



Exploring Practice-Based Clinical–Research Partnerships in Speech–Language Pathology: A Scoping Review



Exploration des partenariats de recherche clinique axée sur la pratique en orthophonie : une revue exploratoire

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Abstract

Collaborative partnerships between speech-language pathologists and researchers present an opportunity for practice-based research. For practice-based research to become more widely used in speech-language pathology, a crucial step is outlining the potential purposes and outcomes of these partnership projects. The current article is two-fold. First, we describe a model for practice-based partnerships between researchers and speech-language pathologists. The practice-based research cocreation model developed for this project includes three distinct partnership outcomes: (a) creating practice, (b) capturing current practice, and (c) changing practice. Then, informed by our model, we completed a scoping review to explore the extent and type of practice-based research in the field of speech-language pathology to date. A literature database search identified 3510 articles meeting our inclusion criteria. Two independent readers reviewed abstracts and titles to determine articles for further review. Fifty-three articles were reviewed in full and 18 of these were excluded. Data were extracted from the remaining 35 articles. Level of partnership (creating, capturing, or changing) and type of partnership (collaborative or consultative) were coded. A thematic analysis revealed that three of the 35 articles involved creating practice, 19 captured current practice, and 13 were aimed at changing practice. Of the 27 articles in which details were provided about the partnerships between researchers and clinicians, 18 partnerships were collaborative and 9 were consultative. This review offers an initial step in examining the use of practice-based research in speech-language pathology, thereby demonstrating to researchers and clinicians how they can support each other to cocreate clinically relevant research.

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Les collaborations et partenariats entre les orthophonistes et les chercheurs représentent de belles opportunités de faire de la recherche axée sur la pratique. Afin que l'utilisation de la recherche axée sur la pratique se généralise en orthophonie, il est crucial de d'abord définir les objectifs et les résultats potentiels pouvant découler de ces projets de partenariat. Le présent article comporte deux volets. Dans un premier temps, nous décrivons un modèle de partenariat de recherche axée sur la pratique unissant orthophonistes et chercheurs. Celui-ci a été développé pour la présente étude et caractérise les partenariats selon trois types de résultats pouvant en découler : (a) création de pratiques, (b) évaluation des pratiques actuelles et (c) modification des pratiques. Dans un second temps, en nous appuyant sur notre modèle, nous avons réalisé une revue exploratoire de la littérature afin de cerner l'étendue et le type de la recherche axée sur la pratique réalisée dans le domaine de l'orthophonie. Une recherche dans des bases de données a permis de recenser 3510 articles répondant à nos critères d'inclusion. Deux lecteurs indépendants ont révisé les abrégés et les titres pour déterminer quels articles se qualifiaient pour un examen approfondi. Cinquante-trois articles ont été lus en entier et 18 ont été exclus des analyses. Les données des trente-cinq articles restants ont été extraites, puis codées selon le niveau de partenariat (création, évaluation ou modification) et le type de partenariat (collaboratif ou consultatif). Une analyse thématique a révélé que, parmi les 35 articles, 3 traitaient de la création de pratiques, 19 de l'évaluation de pratiques actuelles et 13 de modification des pratiques. Parmi les 27 articles contenant de l'information au sujet des partenariats entre les chercheurs et les cliniciens, 18 partenariats étaient collaboratifs et 9 étaient consultatifs. Cette revue constitue un premier pas dans l'évaluation du recours à la recherche axée sur la pratique en orthophonie et indique par le fait même de quelle façon les chercheurs et les cliniciens peuvent s'entraider dans la cocréation de recherches pertinentes sur le plan clinique.

It has long been recognized that laboratory-based research findings with presumed clinical relevance may have little impact on practice. Difficulty translating knowledge from research into practice arises for a variety of reasons related to both research pipelines and clinical experiences (Crooke & Olswang, 2015). Practice-based research (PBR) is an approach to systematic inquiry that involves gathering information from clinical practice to answer questions arising from practice to inform future practice (Epstein, 2002). As a promising approach to knowledge creation, PBR addresses many of the limitations discussed in the field of knowledge translation. Crucially, PBR involves practicing research “without the gap” because the research question is embedded directly in practice. By cocreating knowledge at the point of consumption, PBR has the potential to directly impact practice with little need for knowledge translation. PBR is well suited to the field of speech-language pathology given the importance of applied research questions and objective clinical approaches in the field, however, the extent to which clinicians and researchers are engaged in this type of research is unknown. The purpose of the present study was to examine PBR in the field of speech-language pathology with the two-fold goal of (a) describing potential PBR goals in a cocreation model including *capturing practice*, *changing practice*, and *creating practice*, and (b) reporting a scoping review on published research broadly consistent with a PBR approach in the field of speech-language pathology and categorized according to our model.

The Research–Practice Gap

Knowledge generated through systematic research has important implications for service providers whose goals are to improve the health, education, and well-being of individuals. The traditional research pipeline of creating knowledge involves researchers outside of the clinical provision pathway deciding upon a research question, designing a research study, collecting and analyzing data, and sharing results. One problem noted with this knowledge creation process has been that the shared research results often fail to impact practice at the level of service providers (clinicians, educators, etc.; Graham et al., 2006; Green et al., 2009; Morris et al., 2011; Straus et al., 2009). Observations of this research–practice gap gave rise to the field of knowledge translation (Canadian Institutes of Health Research, 2008; Straus et al., 2009), which centres on moving research from the laboratory into practical use. The full knowledge-translation cycle is captured in the knowledge-to-action framework (Graham et al., 2006; Straus et al., 2009), which specifies both knowledge-creation and action cycles. The knowledge-to-

action framework provides a means of focusing attention on research, practice, and the gap between them.

