Current practices, supports, and challenges in speech-language pathology service provision for autistic preschoolers

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Abstract

Background: Speech-language pathology services are among the most frequently accessed services for young autistic children. Therefore, understanding the nature of these services, what challenges these clinicians face, and what supports they value is critical for developing appropriate policies and practices that can maximize positive outcomes for children and families. This study had two primary aims. The first was to examine the self-reported assessment and intervention practices of community-based Speech Language Pathologists (SLPs) and communicative disorders assistants (CDAs; who provide services under the supervision of a SLP) in supporting preschool children with suspected and diagnosed autism. The second aim was to identify barriers and supports (facilitators) to providing services in the community using the Consolidated Framework for Implementation Research (CFIR) as a framework.

Methods: A cross-sectional online survey was used to collect qualitative and quantitative data from clinicians in Ontario Canada who were providing speech and language services to preschool children with suspected or diagnosed autism. Quantitative data were used to describe clinicians'' practices, and qualitative data captured their perspectives on barriers and supports to providing services.

Results: A total of 258 clinicians participated in the survey. On average, clinicians reported almost half of the preschoolers on their caseload had either diagnosed or suspected autism. There was consistency across the skill development areas assessed by SLPs, and targeted during therapy sessions, with the top four areas targeted being: foundational social communication, language, play and pragmatics. However, there was wide variation in speech and language assessment and intervention practices reported by this sample of clinicians (i.e., service delivery models, tools or programs used, length and duration of therapy services, level of collaboration with other professionals). Clinicians identified several barriers to providing services: limited funding and time, lack of inter-professional collaboration, difficulty accessing services, community messaging about autism services, family readiness and clinician knowledge. Supports (facilitators) included: access to

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autism-focused professional development, inter- and intra-professional collaboration, and access to additional supports in the community.

Keywords

It is estimated that 1 in 66 Canadians has an autism spectrum condition (ASC) or Autism Spectrum Disorder (ASD), referred to here as autism (Public Health Agency of Canada, 2018). One defining characteristic of autism is differences or challenges in social communication skills (American Psychological Association [APA], 2013). As specialists in the assessment and treatment of communication disorders, speech-language pathologists (SLPs) are key members of the team involved in addressing the needs of children with diagnosed and suspected autism. In fact, speech-language pathology services are the most frequently accessed service for young autistic children (Denne et al., 2018; Green et al., 2006; Salomone et al., 2016). This is not surprising because parents consistently identify language and social communication skills as treatment priorities for their autistic children (e.g., Pituch et al., 2011; Rodger et al., 2004). Further, SLPs are trained to assess and support a wide variety of areas (e.g., language skills, augmentative and alternative communication needs, speech/articulation, play, social communication, feeding/swallowing, etc.), so they are well-positioned to address the unique and diverse needs of children on the autism spectrum. Despite the important role SLPs play in autism service delivery, and the frequency with which speech-language pathology services are provided to autistic children, relatively few studies have examined the practices or perspectives of SLPs serving autistic clients, or elicited clinicians" perspectives on the facilitators and barriers to providing services. Understanding how SLPs practice, what challenges they face, and what supports they value is critical to developing appropriate policies, practices, and future research questions that can best maximize positive outcomes for children and families.

Over the past decade, surveys exploring SLP practices used with autistic children have been conducted in Australia (Sandham et al., 2021), India (Mendonsa & Tiwari, 2018), Israel (Sinai-Gavrilov et al., 2019), the United States (Cascella & Colella, 2004; Plumb & Plexico, 2013; Stone, 1987) and Taiwan (Hsieh et al., 2018). While these surveys have examined SLPs" training, knowledge, and current practices with autistic individuals in different countries, there is limited data specific to SLPs and SLP-assistants (e.g., Communication Disorders Assistants; CDAs) working with preschool-aged autistic children. Apart from Sinai-Gavrilov et al. (2019), the studies cited above either included a wide variety of ages, or failed to specify the ages of autistic children served. Given that providing early supports can improve later language outcomes (see Bejarano-Martin et al., 2020; Howlin & Moss, 2012), understanding information specific to practices with preschool children is of importance. Additionally, previous studies have examined practices only for children with diagnosed autism (or Pervasive Developmental Disorder [which is no longer a diagnosis given]), not those showing signs of autism who have not yet been diagnosed. Given that many children are not diagnosed with autism until after age 4 or 5 years (Centers for Disease Control and Prevention [CDC], 2019a, 2019b; Shattuck et al., 2009), SLPs supporting preschool-aged children in the community are likely to see many children with autism who have not yet been diagnosed. In Canada, SLPs are often one of the providers to identify signs of autism and refer children for diagnostic assessment (Speech-Audiology Canada [SAC], 2018).

Also absent in most survey research to date has been SLPs" perspectives on the barriers and facilitators to optimal service delivery. It is critical to understand clinicians" perspectives and the realities of the practice context, to ensure that future research, development of interventions, and service system changes both address factors that impede, and leverage enablers to, service delivery. One framework that has been widely used to promote an understanding of the barriers to and facilitators to health service provision is the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009; Tierney-Hendricks et al., 2022). Given that clinical practice contexts are complex, the CFIR provides a systematic way of framing determinants of health by exploring constructs aligned with three broad domains that may impact service delivery: individual characteristics, inner-setting, and outer-setting. The *individual characteristics* domain takes into account barriers and facilitators aligned with individuals" knowledge/beliefs, self-efficacy, and personal attributes such as ways of learning. *The inner-setting* considers how constructs like culture, organizational structure, and working relationships with colleagues could support or hinder service provision; and the *outer-setting* considers barriers and facilitators related to communities of practice, information exchange across organizations, and external policies and incentives.

Aligned with generating a more complete picture of clinical contexts, a growing body of literature advocates for use of practice-based research approaches. *Practice-based research* involves key stakeholders (e.g., families, clinicians, policy makers) in the research process and embeds research directly in the clinical setting. This work can generate results that are more relevant and applicable to the real-world contexts in which services are delivered, thereby bridging knowledge-to-action gaps in the field (e.g., Cunningham et al., 2019; Logan & Graham, 1998; Olswang & Goldstein, 2017; Olswang & Prelock, 2015).

Using practice-based research principles, the primary aims of this study were to (a) examine the self-reported assessment and intervention practices of community-based SLPs and communicative disorders assistants (CDAs; personnel who provide services under the supervision of a SLP) in supporting preschool children with suspected and diagnosed autism, and (b) identify barriers and facilitators to providing services in the community using the CIFR framework. As key stakeholders in the provision of speech and language services, SLPs and CDAs are well-positioned to provide practical perspectives on what supports, and stands in the way of, optimal communication services for preschool children with suspected or diagnosed autism, and to provide suggestions on how best to address barriers to service delivery in *real world* community settings.

The current study

Despite the momentum in Canadian research regarding community services provided to autistic persons and their families (e.g., autism diagnostic services; Brown et al., 2012; Milen & Nicholas, 2017; Penner et al., 2018), research examining the unique experiences of SLPs and CDAs delivering services to autistic preschool children and their families has yet to be explored. In Canada's largest province, Ontario (population 14.57M), speech and language services for preschool children are provided through a mix of publicly funded and private services. Children from birth to 6 years (or school-entry) are eligible for free, publicly funded SLP services through the province's Preschool Speech and Language Program and, for children attending public schools (beginning with optional junior kindergarten at 4 years), through publicly funded school-based SLP services. Children are referred to the publicly funded Preschool Speech and Language Program from a variety of channels including family physicians, early-childhood educators, and caregiver self-referral. No clinical diagnosis is required to access these services. Private services are also available for purchase. All services are delivered by licensed SLPs directly, or by personnel supervised by SLPs, such as CDAs.

We sought to understand the current assessment and intervention practices used by speech-language clinicians (i.e., SLPs and CDAs) in Ontario, Canada, and identify clinicians" perceived supports (facilitators) and barriers to service delivery. Our specific research questions were:

RQ1. What are the speech and language assessment practices currently used by SLPs working in community settings (e.g., government funded preschool programs, schools, private practice) with preschool-aged autistic children?
RO2. What are the speech and language intervention practices currently used by SLPs and CDAs working in community settings (e.g., government funded preschool programs, schools, private practice) with preschool-aged autistic children?
RQ3. Are assessment and intervention practices the same for children with diagnosed autism as they are for children with suspected autism (not yet diagnosed)?
RQ4. What are the barriers and supports that SLPs and CDAs experience in providing services to preschoolers with diagnosed and suspected autism?

