkins.

Simmons-Mackie, N. (2017). *White paper: Frequency and demographics*. Aphasia Access. https://www.aphasiaaccess.org/white-paper

Simmons-Mackie, N., Code, C., Armstrong, E., Stiegler, L. & Elman, R. (2002). What is aphasia? An international survey of public awareness of aphasia. *Aphasiology*, *16*, 837-848.

Simmons-Mackie, N., & Damico, J. S. (2007). Access and social inclusion in aphasia: Interactional principles and applications. *Aphasiology*, *21*(1), 81-97.

Simmons-Mackie, N., Worrall, L., Shiggins, C., Isaksen, J., McMenamin, R., Rose, T., Guo, E., & Wallace, S. J. (2020). Beyond the statistics: A research agenda in aphasia awareness. *Aphasiology*, *34*(4), 458-471. https://doi.org/10.1080/02687038.2019.1702847

Statistics Canada. (2021). *National Occupational Classification*. https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=1322554

Statistics Canada. (2022). *Canada in 2041*. https://www150.statcan.gc.ca/n1/daily-quotidien/220908/dq220908a-eng.htm

Tabachnick, B. G., & Fidell, L. S. (2007). Using multivariate statistics (5th ed.). Boston, MA: Pearson Allyn Bacon.

Taylor, S., Wilson, E., Murfitt, K., & Balandin, S. (2021). Communication access in the retail environment for people with complex communication needs. *Disability and Rehabilitation*, *43*(22), 3189–3198. https://doi.org/10.1080/09638288.2020.1733108

Threats, T. (2007). Access for persons with neurogenic communication disorders: Influences of personal and environmental factors of the ICF. *Aphasiology*, 21(1), 67-80.

Thomas, S. (2006). "Get it on time": the Parkinson's Disease Society campaign to raise awareness of the importance for medication timeliness. *Nursing Older People*, *18*(2).

Turner, D. W. (2010). Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, *15*(3), 754.

Vyas, L. (2022). "New normal" at work in a post-COVID world: work–life balance and labor markets. *Policy and Society*, *41*(1), 155-167.

Wolor, C., Solikhah, S., Fidhyallah, N. F., & Lestari, D. P. (2020). Effectiveness of e-training, e-leadership, and work life balance on employee performance during COVID-19. *Journal of Asian Finance, Economics and Business*, *7*(10).

Worrall, L., Rose, T., Howe, T., McKenna, K., & Hickson, L. (2007). Developing an evidence-base for accessibility for people with aphasia. *Aphasiology*, *21*(1), 124-136.

Worrall, L., Sherratt, S., Rogers, P., Howe, T., Hersh, D., Ferguson, A., & Davidson, B. (2011). What people with aphasia want: Their goals according to the ICF. *Aphasiology*, *25*(3), 309-322.

World Health Organization. (2001a). *International Classification for Functioning, Disability and Health (ICF).* Geneva, Switzerland: World Health Organization.

World Health Organization. (2011b) *World Report on Disability*. https://www.who.int/disabilities/world_report/2011/report.pdf

Yelon, S., Sheppard, L., Sleight, D., & Ford, J. K. (2004). Intention to transfer: How do autonomous professionals become motivated to use new ideas? *Performance Improvement Quarterly*, 17(2), 82–103

XpressLab. (2023). *Company: About*. https://xpresslab.com/

APPENDICES

Appendix A: SSI Template

Name:	Date of Training:
Employer/ Affiliated Organization:	Who Interviewed:

- Obtain general informed consent (e.g., go over purpose, risks/benefits, confidentiality regarding participation)
    - This is a program evaluation of the AFBC. Goal is to evaluate the training program and assess the extent to which the content has been translated into practice.
    - By providing information and feedback on the training session, we are better able to design strategies to increase the accessibility of public services to people with aphasia.
    - Your responses will be audio recorded for transcription purposes and will be deleted immediately after transcription has occurred. No identifying information will be provided with publication. Participation is voluntary and you may withdraw from the interview at any time.

- Do you have any questions? Do you understand and agree to participate?

IF YES:

1. Why did you participate in AFBC training?

a. What did you hope to learn?

2. What were the most important things that you learned? (*Aim: To get 2/3 items- can use: "In your own words tell me what aphasia is"; probe if they knew about aphasia/supportive communication techniques before if no response*)

3. Since taking the training, have you noticed your communication skills have shifted in any way? *(Aim: To see if used/apply any supportive communication strategies (SCS)?*

a. If yes, what have you noticed? Any particular communication skills that have been particularly helpful?

b. How often would you say you've used SCS? In what contexts?

c. Did you to feel competent/confident to use these strategies your workplace? Daily life?

4. We know a lot of work environments and jobs have shifted due to the pandemic. When you took the training what did your workday look like? (e.g., all virtual, in-person, hybrid?)

a) What about now?

b) Thinking about your work environment, how, if at all does it accommodate for those with any accessibility challenges? What about those with non-visible challenges?

(ONLY USE IF APPLICABLE)

IS THE ENVIRONMENT YOU USE SCS:	
EASY TO HEAR + TALK?	
PHYICALLY ACCESSIBLE?	
WHEELCHAIRS + WALKER FRIENDLY?	

5. Is there anything preventing you from using the information from the training modules in your own life?

a. Is there anything AFC could do to support/ help you incorporate what you've learned?

b. Is there anything that could have enhanced your training experience?

c. Any general questions, comments concerns about training?