Despite nearly 2 decades of effort, closing the gap between research and practice has proven a perplexing challenge (Olswang & Prelock, 2015). This research–practice gap is maintained by various barriers faced by both researchers and clinicians (e.g., time, resources, research useability, support). In the knowledge-creation cycle, researchers experience delays in producing efficacious and effective research (Ovretveit et al., 2014) and can encounter further delays when publishing their findings (Morris et al., 2011; Olswang & Prelock, 2015). As well, avenues valued by researchers for sharing their findings, such as scholarly journals, are not necessarily accessible to practitioners (Grimshaw et al., 2012). In addition, scholarly publications are often not written for a practice-based audience, requiring clinicians to interpret the findings and determine the implications for practice (Olswang & Prelock, 2015). Considerable time, resources, knowledge expertise, and motivation are required to engage in such interpretative activities and implement potential changes (Green et al., 2009). Although critical, necessary organizational support may not be available to enable such activities within everyday practice.

Beyond the challenge of sharing and translating available research, another barrier in addressing the research–practice gap is a lack of overlap between research priorities and clinical concerns. Researchers and clinicians often operate in relative isolation from one another. As a result, researchers may focus on questions that are not relevant to clinical practice or develop solutions that are not feasible within the economic or contextual constraints of practice (Olswang & Prelock, 2015). Although clinician scientists present another solution to the research–practice gap by conducting research as part of practice, the focus of the current review is on the partnership between researchers and clinicians.

Moving Research Into Practice

Situated within knowledge translation is the field of implementation science, which has been a recent focus in communication sciences and disorders (Douglas & Burshnic, 2019). Focused on the action cycle, implementation research is the study of methods that promote the uptake and integration of evidence into health policies, health care, and education (Bauer et al., 2015; Proctor et al., 2013). Specifically, implementation science uses methods and techniques to systematically address barriers that hinder the integration of new research into practice (Eccles et al., 2009; Olswang & Prelock, 2015).

In describing the process of implementation science, Curran (2020) identified three components in the simplest terms: *the thing*, *how to do the thing*, and *the stuff*. The thing refers to an intervention, or innovation for which the knowledge creation phase of effectiveness research has been completed and the effectiveness established. The question of how to do the thing, on the other hand, is the purview of implementation research, which focuses on applying the product of effectiveness research in practice. Implementation researchers develop and investigate implementation strategies, referred to as the stuff, that aim to help people do the thing. These implementation strategies, or the stuff, may improve the uptake of the thing by adding supports or may remove barriers allowing for more ease to do the thing. Thus, although implementation science is aimed at minimizing the research–practice gap (Greenhalgh et al., 2004), this area of research persists as a framework where researchers push their established findings into practice for application and integration (Olswang & Prelock, 2015). Implementation science can be expected to be particularly effective when congruency exists between research outcomes, clinical interests, and practice requirements.

Unfortunately, research priorities and clinical practicalities sometimes fail to align (Olswang & Prelock, 2015). Myriad problems arise when a large gap exists between research outcome requirements and what can feasibly be achieved in practice. This disconnect between research outcomes and practice is not addressed by approaches to knowledge translation. One solution to this problem is for the point of partnership between researchers and practitioners to begin much earlier and work bidirectionally. In collaborative partnerships, knowledge creators and knowledge users work together to codesign theoretically sound things that are relevant to practice and seamlessly implemented within practice (Greenhalgh et al., 2016; Jull et al., 2017).

The Use of Partnerships

In recognition of the intractability of the research–practice gap, there has been a growing trend in many fields to use partnerships to help align research priorities and clinical needs. Indeed, in knowledge-translation approaches, the use of partnerships is widely acclaimed and seen as a fundamental component of the approach (Gagliardi et al., 2015; Greenhalgh et al., 2016; Jull et al., 2017; Nguyen et al., 2020). The timing of partnership initiation, however, may vary. According to the knowledge-to-action framework (Graham et al., 2006), the boundaries between knowledge creation and action are fluid to allow both for the influence of one aspect on the other and for collaboration among

stakeholders to be initiated at any point in the framework. Although collaboration at the action phase can support implementation, engaging in collaborative partnerships earlier in the process better supports rapid creation and integration of evidence (Gagliardi, et al., 2015; Jull et al., 2017). In fact, it has been suggested that the research–practice gap is caused by issues in knowledge production rather than knowledge transfer (Bowen & Graham, 2013; Jull et al., 2017). Engaging in partnerships throughout the knowledge-to-action framework repairs this issue as collaborators cocreate and apply new knowledge together.

Cocreation partnerships have been described using many terms (i.e., research–practice partnerships, PBR networks) and are found within a variety of paradigms (design-based research, integrated knowledge translation, community-based participatory research, organizational participatory research, and PBR). As emerging fields under the broad umbrella of knowledge translation, considerable overlap exists between terms and paradigms related to partnered research. Although the need to include a variety of terms when searching for research broadly consistent with PBR was identified, the term *evidence-based practice* was considered too general and broad to be useful in focusing the search on PBR. The term *practice-based evidence* describes an approach that is particularly important when high-quality evidence is lacking, does not relate to an individual client, or does not provide clear recommendations. A clinician scientist generates practice-based evidence often through single-case experimental designs or case studies (Lemoncello & Ness, 2013). Many clinicians have played a dual clinician-researcher role conducting research on their own practice (Owen et al., 2004; Wight & Miller, 2015). However, our focus for the review was on PBR that incorporated a practitioner–researcher partnership.

Creating Research in Practice: PBR

PBR refers to a researcher–practitioner partnership where the initiation of partnership starts early in the knowledge-creation phase. From the beginning, researchers and practitioners work together to identify a problem currently experienced in practice and design an applicable solution. By situating the knowledge-creation phase directly in practice, the action cycle is either reduced or eliminated. By gathering data in practice to later inform that practice (Epstein, 2002), PBR creates research without the need for translation across the gap. Certainly, PBR does not replace the need for traditional research, but it provides a valuable complement to traditional research. PBR represents the pull from practice by addressing questions that arise from practice (Crooke & Olswang, 2015). It is the lived

experiences of clinicians, educators, and stakeholders that influence all aspects of the project.