Methods

We used a cross-sectional online survey to collect both qualitative and quantitative data from clinicians (i.e., SLPs and CDAs) in Ontario who were providing speech and language services to preschool children with suspected or diagnosed autism. Quantitative data were collected to describe clinicians" practices, and qualitative data were used to capture their perspectives on barriers and supports. This study was reviewed and approved by the Western University Health Science Research Ethics Board.

Survey development

The survey was developed in two phases. Phase 1 involved developing an English language survey using Qualtrics and piloting it with a small group of clinicians for the purpose of content validation. Phase 2 involved integrating feedback from the pilot distribution and revising the original survey.

Phase 1. Survey questions were developed and revised through a collaboration between three SLP researchers with extensive experience working with preschool children with suspected and diagnosed autism (AB, BJC, JOC), and a SLP who worked in a publicly funded preschool speech and language program in Ontario, Canada (AA). Topic areas examined in the survey were decided based on examination of the scientific literature and discussions about clinical relevance. The pilot survey included questions categorized into four topic areas: (a) demographic information, (b) assessment practices, (c) intervention practices, and (d) barriers and supports to service provision. Content validity of the survey questions was established by having all four SLPs on the research team review questions, provide electronic comments, and engage in discussions

until a consensus was reached that questions adequately addressed the topics of inquiry. The terminology used in the survey was also reviewed by the research team. Terms judged to be transparent in meaning to Ontario SLPs and CDAs based on their professional knowledge (e.g., use of *CDA* to represent speech-language assistants) were not defined. Terms that any research team member did not find clear were defined in the survey (e.g., *suspected of having autism* was defined as the clinician thinking it is likely or very likely that the child would receive a diagnosis of autism upon formal assessment by a physician or psychologist). The pilot survey was distributed to 44 speech-language clinicians (SLPs and CDAs) working at one site in the Ontario Preschool Speech and Language Program. Twenty-nine staff members (26 SLPs; 3 CDAs) took part (65.91% response rate), but attrition was seen during survey administration, with many questions at the end of the survey receiving 16 or fewer responses.

Phase 2. The second phase of the survey development process involved revising the original survey based on participants" feedback and responses from the pilot distribution. Phrasing of several questions was changed to capture desired information more clearly and to maximize completion rates. Several questions were also eliminated to shorten the time needed to complete the survey to 20 min. Revised survey questions were examined by the research team and consensus was reached for all revisions. The resulting web-based, English language survey was created using Qualtrics. Survey logic was used so that respondents only saw questions that were relevant to them, based on their earlier responses (e.g., only SLPs who identified they worked in a school board were presented with a list of school boards to choose from). The survey was anonymous, and respondents were able to leave questions blank and to navigate forward or backward through the survey to add or remove answers. The Letter of Information requested that all clinicians who had participated in the pilot study decline participation in the new survey to minimize the possibility of duplicate responses. No respondents who completed the revised survey identified that they worked for the site involved in the pilot study.

Question types. Several question formats were used in the final survey including multiple choice questions, closed ended questions where the participant was required to input a number (e.g., number of years worked), questions where participants were asked to rate statements using a 5-point Likert scale (Always, Often, Occasionally, Rarely, Never), slider questions where respondents placed a marker on a slider bar indicating 0% to 100%, and open-ended questions. The option to select an *Other* response option was included on all relevant questions, so that clinicians could describe any methods/tools/approaches that were not captured in the survey.

Survey organization. The final survey was organized using the same topic areas as the pilot survey. The first section acquired demographic information about participants (i.e., practice setting, professional role, and number of years worked with preschool children with suspected or diagnosed autism). The second and third sections focused on capturing clinicians" assessment and intervention practices. Questions that related to assessment practices queried: the percentage of assessments on caseload dedicated to preschool children with suspected and diagnosed autism, the frequency and type(s) of tools used for assessment, the frequency with which different areas of communication (e.g., speech, language, social communication) and feeding were evaluated, the amount of time needed to conduct an assessment, the practice setting, and the other professionals involved in assessments. Survey items related to intervention practices queried: the percentage of children on caseload seen for treatment with suspected and diagnosed autism, service delivery models used, skills most often targeted in treatment (e.g., joint attention, expressive language, feeding), published programs most often used in treatment, amount of time needed to provide therapy services, intervention setting, and questions related to frequency of collaboration with other professionals.

Participants were asked to provide responses based on services they had provided in the last 6 months, for children aged birth to 5 years, 11 months with diagnosed or suspected autism. Clinicians who indicated that they had not practiced with children with these profiles in the last 6 months were immediately directed to the end of the survey and no further questions were presented. Clinicians were also asked if their assessment and intervention practices differed for children with diagnosed autism, relative to children with suspected autism. If respondents identified a difference, they were prompted to describe how services varied.

The final section of the survey gathered clinicians" perceptions of barriers and supports to service provision for children with suspected or confirmed autism. An open-ended question was presented to clinicians to generate data about (a) supports in place that helped them best serve autistic clients, and (b) the challenges associated with providing optimal service delivery.

Survey participants

Survey participation was limited to SLPs, CDAs, and managers who were also SLPs who had provided assessment and/or intervention services to children with diagnosed or suspected autism under the age of 6 in Ontario, Canada in the last 6 months.

Participant recruitment involved emailing a survey link and study description to coordinators or staff at Ontario Preschool Speech and Language Program sites, professional organizations (i.e., the Ontario Association of Speech-Language

Pathologists and Audiologists, Communicative Disorders Assistant Association of Canada), and Ontario universities and colleges that offer SLP and CDA training programs, with a request to distribute the survey link by e-mail to SLPs and CDAs working with preschool children in Ontario. Two follow-up, reminder e-mails were also sent. In addition, advertisements were posted on social media (i.e., Twitter, Facebook). Participation was voluntary and no compensation was offered.

CDA participants were not prompted to complete questions related to assessment practices, as performing assessments does not fall within their scope of practice. CDAs" intervention responsibilities can include planning, executing and documenting treatment sessions based on the therapy goals established by the SLP (in collaboration with the family).

Analysis

Respondents who did not complete at least 25% of the survey questions were removed from the analysis. All other survey responses were included. Descriptive statistics (means, standard deviations, ranges) were used to analyze data related to clinicians" practices. A realist/essentialist approach using deductive thematic analysis (i.e., driven by the researchers" questions and analytic interest in the area) guided our examination and analysis of responses to open-ended survey questions about: whether clinicians" assessment or intervention practices differed for children with diagnosed versus suspected autism, and clinicians" perceived barriers and supports (facilitators) to intervention and assessment (Creswell & Plano Clark, 2018). This process followed the six steps outlined by Braun and Clarke (2006): (a) data familiarization, (b) generation of initial codes from semantic content, (c) sorting codes into themes (CIFR constructs) and sub-themes, (d) reviewing themes, (e) defining and naming themes, and (f) reporting results. We used CIFR as a conceptual framework to code the barriers and facilitators (supports) identified by clinicians according to the broad constructs outlined in the model (i.e., characteristics of individuals, inner-setting, outer-setting; Damschroder et al., 2009). The analytic process was iterative in nature, with the first and second author coding open-ended responses, and the third author independently coding all responses, blind to first and second author coding to counter potential analytic biases.

To promote credibility and reliability of findings, our research team worked reflexively to control how prior knowledge could influence interpretation of the data. Agreement on codes, themes, and sub-themes was discussed across three meetings with the team until consensus was reached. Further, the team was intentionally selected to offer a range of perspectives and consisted of researchers with different backgrounds including those strictly focused on clinical research, those who were also practicing

Table 1. Survey participant demographics.

Professional Designation	SLPs (n = 208)
	CDAs (n = 41)
	SLP co-ordinators/managers (n = 9)
Employment Setting*	
	Publicly funded preschool program (n = 177)
	Private practice (n = 50)
	School board (n = 49)
	AAC clinic (n = 8)
	Hospital (n = 7)
	Diagnostic team clinic (n = 4)
Years of Experience	
	M = 12 years (SD = 9.10, response rate 98.45%)

Note: SLPs = speech-language pathologists; CDAs = communication disorders assistants; AAC = augmentative and alternative communication. *Participants could work in more than one setting.