Appendix B: AFBC Training Content

APHASIA FRIENDLY CANADA

ACCESSIBILTY TRAINING

Social Sciences and Humanities Research Council of Canada | Conseil de recherches en sciences humaines du Canada | Canada | University of Windsor

LEARNING OUTCOMES

By the end of this training you will be able to describe:

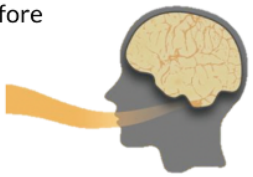
- **Aphasia** and other **communication disorders**
- The **challenges invisible disabilities** present
- **Communication barriers** people with aphasia face in day-to-day life
- **Supportive communication strategies** (communicating creatively!)

WHAT IS APHASIA?

- **Language disorder** caused by damage to the brain
  - Mostly from stroke (1 in 3 survivors)
  - Also from brain injury or brain disease
- Reduces **speaking**, **reading**, **writing** and **understanding** abilities
- **Restricts** ability to **communicate** with others

OUR CHALLENGES INCLUDE :

- Getting the **message in** (through listening or reading)
  - Wernicke's/ Receptive/ Fluent aphasia
- Getting the **message out** (through speaking or writing)
  - Broca's/ Expressive aphasia
- May have difficulties with **BOTH**
- People with aphasia are just as **intelligent** as before



COMMUNICATION CHANGES AFFECT:

1. **Well-being**
   - Communication disability disrupts most aspects of life
2. **Self-confidence**
   - Misconceptions
3. **Conversation effectiveness**
   - Influences all areas of communication
4. **Family roles and relationships**
   - Lifelong disability affecting both the person with aphasia & their family
5. **Social connections**
   - Affects responsibilities, work & leisure activities with friends & family
   - Creates barriers to services in the community

APHASIA STATISTICS

- **2, 600, 000** people in **North America** with aphasia
- 166, 000 to 385, 000 people in Canada
- **More prevalent** than Parkinson's Disease, muscular dystrophy or cerebral palsy
- **Awareness** and **knowledge** of aphasia is **low**
- Businesses & organizations **not equipped** to accommodate customers with this invisible disability

MEET ALAN & JOHN

BARRIERS TO SERVICE:

Quotes from a survey of 12 people with aphasia about barriers to ordering at fast-food chain

"Not enough **time** to respond when ordering in a car/can't communicate well verbally/time pressure"

"Need to have a **visual**/printed way of ordering (e.g., printed/picture menu to point to since it is hard to point to large board on the wall)"

"**Lack of understanding** of aphasia, so sometimes treated as if stupid"

Supportive Communication Strategies

=

Access to Communication & Community

COMMUNICATION ACCESS

What are supportive communication strategies?

1. Good **questioning**
2. Giving **alternative ways** to answer
   - Visual Aids
   - Written and picture choice
   - Pacing speech
3. **Verify**!

GOOD QUESTIONING

Two types of questions:

- OPEN
- **CLOSED**

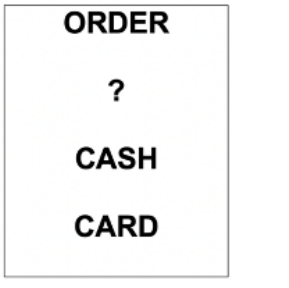
- Allow **time** to answer
- **Rephrase** your question
- **Write** down your question!

ALTERNATIVE COMMUNICATION:

KEY WORDS

If *writing/ typing*:

- Provide **blank** paper
- **LARGE BLOCK** letters
- **ARIAL** font
- Use black/blue ink
- Key wording (3-6 words a page)



ALTERNATIVE COMMUNICATION:

KEY WORDS

On *phone* :

- Use **CLOSED** ended questions
- Press '0' key once for YES; two times for NO
  - Check comprehension/ practice before using this technique
- Use key wording

ALTERNATIVE COMMUNICATION:

PICTURES & GESTURES

- Can be **verbal, written, pictures**
- Try to **draw** your word or message
- You may have to **cover one choice**
- Use **gestures** and pointing

A	B	C	D	Yes	Mistake	I You
E	F	G	H	No	New Word	Bye Thanks
I	J	K	L	M	N	How When
O	P	Q	R	S	T	Where Why
U	V	W	X	Y	Z	What Who

YES  NO

ALTERNATIVE COMMUNICATION: PACING

- **Adjust your pace** to meet the needs of the listener
- Allow extra time to **comprehend**
- Pay attention to **body language**
- Allow extra time to **respond**: When you think you have waited long enough, add 10 more seconds!

'ASC' QUESTIONS

Remember to 'asc' with:

Alternative Methods to answer

Slower Pacing

Closed Questions

VERIFY:

Did **I** understand **you**?

Did **you** understand **me**?

Always check that **you understand**; do not pretend!

PRACTICE YOUR SKILLS

Drop-in **Fridays 12- 2pm EST** to meet members of Aphasia Friendly Canada's team & other training participants to:

- Practice supportive communication strategies
- Ask questions & have discussions about communication barriers!

Copy MS Teams Link into browser:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_OWI0OGFjMDctMjBjMC00OTc3LWIxMGMtODNjNGZlZjNhNDVh%40thread.v2/0?context=%7b%22Tid%22%3a%2212f933b3-3d61-4b19-9a4d-689021de8cc9%22%2c%22Oid%22%3a%2245d3d6d6-d23f-4fa9-a6fd-e9f865118ee4%22%7d

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