The potential power of PBR was first recognized by Epstein (2002), who reported that social workers routinely collected large quantities of clinical information about clients. Most researchers deemed this information as unreliable, but Epstein (2002) argued that these data could be mined to reveal valuable information for that clinical setting. Comparing a randomized control trial (Beder, 2000) and a PBR study (Dobrof et al., 2000), each conducted with end-stage renal dialysis patients, Auslander et al. (2002) showed comparable findings across studies. However, the PBR study (Dobrof et al. 2000) provided insight into service patterns that could not have been captured by the randomized trial. Both Beder's (2000) and Dobrof et al.'s (2000) studies answered questions about clinical practice, but only Dobrof et al.'s PBR project answered questions without adding to the workload of the clinicians and exposed service patterns that would not have been recognized otherwise. Both evidence of enhanced knowledge outcomes and reduced research-related workload highlight the value of PBR.

An important attribute of PBR is that it uses an inductive rather than deductive approach with key concepts coming from practical insight (Epstein, 2002). PBR approaches can use nonexperimental or quasi-experimental data designs, include descriptive and correlational findings, be collected retrospectively or prospectively, and include both quantitative and qualitative information. PBR studies also employ instruments from practice and recruit participants from their point of care without random assignment to alternate treatments or control groups. Similarly, unlike research-based practice trials, standardized assessments can be used in an unstandardized way if that is best for clinical practice. PBR is a collaborative science based in practice, and as such, practice requirements are of greater importance than research considerations (Epstein, 2002).

For the most part, PBR is built on partnerships between clinicians working primarily as service providers and researchers working primarily to carry out scientific investigation (e.g., Arcuri et al., 2016), although other models where a clinician scientist carries out both roles exist (e.g., Owen et al., 2004). Given the different expertise the partners bring to the partnership, a willingness to acknowledge the valuable contribution of other members is necessary. Researchers offer knowledge and skills that enhance the scientific rigour of the study design while ensuring high fidelity to the protocol, and clinicians possess insight into which research outcomes will be most significant

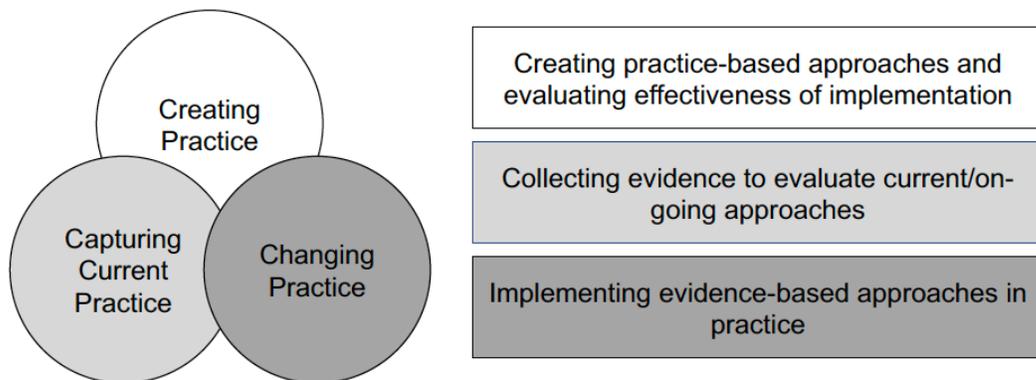
to clinical practice and ensure the protocol is sustainable in practice (Crooke & Olswang, 2015). Specifically, by involving clinicians in developing the research question, knowledge is created that is highly practical and sustainable for practice settings. It can be expected that PBR partnerships will vary in the degree of engagement between researchers and clinicians. Some partnerships may be more *consultative*, such that partners meet at specific timepoints throughout the process to discuss and make changes, but the partnership between the two parties is not constant. Other partnerships might be more *collaborative*, with clinicians and researchers working together on an ongoing basis to design, implement, solve problems, and make changes as needed. The extent to which partnerships are fully collaborative is often not reported clearly in the literature (Gagliardi et al., 2016). Nevertheless, where possible, the partnerships were characterized as either consultative or collaborative based on descriptions of partnerships reported in relevant studies of our scoping review.

Development of a Cocreation Model to Support Clinical–Research Partnerships

Although PBR has a long-standing history, its utility for the field of speech-language pathology has not been fully explored yet. For those interested in engaging in collaborative partnerships, there is little guidance in the literature regarding the types of research that can be conducted using this approach. Further, documentation of partnerships is inconsistent and is not systematic (Drahota et al., 2016), leading to little consensus on how best to engage in a partnership. For PBR and the use of PBR partnerships to become more widespread and accepted in speech-language pathology, a crucial step is to outline the potential purposes or outcomes of these partnership projects. As a first step and to capture our emerging thinking in this area, we created the cocreation model (**Figure 1**) based on our experiences with PBR, the utility of PBR in other fields (Candy & Edmonds, 2018), and attributes described in the literature (Epstein, 2002). This model broadly identifies the potential outcomes for partnership projects in which the goal is to answer clinical questions originating from practice and informing future practice.

The creation of the model was informed by the discussions of Epstein (2002), who identified that clinicians gather large amounts of information about their practice and about their clients. This information provides the potential to understand current practice, which could, in turn, motivate changes in practice. Further, PBR involves initiating the partnership as a first inquiry step that could contribute to the design of new practice. The model was also informed by our experiences as practice-based

Figure 1



The practice-based research cocreation model

researchers in the areas of preschool (Kwok, 2020) and school-age language development (Vollebregt et al., 2019), and motor speech and swallowing (Theurer et al., 2013). Ongoing partnerships and projects provided insight into the outcomes achievable through PBR. Compiling these possible outcomes from the literature reinforced our ideas and experiences working in PBR, bringing about the cocreation model to represent how these partnerships can produce sustainable clinical practices. Our PBR cocreation model (Figure 1) describes three distinct purposes or outcomes related to PBR: (a) creating practice, (b) capturing practice, and (c) changing current practice.