SLPs, and one who was a research student. This diversity in perspectives facilitated balanced reflection during data analysis and interpretation.

Results

Participants

A total of 258 clinicians participated in the survey (see Table 1). Participants were not required to disclose the location of their clinical practice; however, based on data for those who did report, at least 56 participants (22%) provided services in rural areas of Ontario. Most respondents had provided both assessment and intervention services to children with diagnosed or suspected autism in the last 6 months (n = 195), while some (e.g., CDAs, who are not permitted to provide assessments in the province of Ontario) reported only providing intervention services (n = 50). Few SLPs provided only assessment services (n = 13).

Assessment practices used by SLPs

SLPs who reported providing assessment services (n = 208) conducted an average of 11 assessments monthly for children with any communication need, including but not limited to autism (Range = 0.5–65; SD = 12.30). Of these assessments, approximately, 37% (SD = 25.95%) were with children who had diagnosed or suspected autism.

Assessment tools. SLPs reported using a variety of methods in the assessment of children with diagnosed or suspected autism (M = 3.59; SD = 0.76), with 76% (n = 158) using 3–4 methods per assessment (see Figure 1). Overwhelmingly, the assessment methods *always* or *often* used by SLPs were observation of the child (n = 187; 90%), parent/caregiver
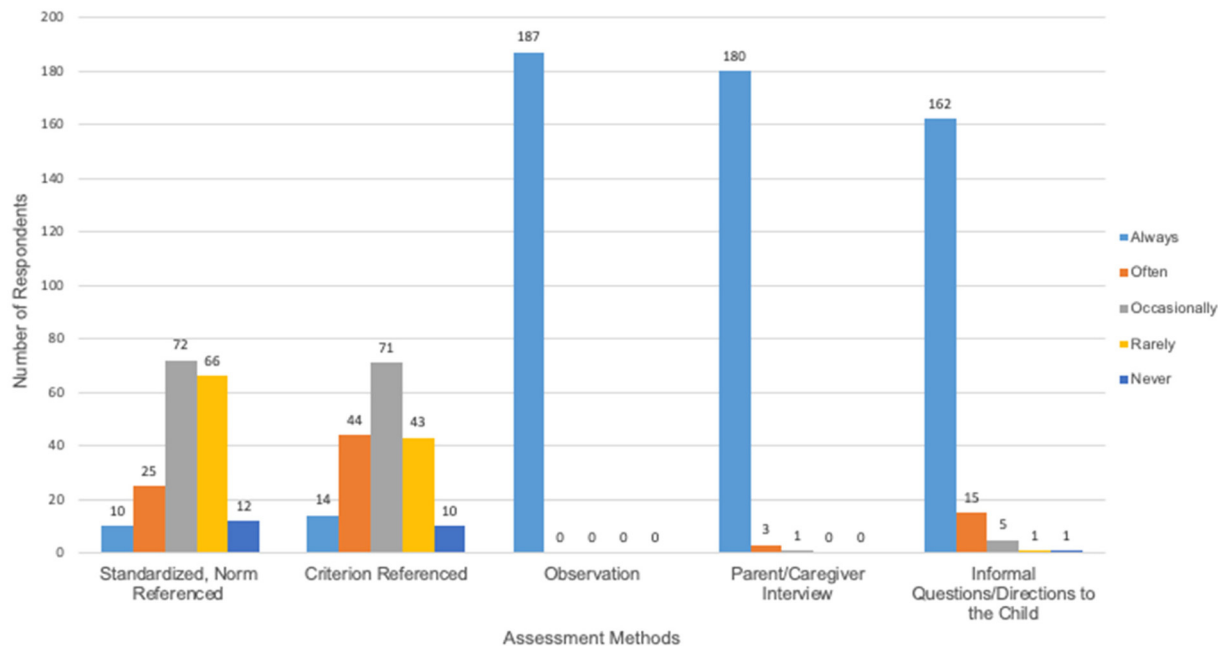
Figure 1. Frequency of use of different assessment methods.

interview (*n* = 184; 88%), and informally asking questions of or providing directions to the child (*n* = 184; 88%). Many SLPs reported using standardized/norm referenced (*n* = 173; 83%) and criterion referenced tools (*n* = 172; 83%), but most did so only *occasionally* or *rarely*. Of the 56 clinicians who reported using *Other* assessment methods, 27% used informal assessment techniques (*n* = 15; e.g., picture description, narrative sample), while 18% used informal checklists/ milestone charts (*n* = 10) and interviews/consultation with caregivers who were not the parent(s) (*n* = 10; e.g., teacher, daycare provider). Observation in classroom or daycare settings (*n* = 2), review of the child's chart or past reports (*n* = 4), and diagnostic therapy (*n* = 2) were also reported. When asked to identify the specific assessment tools most often used, 150 SLPs responded, and 42 tools were listed (see Table 2). Notably, there was some consistency in commercial test use (i.e., Clinical Evaluation of Language Fundamentals, Semel et al., 2004; Preschool Language Scale, Zimmerman et al., 2011).

Assessment areas. Many SLPs reported *always* or *often* assessing four skill development areas: prelinguistic foundational social communication capacities (e.g., joint attention, non-verbal communication; (*n* = 180; 87%), language (*n* = 174; 84%), play (*n* = 172; 83%), and pragmatics (e.g., repairing communication breakdowns, topic maintenance; (*n* = 164; 79%) (see Figure 2). Although some SLPs reported *always* or *often* assessing other areas, children's emergent literacy and speech production were most likely to be *occasional* areas of assessment, and

evaluation of fluency, voice/resonance, and feeding was *rare* for most SLPs.

Assessment duration, settings and collaborations. Eighty-six percent of respondents who provided assessment services (*n* = 179) answered questions related to the amount of time required to complete assessments, assessment location, and collaboration with professionals from other disciplines during the assessment process (see Table 3). On average, the total time SLPs reported spending on each assessment for a child with diagnosed or suspected autism was just over 4 h (inclusive of direct assessment and indirect documentation time). Assessments were most likely to be conducted within a clinic setting (68%), with an average of 25% of assessments involving collaboration with other professionals. Most often collaboration was with Occupational Therapists (*n* = 76).

Intervention services provided by SLPs and CDAs

Clinicians (SLPs and CDAs; *n* = 245) reported providing intervention to an average of 23 children per month (inclusive of but not limited to children with autism or suspected autism; *SD* = 26.98; Response rate = 85%). Of these children served, an average of 39% (*SD* = 28.87; Response rate = 84%) were children with suspected or diagnosed autism.

Service delivery models. A variety of service delivery models were used by clinicians (see Table 4). Caregiver training

Table 2. Assessment tools used.