Creating practice refers to a cocreation partnership aimed at designing or creating a new practice and evaluating its effectiveness. In a practice-creation project, clinicians and researchers may work together to integrate or adapt evidence-based practices from traditional research within the constraints of a particular practice setting. In this way, an evidence-informed practice is created and evaluated. For example, a creating-practice study might involve designing a new phonological awareness program, incorporating the best available evidence with modifications to suit a particular context, and then evaluating program effectiveness.

Capturing practice describes a cocreation partnership that evaluates ongoing practice to inform both the clinicians and researchers. By studying current practice directly, researchers and clinicians can build the evidence base for effective practices in speech-language pathology

across a range of settings and implementation schedules. This purpose aligns most closely with the concept of practice-based evidence, although the present review focused on studies based specifically on a practitioner–researcher partnership. An example of research designed to capture practice could include evaluating the effectiveness of a preschool program building social communication skills in children with autism that is being delivered in a community clinic.

Changing practice describes a cocreation partnership whose goal is to implement evidence-based approaches either arising from practice-based or traditional research activities. This purpose of PBR aligns most closely with the view of knowledge translation and implementation science as taking action to move knowledge into practice or studying the implementation process. An example of changing practice could include a researcher working with a clinician to implement an alternative therapeutic approach in their clinical practice.

The PBR cocreation model was used in a scoping review to further our exploration of the extent to which researchers in the field of speech-language pathology are engaged in PBR. Unlike systematic reviews, scoping reviews allow the assessment of emerging evidence and serve to provide an overview of a broad topic (Peterson et al., 2017). Scoping reviews consider diverse related literature and use a systematic methodological approach (Arksey & O'Malley, 2005). As such, scoping reviews are an appropriate alternative to systematic reviews when the literature is

vast and complex or when the identified topic is emerging or evolving. Given the emerging nature of PBR in the field of speech-language pathology, a scoping review was considered an appropriate approach to explore the extent of research completed in the area.

Scoping Review Examining PBR in Speech-Language Pathology

The scoping review was conducted to provide an overview of PBR in the field of speech-language pathology broadly. Because this is a relatively new area of research, no limits were placed on the population or disorder types studied. The aim of this review was to acquire a general sense of the available research that could be broadly defined as using a PBR approach and consider it in relation to our PBR cocreation model. A first goal was to determine whether research involving cocreation partnerships could be identified that corresponded to our three hypothesized purposes of creating, capturing, and changing current practice. Finding studies addressing the three distinct research partnerships would provide validation to the model. A second goal was to categorize these partnerships as either collaborative or consultative to determine how partnership collaboration was being documented and if examples of these partnerships could provide insight into how these partnerships exist. Partnerships were coded as collaborative if there was evidence of an ongoing partnership throughout the research process. Partnerships were coded as consultative if there was some engagement between researchers and stakeholders, but there was no evidence of ongoing partnership.

Method

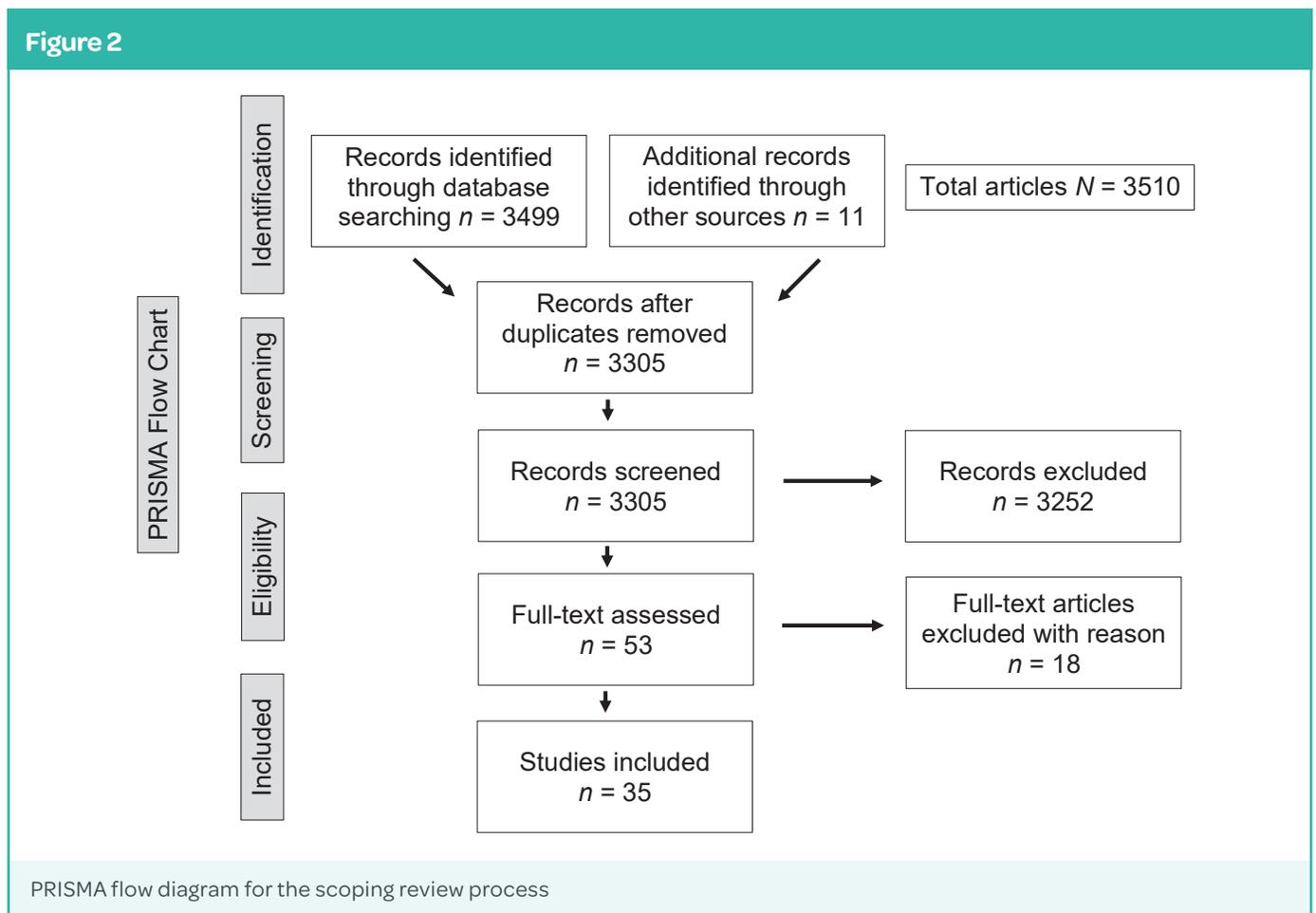
Searches were conducted in the following database search engines: Web of Science, PubMed, CINAHL, and Psych Info. Articles were included if published in English in peer-reviewed journals between 1980 and April 2020. A hand-search was completed on the journal *Implementation Science*. Keywords were selected to reflect the possibility of terms used to describe relevant clinician–researcher partnerships and included *implement* science*, or *knowledge translat**, or *practice-based research*, or *practice-based evidence*, or *design research*, and *speech language path**, or *speech therap**, or *speech path**. Evidence-based practice was excluded as a search term to focus the search on articles that involved an ongoing partnership between clinicians and researchers. In communication sciences and disorders, the term evidence-based practice is widely used to describe many clinical activities, so its inclusion would have produced too many irrelevant results.

Articles were eligible for this scoping review if they were related to the field of speech-language pathology and described the movement of scientific knowledge from research to practice or practice to research using one of the following terms: *implementation science*, *knowledge translation*, *practice-based research*, or *practice-based evidence*. The initial search yielded 3510 articles. The titles and abstracts of these articles were independently reviewed by two readers (author MV and an additional, trained research assistant). Any disagreement about which articles should be included led to discussion until consensus for included articles was reached ($n = 53$). After that, articles were excluded if they were systematic reviews or editorials. Articles meeting the inclusion criteria were read in full by the first author. An additional 18 articles were excluded upon full text review because they outlined the importance of cocreation partnerships but did not present research data. A PRISMA flow diagram outlines the study selection process (**Figure 2**).

For all studies meeting the inclusion criteria, data were extracted using a Microsoft Excel chart developed by the authors. To develop the extraction sheet, one author (MV) completed data extraction of an article using the general extraction inventory outlined by the Joanna Briggs Institute (Peters et al., 2015). Over the course of the data extraction, the four authors met twice to discuss what information should be extracted from the articles. In the first meeting, information regarding the details of the study were discussed (e.g., participants, location). The second meeting was dedicated to creating consensus amongst the group about how to categorize partnerships using the cocreation model (changing practice, creating practice, or capturing current practice). Following the second meeting, a portion of the articles were read by each of the authors and information extracted from the articles was compared across authors to ensure accuracy. Data extraction included a chart outlining: journal title, authorship, year, participants, service context, and setting (see **Table 1**). An additional chart was used for extraction of location of research, study design, data source, type of analysis, level of cocreation, and type of partnership (see **Table 2**).

Results

The scoping review yielded 35 articles from six countries. Fourteen articles were from Australia, nine from the United States, nine from Canada, one from Sweden, one from South Africa, and one from the Netherlands. Included articles were published between 2010 and 2020.



Participants, Disorder Area, and Setting

Consistent with our purpose of examining PBR in the field of speech-language pathology, S-LPs were involved in every study except one where S-LPs were invited to participate but none responded to the call for participants (Boudreau et al., 2019). Multiple studies included more than one group of participants. For example, Francis et al. (2019) collected data from patients, caregivers, and S-LPs. S-LPs were not always the primary participants, in that they were not always the source of data for the research studies. However, S-LPs were the primary participants in the majority of the included articles (20/35). In other studies, participants were allied health professionals (e.g., occupational therapists, physiotherapists) who provided feedback on the implementation of a specific intervention program (10/35). Other studies included parents and caregivers as participants (4/35), patients (4/35), educators (2/35), nurses (1/35) and master of education students (1/35).

A variety of populations, disorder types, and settings were represented across the reviewed articles. Populations included both adults (17/35) and children (18/35).

Setting was only collected from an article if explicitly stated in the text. For adult participants, the settings included rehabilitation settings (9/35), acute hospital settings (5/35), skilled nursing facilities (2/35), long-term care settings (1/35), the home (1/35), university clinic (1/35), and community-based programs (1/35). The disorders examined included stroke (10/35), cognitive communication impairment (2/35), dysphagia (1/35), hypokinetic dysarthria (1/35), dementia (1/35), traumatic brain injury (1/35), and spinal cord injury (1/35). PBR involving children occurred in community-based programs such as preschool speech and language programs (5/35), children’s treatment centres (3/35), schools (3/35), home care (1/35), a pediatric rehabilitation centre (1/35), and a nongovernment organization (1/35). Children in the studies presented with language impairments (4/35), preschool speech and language needs (4/35), cerebral palsy (3/35), physical disability (1/35), significant developmental delay (1/35), autism spectrum disorder (1/35), voice concerns (1/35), speech sound disorder (1/35), and augmentative and alternative communication needs (1/35).