Tools	n
Clinical Evaluation of Language Fundamentals—Preschool (Wiig et al., 2004)	86
Preschool Language Scales (Zimmerman et al., 2011)	63
Rossetti Infant Toddler Communication Inventory (Rossetti, 2006)	55
Informal Observations (40)	
Skills observed not specified	12
Observation of play skills	13
Observation of communicative functions	7
Observation of pragmatics/interaction skills	6
Observation of gestures, non-verbal communication	4
Peabody Picture Vocabulary Test (Dunn & Dunn, 1997)	32
Goldman Fristoe Test of Articulation-2 (Goldman & Fristoe, 2002)	21
Modified Checklist for Autism in Toddlers (Robins et al., 2009)	19
Communication and Symbolic Behavior Scales Developmental Profile (Wetherby & Prizant, 2002)	18
Hanen Center resources & checklists (e.g., More Than Words, TalkAbility)	15
MacArthur Bates Communicative Development Inventories (Fenson et al., 2007)	13
Self or agency made tools/ checklists	11
Autism Diagnostic Observation Schedule (Lord et al., 2000)	11
Language Use Inventory (O'Neill, 2009)	11
Language sampling /Informal evaluation of language	11
Structured Photographic Articulation Test (Tattersall, 1991)	10
Expressive Vocabulary Test (Williams, 1997)	10
Expressive One Word Picture Vocabulary Test (Martin & Brownell, 2010)	9
Comparing to developmental milestones/ norms	9
Renfrew Bus Story (Renfrew, 1995)	8
Receptive Expressive Emergent Language Test (Bzoch et al., 2003)	6
Communication Matrix (Rowland, 2004)	6
Test for Auditory Comprehension of Language (Carrow-Woolfolk, 2014)	5
Test of Aided-Communication Symbol Performance (Bruno, 2010)	5
Childhood Autism Rating Scale (Schopler et al., 2010)	4
Structured Photographic Expressive Language Test (Dawson et al., 2005)	4
SCERTS Resources: Assessment Observation Forms (Prizant et al., 2006)	4
Assessment of Social and Communication Skills for Children with Autism/Do-Watch-Listen-Say (Quill, 2000)	4
Phonological Awareness Test (Robertson & Salter, 2007)	4
Focus on Outcomes of Communication Under Six (Thomas-Stonell et al., 2010)	4
Early Functional Communication Profile (Kleiman, 2003)	6
Bracken Basic Concept Scale: Receptive & Expressive (Bracken, 2006)	3
Checklist of Communicative Functions and Means (Weatherby, 1995)	3
Screening Tool for Autism in Toddlers & Young Children™ (Stone et al., 2008)	3
Receptive One Word Picture Vocabulary Test (Martin & Brownell, 2011)	2
Social Communication Questionnaire (Rutter et al., 2003)	2
Early Functional Communication Profile (Jensen, 2012)	2
'Social Pragmatics Crib Sheet"	2
Verbal Behavioral -Millstones Assessment and Placement Program (Sundberg, 2008)	2
Test of Problem Solving (Bowers et al., 2018)	2
Informal Tool for Early Motor Speech Control*	2
Diagnostic Evaluation of Articulation and Phonology (Dodd et al., 2006)	1
Early Literacy Milestones Checklist	1

Note: SCERTS = Social Communication, Emotional Regulation and Transactional Supports; *Tool developed by the Toronto Speech and Stuttering Institute.

during individual sessions (i.e., 1 caregiver, 1 child, 1 therapist) was used most often.

Therapy targets, goals & areas of focus. Most clinicians reported *always* or *often* targeting four skill development areas in intervention: prelinguistic foundational social communication capacities (e.g., joint attention, non-verbal communication; $n = 183$; 74%), language ($n = 180$; 73%), play ($n = 169$; 69%), and social communication/pragmatics (e.g., repairing communication breakdowns, topic
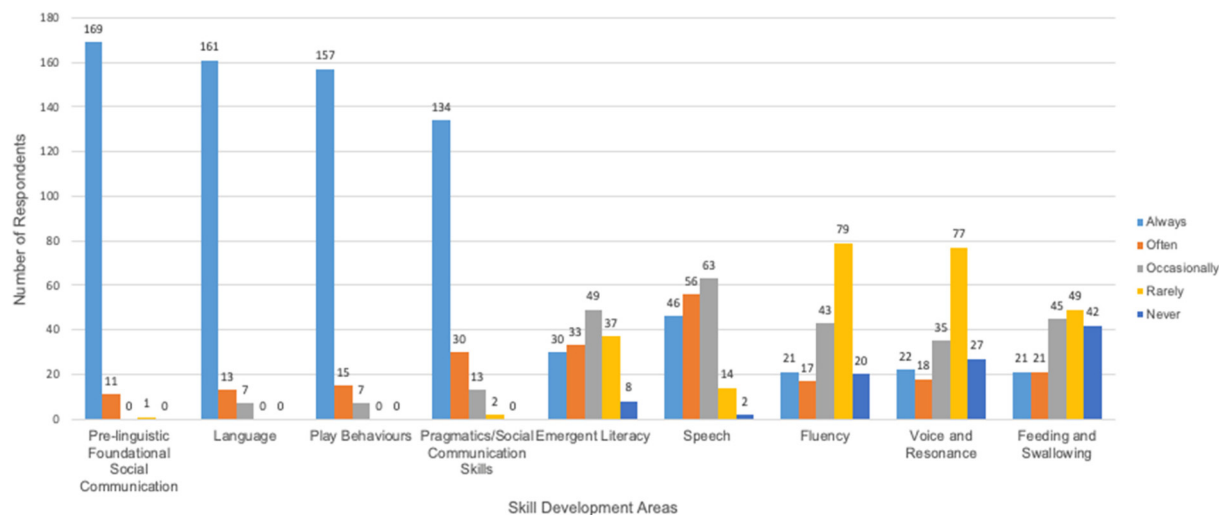
Figure 2. Frequency of assessing different skill development areas.

Table 3. Assessment duration, setting, and collaboration.

| Assessment Duration	Mean time (Range; *SD*)
Direct time assessing	2.03 h (40 min – 4 h; 1.33)
Time spent in preparation and documentation of results	2.01 h (3 min – 10 h; 1.23)
Assessment Location	Mean % of occurrences (*SD*)
Clinic	68% (39.07)
School/Daycare	8% (20.95)
Home	8% (20.95)
Other (i.e., community drop in centers)	2% (7.97)
Assessment Collaborations	Mean % of occurrences (Range; *SD*)
Assessments conducted in collaboration with other professionals	25% (0–100; 33.68)
Professional Designation of Collaborators	# of clinicians reporting
Occupational therapists	76
Physicians	34
Early childhood educators	30
Teachers	28
Physical therapists	28
Social workers	22
Psychologists	21
BCBAs & Instructor therapists	17
ICD workers & Resource consultants	9
Psychometrists	8
Dietitians	3
Educational assistants	3

Note: BCBAs = Board Certified Behavior Analysts; ICD Workers = Infant Child Development Workers from a government funded program in Ontario for children up to 5 years of age with/at risk for developmental delay; Resources Consultants are government funded educators who support children with special needs in licensed daycares in Ontario

maintenance; *n* = 138; 55%) (see Figure 3). Many clinicians reported that they also *occasionally* targeted speech production goals (*n* = 85; 35%). Emergent literacy and fluency goals were *rarely* targeted. Some clinicians targeted feeding, and voice and resonance, however, there was also a large proportion of clinicians who reported *never* targeting these areas.

Therapy strategies/programs. Most SLPs and CDAs (*n* = 192) responded to questions about use of strategies from published (i.e., commercial) therapy programs used in intervention and frequency of their use (response rate 78%). The programs provided as options in the survey were generated from a list of programs identified by SLPs working in the Ontario Preschool Speech and Language program in 2017

Table 4. Frequency of use of different intervention service delivery models.