Table 1**Articles Included in Scoping Review: Authors, Title, Year, Participants, Disorder Area, and Setting**

Author(s)	Article title	Year	Participants	Disorder area	Setting
Lavesson et al.	"Development of a Language Screening Instrument for Swedish 4-Year-Olds"	2018	4-year-old children	Child language	Child health centres
Olswang & Prelock	"Bridging the Gap Between Research and Practice: Implementation Science"	2015	S-LPs, occupational therapists, physiotherapists	Children with physical disabilities	Children's treatment centre
Vallila-Rohter et al.	"Implementing a Standardized Assessment Battery for Aphasia in Acute Care"	2018	Patients with aphasia, their caregivers, and S-LP assistants	Aphasia	Hospital
Allen et al.	"Implementing a Shared Decision Making and Cognitive Strategy-Based Intervention: Knowledge User Perspectives and Recommendations"	2020	Interprofessional teams of stroke rehabilitation hospitals	Cognitive impairments following a stroke	Rehabilitation hospitals
Arcuri et al.	"Perceptions of Family-Centred Services in a Paediatric Rehabilitation Programme: Strengths and Complexities from Multiple Stakeholders"	2016	Parents and allied health professionals	Children with significant developmental delays	Pediatric rehabilitation centre
Cunningham et al.	"Barriers to Implementing Evidence-Based Assessment Procedures: Perspectives From the Front Lines in Pediatric Speech-Language Pathology"	2019	S-LPs	Pediatric S-LP-Children who are deaf and hard of hearing	Preschool speech and language services
Dada et al.	"Augmentative and Alternative Communication Practices: A Descriptive Study of the Perceptions of South African Speech-Language Therapists"	2017	S-LPs	Augmentative and alternative communication	
Douglas	"Organizational Context Associated With Time Spent Evaluating Language and Cognitive-Communicative Impairments in Skilled Nursing Facilities: Survey Results Within an Implementation Science Framework"	2016	S-LPs	Cognitive communication impairment	Skilled nursing facility
Farquharson et al.	"Using Hierarchical Linear Modeling to Examine How Individual S-LPs Differentially Contribute to Children's Language and Literacy Gains in Public School"	2015	S-LPs	Children with language impairment	Public school
Foster et al.	"'That Doesn't Translate': The Role of Evidence-Based Practice in Disempowering Speech Pathologists in Acute Aphasia Management"	2015	S-LPs	Stroke care (aphasia)	Acute hospital

Table 1 (continued)**Articles Included in Scoping Review: Authors, Title, Year, Participants, Disorder Area, and Setting**

Author(s)	Article title	Year	Participants	Disorder area	Setting
Greenspan et al.	"Clinician Perspectives on the Assessment of Short-Term Memory in Aphasia"	2020	S-LPs	Aphasia	Rehabilitation hospital, acute care hospital with outpatient services, professional conference, and university speech clinic
Hadely et al.	"Speech Pathologists' Experience With Stroke Clinical Practice Guidelines and the Barriers and Facilitators Influencing Their Use: A National Descriptive Study"	2014	S-LPs	Stroke care	Rehabilitation
Hartley et al.	"Practice Patterns of Speech-Language Pathologists in Pediatric Vocal Health"	2017	S-LPs	Pediatric voice	
Imms et al.	"Improving Allied Health Professionals' Research Implementation Behaviours for Children With Cerebral Palsy: Protocol for a Before-After Study"	2015	Allied health professionals	Children with cerebral palsy	Nongovernment organizations
Jeng	"Clinical Decision Making in Skilled Nursing/Long Term Care: Using and Generative Evidence in the Field"	2015	S-LPs	Hypokinetic dysarthria	Long-term care
Justice et al.	"Designing Caregiver-Implemented Shared-Reading Interventions to Overcome Implementation Barriers"	2015	Parents and their children	Children with language impairment	Home environment
Miao et al.	"Factors Affecting Speech Pathologists' Implementation of Stroke Management Guidelines: A Thematic Analysis"	2015	S-LPs	Stroke care	
Nitsch et al.	"Integrating Spinal Cord Injury - Quality of Life Instruments Into Rehabilitation: Implementation Science to Guide Adoption of Patient-Reported Outcome Measures"	2021	Allied health professionals	Spinal cord injury	Rehabilitation Institute of Chicago
Poulin et al.	"Identifying Clinicians' Priorities for the Implementation of Best Practices in Cognitive Rehabilitation Post-Acquired Brain Injury"	2020	Interdisciplinary teams and clinical coordinators, occupational therapists, neuropsychology, special education, S-LP	Traumatic brain injury/acquired brain injury	Stoke rehabilitation centre, inpatient and outpatient rehabilitation centre, acquired brain injury rehabilitation centre
Shrubsole et al.	"Barriers and Facilitators to Meeting Aphasia Guideline Recommendations: What Factors Influence Speech Pathologists' Practice?"	2018	S-LPs	Aphasia	Acute and rehabilitation settings

Table 1 (continued)

Articles Included in Scoping Review: Authors, Title, Year, Participants, Disorder Area, and Setting						
Author(s)	Article title	Year	Participants	Disorder area	Setting	
Sugden et al.	“Service Delivery and Intervention Intensity for Phonology-Based Speech Sound Disorders”	2018	S-LPs	Phonology-based speech sound disorders		
Young et al.	“Factors that Influence Australian Speech-Language Pathologists’ Self-Reported Uptake of Aphasia Rehabilitation Recommendations From Clinical Practice Guidelines”	2018	S-LPs	Aphasia	Inpatient acute, inpatient rehab, outpatient rehabilitation, community rehabilitation, university, nursing home, private practice	
Brebner et al.	“Facilitating Children’s Speech, Language, and Communication Development: An Exploration of an Embedded, Service-Based Professional Development Program”	2017	Early educators and S-LPs	Pediatric S-LP	Childcare centres	
Boudreau et al.	“Peer-Mediated Pivotal Response Treatment for Children With Autism Spectrum Disorder: Provider Perspectives on Acceptability, Feasibility, and Fit at School”	2019	Educators and early intervention providers	Autism spectrum disorder	School board	
Campbell et al.	“AKT Intervention Including the Evidence Alert System to Improve Clinician’s Evidence-Based Practice Behaviour – A Cluster Randomized Controlled Trial”	2013	Allied health professionals	Children with cerebral palsy	Community-based cerebral palsy services	
Cunningham et al.	“Promoting Consistent Use of the Communication Function Classification System (CFCS)”	2016	S-LPs	Preschool speech and language	Preschool speech and language program	
Cunningham et al.	“Moving Research Tools Into Practice: The Successes and Challenges in Promoting Uptake of Classification Tools”	2018	S-LPs	Infants, toddlers, and school-aged children		
Cunningham & Oram Cardy	“Using Implementation Science to Engage Stakeholders and Improve Outcome Measurement in a Preschool Speech-Language Service System”	2020	S-LPs	Pediatric speech-language pathology	Preschool speech and language services	
Dale et al.	“Barriers and Enablers to Implementing Clinical Treatment for Fever, Hyperglycaemia, and Swallowing Dysfunction in the Quality in Acute Stroke Care (QASC) Project – A Mixed Methods Study”	2015	Registered nurses, clinical nurse consultants, nurse unit manager, endorsed enrolled nurse	Stroke care		
Francis et al.	“The Use and Impact of a Supported Aphasia-Friendly Photo Menu Tool on iPads in the Inpatient Hospital Setting: A Pilot Study”	2019	Patients with aphasia, their caregivers, and S-LP assistants	Aphasia	Inpatient hospital	

Table 1 (continued)

Articles Included in Scoping Review: Authors, Title, Year, Participants, Disorder Area, and Setting					
Author(s)	Article title	Year	Participants	Disorder area	Setting
Imms et al.	"Efficacy of a Knowledge Translation Approach in Changing Allied Health Practitioner Use of Evidence-Based Practices With Children With Cerebral Palsy: A Before and After Longitudinal Study"	2020	Allied health professionals	Children with cerebral palsy	Five disability service organizations
Molfenter et al.	"Decreasing the Knowledge-to-Action Gap Through Research-Clinical Partnerships in Speech Language Pathology"	2009	S-LPs	Dysphagia	Rehabilitation hospitals
Smith et al.	"Memory and Communication Support in Dementia Research-Based Strategies for Caregivers"	2010	Family members and professional caregivers	Dementia	Home care
Weiss et al.	"Transdisciplinary Approach Practicum for Speech-Language Pathology and Special Education Graduate Students"	2020	4 S-LP participants and master students in special education	Autism spectrum disorder	School board
Wielbert et al.	"ImPACT: A Multifaceted Implementation for Conversation Partner Training in Aphasia in Dutch Rehabilitation Settings"	2016	Rehabilitation professionals	Aphasia	Rehabilitation centres, nursing homes with rehabilitation units

Note: S-LP = speech-language pathologist. This table outlines title, year, participants, disorder area, and setting from included articles. Articles in Table 1 are presented in order corresponding to Table 2.

Data Source and Analysis

Across the included studies, data collected were related to implementation of the program, current practices, or what needed to be adjusted about a program. Regarding the type of data collected, 11 articles reported quantitative data, 10 articles reported qualitative data, 11 articles reported mixed-method data, and 3 articles could not be classified. Multiple means of data collection were reported. The use of surveys (13/35), particularly online surveys, was most frequent. In one study conducted to assess barriers and facilitators to implementing a clinical treatment protocol, clinicians first participated in preimplementation workshops to identify perceived barriers (Dale et al., 2015). Postimplementation, clinicians completed a mixed-method survey to determine what barriers still existed and what barriers were addressed through the preimplementation workshops.

Other commonly reported practices included interviews (8/35), focus groups (7/35), participant outcomes (6/35), and questionnaires (5/35). Foster and colleagues (2015) completed in-depth interviews with S-LPs to gain an

understanding of the role of evidence-based practice and its implementation in poststroke aphasia. Fewer studies reported participant reflections (3/35), patient information (3/35), and collecting information regarding the acceptability and feasibility of implementation (2/35). One article used an existing scale, the Change on Goal Attainment Scale to capture quantitative data about how PBR influenced progress towards achieving goals (Campbell et al., 2013).

Level of Cocreation

The final stage of extraction involved classifying the articles using our PBR cocreation model. All studies were able to be classified according to the model. Three studies were classified as creating practice. In one of these studies, clinicians and researchers adopted a series of single-subject feasibility studies and a randomized control trial into a triadic gaze intervention for children (Olswang & Prelock, 2015). As the intervention was adopted into practice, they

Table 2**Articles Included in Scoping Review: Authors, Location, Data Source, Analysis, Level of Cocreation, and Partnership**

Author	Location	Data source	Type of analysis	Level of cocreation			Type of partnership	
				Creating practice	Capturing practice	Changing practice	Collaborative	Consultative
Lavesson et al., 2018	Sweden	Child language screening tool	Quantitative, (discrepancies resolved through qualitative information)	✓				
Olswang & Prelock, 2015	United States	Mixed methods assessed acceptability, adoption, and fidelity	Mixed	✓			✓	
Vallila-Rohter et al., 2018	United States	Retrospective medical review	Mixed	✓		✓	✓	
Allen et al., 2020	Canada	Semistructured focus group	Qualitative		✓		✓	
Arcuri et al., 2016	Canada	Parent questionnaire responses	Quantitative		✓			
Cunningham et al., 2019	Canada	Online survey	Quantitative		✓		✓	
Dada et al., 2017	South Africa	Online survey	Quantitative		✓		✓	
Douglas, 2016	United States	Survey responses			✓			
Farquharson et al., 2015	Australia	Questionnaires	Quantitative		✓			
Foster et al., 2015	Australia	Interview responses	Qualitative		✓			
Greenspan et al., 2020	United States	Semistructured interview in focus group	Qualitative		✓		✓	
Hadely et al., 2014	Australia	Survey responses	Mixed		✓			✓
Hartley et al., 2017	United States	Online survey	Mixed		✓			✓
Imms et al., 2015	Australia	Survey responses and client outcomes	Mixed		✓		✓	

Table 2 (continued)**Articles Included in Scoping Review: Authors, Location, Data Source, Analysis, Level of Cocreation, and Partnership**