Service Delivery Model	Description of Service Delivery Model	n	Mean % time used in intervention	SD
Caregiver Training (Individual)	Teaching parents/caregivers strategies to implement with the child in an individual setting with only the caregiver(s) and child	199	45.40	31.52
Caregiver Training (Group)	Teaching parents/caregivers strategies to implement with the child in a group setting with other caregivers	198	22.24	27.85
Support Staff Training	Teaching daycare or school staff support strategies to implement with the child	195	20.75	27.95
Group Intervention	Working directly with the child in a group setting with other children (in any location—daycare, home, clinic, etc.)	190	19.70	27.57
Peer Coaching	Teaching typically developing children/ peers/ siblings strategies to implement with the child	190	3.58	8.39
Individual Intervention (with parent observing)	Working directly with the child in an individual setting with the parent present/ observing	193	28.13	32.08
Individual Intervention (with parent absent)	Working directly with the child in an individual setting with parent absent	188	8.06	20.82
Other	Tele-practice; supervising CDAs; working individually with a child in a group setting	73	2.47	8.07
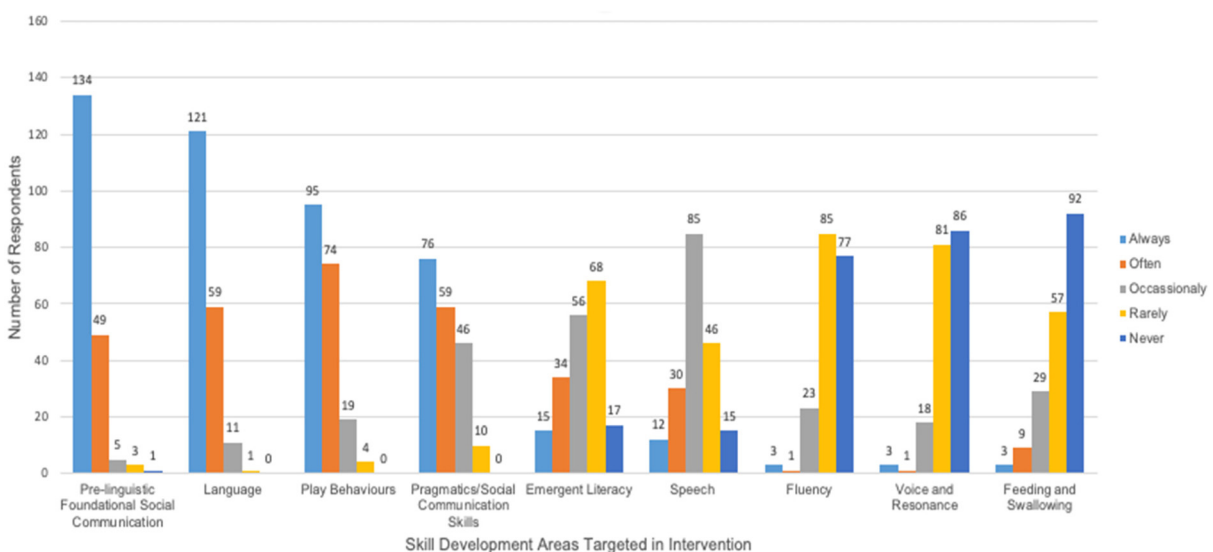
Figure 3. Frequency of targeting different skill development areas in intervention.

in an unpublished evaluation of training needs conducted by authors BJC and JOC. The Hanen More Than Words program (Sussman et al., 2016) was used most frequently, followed by the Picture Exchange Communication System (PECS) program (Frost & Bondy, 2002); see Figure 4). TalkAbility (Sussman, 2006) and Social Stories (Gray, 2015) were also popular models. Thirty-seven respondents who reported using *Other* published programs listed the specific programs they used. These included: Social Thinking (Winner & Crooke, 2009; $n = 6$), Early Start Denver Model (Rogers & Dawson, 2010; $n = 4$), SCERTS (Prizant et al., 2006; $n = 4$), Hanen It Takes Two to Talk (Weitzman, 2017; $n = 3$), Applied Behavior

Analysis ($n = 3$), Augmentative and Alternative Communication ($n = 3$), Hanen ABC and Beyond (Weitzman & Greenberg, 2010; $n = 2$), Hanen 4 I's to Socialize program ($n = 2$) and the Reference and Regulate Program ($n = 2$; Loyst, 2019). Individuals listed other programs/strategies that included: Hanen Learning Language and Loving it (Weitzman & Greenberg, 2002), Building Bridges for Self-Regulation (Aquilla et al., 2015), Do-Watch-Listen-Say (Quill, 2000), Teach me to talk (Mize, 2019), Pivotal Response Therapy (Koegel & Koegel, 2019), Social ABCs (Brian et al., 2016), Settings-Triggers-Actions-Results (STAR; Zarkowska & Clements, 1994), TEACCH (Mesibov et al., 2004),
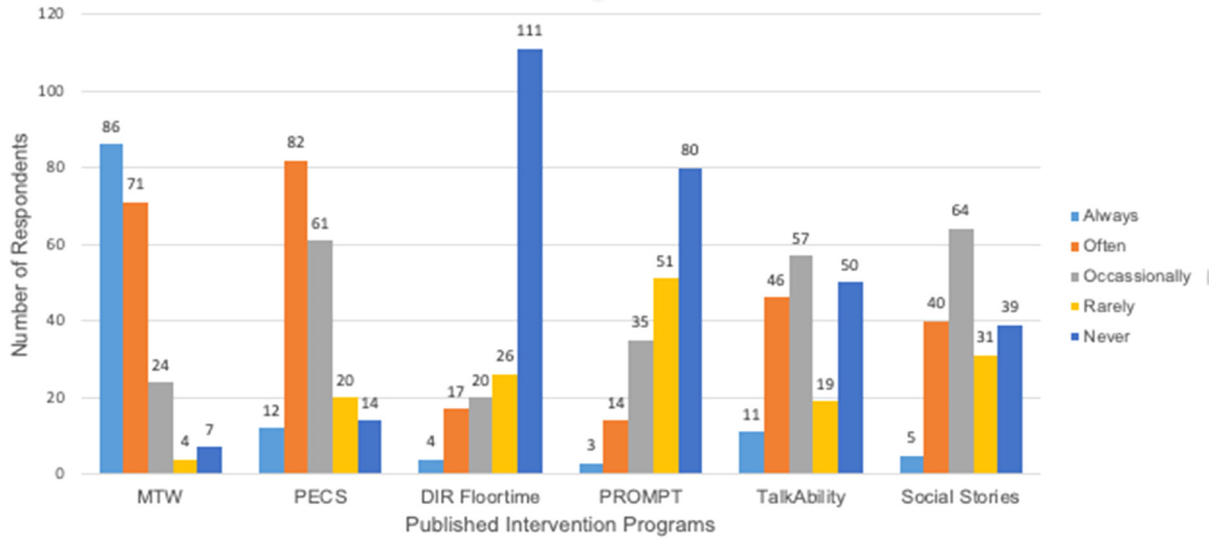
Figure 4. Frequency of use of strategies from published intervention programs.
Note: MTW = More Than Words®—The Hanen Program®; PECS = Picture Exchange Communication System®; DIRFloortime = Developmental, Individual Difference, Relationship-based/Floortime model®; PROMPT = PROMPTS for Restructuring Oral Muscular Phonetic Targets.

Table 5. Intervention duration, setting, and collaboration.

Intervention Duration	Mean time (Range; SD)
Direct time providing intervention/ session	1hr (15min – 3hrs; 0.35)
Indirect time/session (i.e., preparation, documentation)	2hrs (10min – 3hrs; 1.23)
Intervention Location	Mean % of occurrences (SD)
Clinic	67% (SD = 39.25)
School/Daycare	28% (SD = 37.25)
Home	10% (SD = 23.62)
Other (i.e., community drop in centers)	4% (SD = 12.73)
Intervention Collaborations	
% of sessions conducted in collaboration with other professionals	27% (SD = 31.60)
Professional Designation of Collaborators	# of clinicians reporting
Occupational Therapists	85
Early Childhood Educators	58
BCBAs & Instructor therapists	43
Teachers	36
Physio therapists	30
Social Workers	23
Psychologists	10
ICD Workers & Resources Consultants	13
Physicians	8
Recreation Therapists	4
Educational Assistants	4
Psychometrists	3
Dietitians	3
Music Therapists	3

Planning for social development for autistic children or intellectual disability, Zones of Regulation (Kuypers, 2011), and non-manualized programs e.g., child center resources, video modeling, motor speech therapy). Overall, clinicians reported using 26 unique therapy programs during intervention.

Intervention duration, setting, and collaborative service provision. Many respondents (n = 189) answered questions related to the duration of intervention sessions (inclusive of direct and indirect time), location, and collaboration with professionals from other disciplines during intervention (see Table 5). Over half of clinicians (61%) reported their intervention sometimes involved collaboration with other professionals (see Table 5). On average, this occurred for about a quarter of intervention sessions.

Number of therapy sessions allocated per child. Many respondents reported providing *blocks* of therapy (n = 126), which refers to a set-number of consecutive sessions allotted to each child receiving services within a program, followed by a time when the child does not receive therapy. This approach to waitlist management was commonly used within the Ontario Preschool Speech and Language program when this study was conducted. Most clinicians (82%) reported that children received between 4 and 9 sessions per therapy block. The time children and families waited for services between therapy blocks was reported to range between 7 weeks and 6 months for most respondents (85%). (see Table 6)

Of the clinicians who did not use a block structure for intervention (n = 63; i.e., clinicians working in private practice and school-board settings), 59 provided details about

Table 6. Number of sessions within, and wait time between therapy blocks.

Number of therapy sessions in a *block*	n
3	2
4–6	46
7–9	57
10–12	18
13–15	0
More than 15	2
Time children wait between therapy *blocks*	
Less than 2 weeks	1
2–6 weeks	6
7–11 weeks	34
3–4 months	45
5–6 months	27
17–12 months	10
Over 12 months	2

Table 7. Themes identified regarding differences in service delivery for children with versus without a confirmed diagnosis of autism.

Interventions/Supports Specific to Children with an Autism Diagnosis	Number of Comments (n)
More parent counseling, coaching	8
Different strategies/goals would be used (unspecified)	7
Sensory activities are a main foundation for session goals; sessions may be more physical (e.g., movement based, not sitting at a table)	6
More use of visuals	5
More collaboration with other professionals (e.g., behavior therapists)	3
Choice of activities may be different because board games/symbolic toys may not be motivating	2
Use more dynamic assessment and probing during therapy	2
Strategies around transitions are implemented	1
More focus on engagement before building vocabulary	1
Core deficits of autism targeted	1
Less structured sessions	1
More use of ABA principles to align with school board requirements	1
A child with a diagnosis may move to a new/different team	1
Intervention/Supports Specific to Children Suspected to Have Autism	
Different counselling strategies are used, and different referrals are made if child has not yet been diagnosed (e.g., recommending developmental assessment)	4
Avoiding use of the word autism in sessions and in handouts/materials that reference autism*	3
Without a diagnosis, some children may not have access to specific supports/groups (e.g., Autism team at school-board)	3

Note: * SLPs in Canada are not permitted to independently diagnose Autism.

typical dosage. Few clinicians ($n = 6$) reported ranges of 3–6 sessions/client, 8–10 sessions/client ($n = 5$), 13–36 sessions/client ($n = 6$), and over 36 sessions/client ($n = 6$). Most respondents ($n = 41$) indicated the number of sessions per client varied, and gave no set number of sessions.

We identified four themes across clinicians" responses to the question exploring factors that impact the frequency of therapy provision. They were: (a) the extent of the child's communication difficulties ($n = 22$); (b) the family's capacity/desire to continue (e.g., insurance limitations, family time limitations; $n = 10$); (c) clinicians working in a consultative versus direct therapy system (i.e., within school boards; $n = 10$); and (d) clinicians" availability/staffing/transportation ($n = 5$). Agreement between raters was strong (98%; $K = 0.85$). Disagreements were discussed, and a consensus was reached.

Services for children with suspected vs diagnosed autism

Of the SLPs who responded to the question asking whether assessment processes differed for children with confirmed versus suspected diagnoses ($n = 174$), most reported no difference in practice ($n = 143$; 83%). Eleven of the 31 clinicians who reported a difference in their assessment procedures provided comments describing how assessments varied. Clinician's responses regarding how they changed assessment processes depending on a child's diagnosis were grouped into one of three central themes. *More information* was the first theme identified. SLPs shared that when providing speech-language assessments for children who had not yet received a diagnosis of autism they may need to: (a) provide caregivers with more education ($n = 7$), or (b) complete a more detailed communication assessment, focused on evaluating areas related to diagnostic criteria (i.e., social communication, play, restricted/

repetitive behaviors; $n = 7$). Additionally, SLPs reported spending *more time* making referrals (e.g., for diagnostic assessment, OT services, or community programs; $n = 5$). Finally, for children who had already received a diagnosis of autism, SLPs ($n = 5$) stated that they were likely to use *different testing tools*, specifically more criterion-referenced or informal tools rather than standardized measures.

When asked if they provided intervention sessions differently for children with confirmed versus suspected autism, 190 therapists responded (response rate = 77.55%). Most (82.63%) reported no difference in how they provided

Table 8. Perceived supports to providing speech-language autism services.

Types of Supports (CFIR Domain)	Themes and Summary Explanations	# Comments (% Respondents)
Individual Characteristics	Knowledge: Accessing Autism Focused Training/Professional Development For example: Trainings, workshops, webinars, readings, supervision and mentorship	$n = 104$ (72%)
Inner Setting	Networks: Interprofessional Collaboration For example: Collaboration with Occupational Therapists, Resource Consultants, Early Interventionists, Educators, and ABA therapists (i.e., joint therapy sessions, meetings, team approach to intervention); or school-based autism teams	$n = 58$ (40%)
	Networks: Intraprofessional Collaboration For example: Supportive, collaborative SLP colleagues; access to clinicians with Augmentative Alternative Communication expertise	$n = 25$ (17%)
	Organizational Infrastructure: Additional Supports in Daycare and Community Programs For example: Children's access to resource consultants, educational assistants, communication disorders assistant support in the community; access to community programs	$n = 16$ (11%)

Note: CFIR = Consolidated Framework for Implementation Research

intervention. Thirty-three reported that services differed depending on the presence of an autism diagnosis, and 28 participants provided explanations for how services differed. Several themes were identified (see Table 7).

Clinicians" perceptions of supports and barriers to delivering services

Supports (facilitators). Clinicians were asked to describe supports they experience in providing services to preschool children with diagnosed or suspected ASD. Comments from 145 respondents were organized into themes, and subthemes underpinned by the CFIR framework (i.e., individual characteristics, inner setting, outer setting). The average length of response for clinicians reporting supports was 13 words ($SD = 11.49$; Range = 1–61); and reporting barriers was 25 words ($SD = 27.31$; Range = 1- 164). Most clinicians ($n = 104$) reported supports to practice aligned with the domain individual characteristics. More specifically, *knowledge* and access to autism-focused professional development was an integral support. Professional development focused on caregiver coaching, AAC, ADOS training, and regulation and sensory processing were mentioned as being particularly valuable. Notably, almost half of the clinicians ($n = 46$) reported trainings offered by The Hanen Center (e.g., More Than Words) as facilitators to delivering autism services. Inner-setting facilitators centered around

networks and access to opportunities to collaborate (i.e., intra- and inter- professionally) and access to additional supports (i.e., CDAs or community programs). Clinicians did not identify supports that aligned with the outer-setting domain. Identified themes are displayed in Table 8.

Barriers. SLPs and CDAs ($n = 154$) also described the barriers they experienced in delivering services to preschool children with diagnosed or suspected autism. Thematic analysis was conducted using the CIFR model to guide the identification of themes/ categorizations. Several barriers aligned with the broad themes (individual characteristics, inner-setting, outer-setting) were identified, and are presented along with example comments in Table 9. The most commonly reported barriers were inner-setting and outer-setting policy level barriers connected to available resources ($n = 126$). These barriers included: difficulty meeting caseload and documentation expectations, inability to provide "an adequate amount of therapy to support child and family needs" and long waitlists for autism diagnosis and services. Barriers aligned with individual characteristics domain were related to clinician *knowledge* and access to professional development and interprofessional trainings to support skill development in areas such as sensory processing, regulation, and behavior support ($n = 24$). Additionally, perceived family readiness for pursuing an autism diagnosis, or receiving an autism diagnosis was

Table 9. Perceived barriers to providing speech-language autism services.

Types of Barriers (CFIR Domains)	Themes and Sub-themes Within Barriers	# Comments/ Theme (% Respondents)	Example Comments
Individual Characteristics	Clinician knowledge	n = 24 (16%)	There is limited professional development (PD) and training in autism, and PD can be expensive. There is a lack of training in how to support children's sensory processing, regulation differences and behaviors, which can hinder SLPs" ability to deliver communication supports.
	Family readiness	n = 29 (19%)	There can be stigma attached to autism diagnosis. Caregivers may experience denial.
Inner-Setting	Lack of interprofessional collaboration	n = 28 (18%)	This can be due to availability and motivation of other professionals to collaborate. It can also be related to financial barriers (i.e., co-treatment sessions/ collaborative meetings are expensive)
Outer-Setting	Perception there is only one "right" way to support autistic clients	n = 17 (11%)	Messaging (i.e., from physicians, other professionals, professional organizations) that ABA based interventions are *the only* effective option to support children with autism, can lead parents to under-value SLP services. There is a lack of understanding that behaviors are communicative; therefore, SLP services may not be sought out until after "behaviors are addressed".
	Access to services Transportation Childcare Scheduling First language/ multi-lingual services	n = 43 (28%)	Families experience transportation challenges to get to the clinic. Rural areas have limited access to service centers. Families may miss sessions if they are not able to get child care for siblings. Caregivers may have difficulty attending sessions during their work hours. There can be difficulty finding interpreters and multi-lingual service providers.
Inner, and Outer Settings	Lack of funding and time Extensive documentation Large caseloads Waitlists	n = 126 (82%)	Paperwork "takes away" from time available to provide services. There is not enough time to prepare materials, and individualize programming, nor is there enough staff. Too many kids on caseload, too little time, too few resources, spread too thin with the demands of the job, more kids diagnosed with autism than ever before. There are long waitlists (in some regions wait times are much longer than in others, leading to inequity of access to services). The amount of therapy provided to children is variable and not guided by evidence. Instead, there are arbitrary service caps for children with autism or suspected autism, not informed by research (i.e., block system of therapy) to address long waitlists. Presumed prioritization of clearing waitlist rather than providing optimal services (i.e., providing group therapy when it may not be appropriate, arbitrary number of sessions per client for therapy).

Note: CFIR = Consolidated Framework for Implementation Research.

also identified as a barrier (n = 29). Inner-setting barriers included a lack of interprofessional collaboration (n = 29). Finally, aligned with the outer-setting level, several clinicians shared that they believed community messaging (i.e., from physicians, websites, or other professionals) asserting Applied Behavioral Analysis (ABA) was the

only effective option for supporting children with autism led parents to under-value SLP services ($n = 17$).

Discussion

The aims of this study were to explore the practices of SLPs and CDAs in providing assessment and therapy services to autistic preschoolers and their families, and to initially explore barriers and supports to service provision. In using practice-based research methods to develop the survey, we were able to ensure questions asked of respondents were clinically relevant and important. While findings are expected to be useful for SLPs, SLP assistants, managers, and policy makers working in Ontario, Canada, they can also be of use to the broader clinical, academic and research communities. First, by capturing the practices of SLPs and support personnel in serving autistic preschool children in Ontario, we orient readers to the service delivery context used by the participants in this survey. This information can be used by readers to examine the extent to which their practice contexts align or differ from the clinical practices used in Ontario. Second, the supports and barriers to service delivery identified by our SLPs and CDAs may be used by research teams interested in implementation work in pediatric speech-language pathology. Researchers may build on our results by evaluating the extent to which the barriers and facilitators in Ontario are generalizable in other countries and practice contexts, and implementation teams may use the information to support implementation of new programs or processes in similar contexts. In the following discussion, we consider our main findings in the broader research and clinical practice contexts and link these to suggested future research directions.

Assessment and intervention practices

Our sample of clinicians had varied caseloads that involved children with all types of communication impairments including, but not restricted to, children with autism. Nonetheless, on average, they reported almost half of the preschoolers on their caseload had either diagnosed or suspected autism. Although our respondents reported a higher proportion of their caseloads allocated to serving autistic children than previously reported by American school based and private practice SLPs (e.g., ASHA, 2015, 2019); this pattern is consistent with previously reported practices of SLPs globally (e.g., Mendonsa & Tiwari, 2018). Our findings underscore the important role SLPs and CDAs play in autism service provision and can be used to advocate for training specific to autism service provision for speech-language clinicians and inform future funding initiatives and resource allocation.

Overall, there was wide variation in speech and language assessment and intervention practices reported by this sample of 258 clinicians. This is likely due, at least in part, to the heterogeneous nature of autism (Masi et al., 2017; Wing & Gould, 1979). Prior research examining reasons for inconsistent assessment practices has suggested that clinician education and knowledge may also contribute to variable practices (Duncan & Murray, 2012). With this information in mind, another factor that may play a role in the vast breadth of practices could be related to the extensive range of skill development areas SLPs are trained to assess and treat (e.g., speech production, joint attention, reciprocal interactions, literacy, language comprehension, feeding). Given this breadth of training, SLPs may be uniquely positioned to embrace the complexity of autism, and select assessments and interventions to address child and family individual differences, rather than focusing the selection of assessment tools and interventions solely on core symptom clusters of autism. However, this idea needs to be explored in future research. Finally, the extensive variability in assessment and intervention practices may also reflect a lack of best practice guidelines in Ontario, and a lack of uniformity across recommended best practices in the field of autism as a whole. To address the aforementioned challenges, best practice guideline development in collaboration with all interested parties (i.e., clinicians, caregivers, and autistic individuals) should be pursued to facilitate more consistent clinical decision making. However, this does not mean that service provision should be uniform. Rather we argue that the process of clinical decision making, and individualizing assessments, service delivery models, supports, and goals to each child and family's needs should be done in a way that is equitable.

Despite overall variability across service provision, there was alignment between the four skill development areas primarily assessed and targeted by clinicians: foundational social communication (e.g., social engagement, joint attention, reciprocity), language (comprehension and production), play, and pragmatic language use (e.g., functions of communication). And while SLPs reported rarely carrying out assessment of fluency or voice/resonance for preschool aged autistic children, it may be that they are informally assessing these skill development areas when carrying out expressive language assessments. Together, this information can be used to guide the development of future research studies that align with clinicians" assessment and treatment priorities. Additionally, development of clinical training and service provision models would benefit from focus on these areas to maximize clinical impact.

SLPs use a wide range of assessment practices with autistic preschoolers. Consistent with recommended practices for assessment of communication with autistic children (e.g., Tager-Flusberg et al., 2009), SLPs in our sample reported using multiple tools during the assessment process. However, in contrast to recommended practice, routine

inclusion of a standardized or criterion referenced tool in the assessment process was extremely low (i.e., used rarely, or never). Assessment tools predominantly reported by this sample were informal (i.e., observations, caregiver interviews, and asking questions of, or providing directions to the child). Generally, disagreement between SLPs about whether to use formal or informal assessment tools it is not uncommon (Kerr et al., 2003; McLeod & Baker, 2014). For assessments with young autistic children, this may be due to a lack of existing tools with appropriate standardization and psychometric properties for use with this population (Bishop et al., 2019). Use of a range of assessment tools, inclusive of formal and informal measures derived from multiple sources and across different contexts, is seen as important to enhance validity of assessment results (Frost et al., 2019; McConachie et al., 2015; Tager Flusberg et al., 2009). However, there is still a need for consistency in the assessment practices and procedures used by SLPs, because inconsistency of assessment practices can lead to inequitable access to services (McLeod & Baker, 2014) and inconsistent recommendations for intervention. With 42 unique tools listed as being commonly used by the SLPs who participated in the survey, our findings reinforce the critical need for development of tools that clinicians value, and that can be used to quantify young autistic children's challenges, skills, and changes in common assessment areas.

To begin to address the gaps in recommended best practice for communication assessment of autistic preschool children and to inform future development assessment tools, future research could examine (a) why SLPs do not typically use standardized or criterion referenced tools with this population, (b) why informal observational tools are used, (c) whether standardized tests are being used formally or more informally as criterion-referenced measures, and (d) what information SLPs (and caregivers) value most from the assessment process.

SLPs and CDAs use a wide range of intervention practices with autistic preschoolers. Caregiver training was the intervention service delivery model most frequently used by SLPs and CDAs, which aligns with recommendations for family-centered practice (e.g., American Academy of Pediatrics, 2012; Hecimovic et al., 1999; Marshall & Mirenda, 2002). Features of caregiver training service delivery models are likely to vary as there is no consensus on a single definition of caregiver training (Brown & Woods, 2016; Kemp & Turnbull, 2014; Friedman et al., 2012; Ward et al., 2019). These models of intervention may include providing education to caregivers, direct coaching (e.g., interventionist-directed approach), or collaborating with caregivers through shared decision making and/or reflective practice. Generally, parent-mediated models of intervention are thought to support social interaction between caregivers and their autistic children (e.g., shared

enjoyment, joint attention, shared social smiles, reciprocal interaction) and may also positively impact autistic children's use of language (e.g., Binns & Cardy, 2019; Oono et al., 2013). Given the frequency of using these types of supports, evidence that can be used to guide clinicians in selecting specific parent coaching interventions aligned with child and family individual needs is required. Future research should examine the effectiveness of the various forms of caregiver training, explore caregivers" experiences of receiving caregiver training interventions, and identify the processes used by SLPs when delivering caregiver-training service delivery models. Additionally, given therapists" frequent use of this service delivery model, and their identification of professional development in this area (e.g., Hanen's More Than Words program) as a principle facilitator to providing preschool autism services, there may be value in teaching this type of service delivery approach within SLP graduate training programs.

Aligned with previously published survey studies on SLP autism service delivery practices, a wide range of published therapy programs were reportedly used by this sample. However, two programs were frequently used by the majority of survey respondents: the Hanen Center's More Than Words program (Sussman et al., 2016) and the Picture Exchange Communication System (PECS; Bondy & Frost, 1998). Previously published studies have also identified Hanen training programs and PECS as commonly used among SLPs outside of Canada (e.g., Hsieh et al., 2018). However, the large extent to which More Than Words is used in this sample may also have been influenced by the fact that The Hanen Center is located in Ontario, Canada, which may have increased exposure and proximity to training opportunities in this program. Exploration of factors and processes related to clinical decision making (i.e., selecting interventions) should be undertaken to inform future development and implementation of programs, and support evidence-informed decision making. Additionally, it is crucial that future research explores the effectiveness of programs commonly used by SLPs in the community (e.g., More than Words, PECS).

Interdisciplinary service provision is a priority

It is generally suggested that the assessment process and therapy provision for children with autism be informed by the perspectives of multiple disciplines. The complexity and heterogeneity of autism requires a group of skilled professionals working together to ensure high quality care and promote positive outcomes for individuals with autism (Cooper-Duffy & Eaker, 2017). The importance of collaboration with professionals from other disciplines was echoed by respondents in our survey. Interprofessional collaboration (e.g., with occupational therapists, behavior therapists, resource consultants) was identified as a key facilitator to delivering speech-language services to autistic

preschool children. Insufficient opportunities for collaboration across professionals was also identified as a barrier to providing services. Interprofessional collaboration in autism assessment and intervention can be beneficial for developing comprehensive treatment plans, for facilitating co-ordinated interventions, and establishing alignment across goals (Gerdts et al., 2018). In response to clinicians" needs, access to interprofessional education should be considered at the graduate training level, and professional development opportunities should be provided addressing interprofessional topics of importance to therapists (i.e., caregiver training/coaching, children's sensory and regulation needs, supporting challenging behaviors).

Service provision is similar for children with diagnosed versus suspected autism

We examined whether children having diagnosed versus suspected autism altered how speech-language clinicians engaged in speech-language assessments or provided therapy. Generally, SLPs and CDAs reported that their services were similar for those awaiting diagnosis and those who had already received a diagnosis. However, with a diagnosis of autism, families were reported to receive access to additional government funded services (i.e., ABA intervention) and a wider variety of autism-specific supports or programs. As soon as SLPs suspect a child may be autistic, it appears they begin began providing treatment in a way that aligns with therapy provided for children who have received a diagnosis. This practice aligns with recommendations that intervention should be initiated at the first indication of developmental concerns, before a diagnosis is confirmed (Mitchell et al., 2006). This is encouraging as our results suggest that while children are waiting for a diagnostic assessment, they are likely to be getting access to early social communication intervention, targeting goals aligned with needs often reported for children with autism.

Clinical implications and future directions informed by exploration of supports and barriers to clinicians providing autism support services

Access to autism-focused professional development was identified as a primary facilitator to delivering autism speech-language services by our survey respondents. Likewise, limited clinician knowledge was identified as a barrier to service provision. These findings indicate a need to offer more training opportunities to SLPs and CDAs in assessment and intervention practices for autistic preschoolers and their families. To promote sustainability, this training could be incorporated into curricula for SLP and support personnel training programs and to ongoing professional development programs. Further, inter- and

intra- professional collaborations were identified as key supports for SLPs and CDAs, and not having the opportunity to collaborate inter-professionally was identified as a barrier to service provision. Therefore, interprofessional autism training opportunities (e.g., with occupational therapists, behavior therapists, educators) could address multiple needs of clinicians and, over time, work toward increasing capacity within SLPs and support personnel.

Our survey respondents reported that the primary *inner-setting* and *outer-setting* barriers to delivering services were related to funding and time. The predominance of inner-setting barriers at the organization level is consistent with previously conducted research in the field (e.g., prioritizing activities related to client flow over client care, lack of skills and resources, lack of time; Cheung et al., 2013; Harding et al., 2014; Sandham et al., 2021). Across our sample, large caseloads, long waitlists, and inadequate amount of and access to therapy were recurring themes. These issues signal the need to examine current waitlist management strategies (e.g., providing therapy blocks) so that autistic children and their families have better access to community speech-language services. Waitlist management strategies may be implemented at the time of referral (e.g., screening prior to being placed on the waitlist), during the waiting period (e.g., regularly auditing waitlist), or during intervention (e.g., group interventions or caregiver coaching interventions). Strategies could involve prioritization (e.g., triaging), multi-disciplinary care, and use of patient-led approaches (Deslauriers et al., 2016; Harding et al., 2013a, 2013b; Laliberte et al., 2017; Thomas et al., 2021). Further research is needed to determine the optimal balance between efficiency, accessibility, and effectiveness of speech-language service delivery for this population. Similarly, a better understanding of the optimal intensity of speech-language therapy that aligns with real-world clinical practice demands and provides effective and equitable speech-language services is needed.

Another barrier to service provision reported by our respondents was community messaging that ABA-based interventions are the only effective option for supporting children with autism, which our survey respondents believed could lead caregivers to undervalue services provided by Speech-Language clinicians. With an increase in research on autism interventions over the past decade (Binns et al., 2021; Sandbank et al., 2020), there has been a rapid transformation of the evidence base for autism treatment (Sandbank et al., 2020). Community messaging should reflect current findings. That is, families should be: (a) informed that there are a range of treatment options that have been effective for supporting autistic children and families (e.g., Naturalistic Developmental Behavioral Interventions, Developmental Interventions), and (b) referred to multi-disciplinary supports (e.g., SLPs, occupational therapists, early childhood educators, social workers, behavior therapists) to address the individual needs of autistic children and their families. In the long

term, development of systems that integrate models of care with collaboration across a range of disciplines will work toward addressing this barrier. However, system-wide changes take time. In the short term, steps toward overcoming this barrier will require community outreach and collaboration with local and professional organizations to provide public health messaging focused on needs-based services.

Limitations

We acknowledge that the voluntary nature of the survey increased the potential for response bias, with respondents more likely to have interest in autism. Similarly, we cannot determine percentage response rate, as SLPs and CDAs were not directly contacted to participate. We attempted to minimize the possibility of recall bias by asking respondents to report based on services provided over the past 6 months, as opposed to a longer interval. However, the information clinicians reported could not be verified, a limitation of this type data collection strategy. Further, although our participants included CDAs, they were not involved in developing the survey questions, and only 3 CDAs partook in the pilot. Therefore, it is difficult to interpret the reliability of CDAs" understanding of definitions included in the survey—particularly terms related to SLP assessment practices that fall outside the scope of CDAs" practice (i.e., identifying children who are *suspected of having autism*). Finally, attrition may have caused sampling issues and potential biases, and because we limited survey participants to clinicians and CDAs practicing in Canada, the generalizability of the results requires further investigation.

Conclusions

These results provide a snapshot of current speech-language assessment and intervention practices used by SLPs and CDAs in Ontario, Canada, and present facilitators and barriers that clinicians encounter in service delivery with autistics preschoolers and their families. Findings highlight the significant proportion autistic children supported on the caseloads of SLPs providing preschool services and underscore the need for SLPs and SLP assistants (e.g., CDAs) to receive autism-specific training to support this population. The variability in assessment practices and provision of supports by clinicians working with preschool autistic children in Ontario draws attention to the need for more research on collaboration with other disciplines, the processes of evidence-informed clinical decision making, and systems of service delivery that are not only aligned with current evidence, but also equitable and sustainable in the real-world context. Our hope is that through our initial exploration of facilitators (supports) and barriers to service provision, we can become more proactive in implementing changes to address these issues. Together, findings

extend our understanding of current SLP and CDA practices and provide several directions for future research that are aligned with clinician needs in real-world contexts.

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