Author	Location	Data source	Type of analysis	Level of cocreation			Type of partnership	
				Creating practice	Capturing practice	Changing practice	Collaborative	Consultative
Jeng, 2015	United States	Client performance			✓			
Justice et al., 2015	United States	Interview/survey responses	Mixed		✓			
Miao et al., 2015	Australia	Interview responses	Qualitative		✓			✓
Nitsch et al., 2021	United States	Focus group	Qualitative		✓		✓	
Poulin et al., 2020	Canada	Cross sectional electronic survey and focus group	Quantitative		✓			✓
Shrubsole et al., 2018	Australia	Semistructured interviews	Qualitative		✓			✓
Sugden et al., 2018	Australia	Online survey	Quantitative		✓			✓
Young et al., 2018	Australia	Online survey	Quantitative		✓			✓
Brebner et al., 2017	Australia	Focus group and individual semistructured interviews	Qualitative			✓	✓	
Boudreau et al., 2019	Canada	Semistructured interviews	Qualitative			✓	✓	
Campbell et al., 2013	Australia	Change on Goal Attainment Scaling	Quantitative			✓	✓	
Cunningham et al., 2016	Canada	Pre-posttest intervention responses	Mixed			✓		
Cunningham et al., 2018	Canada	Pre-post survey responses	Qualitative			✓	✓	
Cunningham & Oram Cardy, 2020	Canada	Pre-post survey	Quantitative			✓	✓	
Dale et al., 2015	Australia	Pre-post survey responses	Mixed			✓		✓

Table 2 (continued)

Articles Included in Scoping Review: Authors, Location, Data Source, Analysis, Level of Cocreation, and Partnership								
Author	Location	Data source	Type of analysis	Level of cocreation			Type of partnership	
				Creating practice	Capturing practice	Changing practice	Collaborative	Consultative
Francis et al., 2019	Australia	Each participant acted as own control switching the menu, questionnaires, reflective logs, and focus groups	Mixed			✓		✓
Imms et al., 2020	Australia	Data collected during sessions at 6, 12, and 24 months, questionnaires, and check-up tool. Child data collected via health records.	Quantitative			✓	✓	
Molfenter et al., 2009	Canada	Interview responses	Qualitative			✓	✓	
Smith et al., 2010	Australia					✓	✓	
Weiss et al., 2020	United States	Pre-post questionnaires, reflections, and focus groups	Mixed			✓	✓	
Wielert et al., 2016	Netherlands	Data collected from the recruitment administration, questionnaires, consensus notes from meetings with S-LP groups	Mixed			✓	✓	

Note: S-LP = speech-language pathologist. This table outlines the location, type of data collected, type of analysis, level of partnership, and level of cocreation that were identified for each included article. Table 2 is organized according to level of cocreation and then articles are organized alphabetically within each level of cocreation.

assessed the clinician's views on acceptability, adoption, and feasibility, and addressed implementation barriers. Nineteen studies were classified as capturing practice. As an example, Justice et al. (2015) sought to understand barriers that parents face in using caregiver-implemented shared reading interventions. Parents completed weekly logs to document their maintenance to the intervention schedule and completed an exit interview to discuss implementation barriers. Thirteen studies were classified as changing practice. In an example study aimed at standardizing S-LPs' use of a language assessment tool, S-LPs completed a pretest survey, reviewed online intervention materials, and then completed a postsurvey (Cunningham et al., 2016).

Where possible, the level of partnership was coded as either collaborative (evidence of ongoing partnership) or consultative (evidence of some engagement between researchers and stakeholders). Only 27 of 35 studies could be classified relative to the type of partnership; in the remaining articles, authors did not define the type of partnership or did not provide sufficient information to allow for characterization. Of these 27 studies, 18 were classified as incorporating a collaborative partnership and 9 were classified as consultative. For example, studies using a collaborative model described their partnerships as ongoing and researchers engaged with clinicians at multiple time points throughout the project to collect implementation data (Olswang & Prelock, 2015). Further, they

described their partnerships as collaborative throughout all stages of implementation (Cunningham et al., 2018). As an example of a study using a consultative model, one study (Miao et al., 2015) described an organization, the National Stroke Foundation, receiving input on guidelines from S-LPs. As an example of a study where the type of partnership could not be classified, one study described a project using implementation science with researchers and S-LPs, but the extent of the partnership was not described in the article and therefore not classified as collaborative or consultative (Farquharson et al., 2015).

Discussion

This scoping review investigated the emerging area of PBR in the field of speech-language pathology. The objective in the present study was to examine PBR with the two-fold goal of (a) describing potential PBR outcomes in a cocreation model including capturing practice, changing practice, and creating practice, and (b) reporting a scoping review of published research consistent with a PBR approach in the field of speech-language pathology and categorized according to our model. As described by our PBR cocreation model, PBR includes research aimed at creating practice, capturing practice, and changing practice. PBR partnerships were expected to vary, with some being highly collaborative involving researchers and clinicians working together throughout the process and others being more consultative with points of contact at only specific junctures. Our review yielded 35 articles reporting PBR involving S-LPs, other allied health professionals, caregivers, patients, and other professionals. Of these articles three were categorized as creating practice, 19 as capturing practice, and 13 as changing practice. Eighteen studies were classified as collaborative and 9 were classified as consultative. In this discussion, a broad overview of PBR in speech-language pathology is provided and the utility of PBR in speech-language pathology is outlined. Further, attention is drawn to existing gaps in the literature and ways PBR can reduce the gap between practice and research are described.

Levels of Cocreation

The PBR cocreation model for this scoping review was designed using experiences of cocreation partnerships and the existing literature of PBR in health care related fields (Davis et al., 2020; Epstein, 2002). The model outlines three distinct levels of cocreation that can exist within PBR: creating practice, capturing current practice, and changing practice. One purpose of this review was to examine available PBR in relation to our proposed model. More studies were classified as capturing practice than changing practice. Studies involving capturing practice may

be somewhat more straightforward to carry out because no practice change is required. It is also possible that capturing current practice is the first step to determining if the services are meeting current needs before services are changed or created. It may also be the case that more research involves capturing practice because capturing practice closely aligns with Epstein's (2002) original work in PBR. This type of capturing practice aligns with practice-based evidence where clinicians are acting as dual clinicians and scientists conducting research on their own practice (Lemoncello & Ness, 2013).

PBR involving creating practice seems to be particularly rare given that only three studies were classified as such, and one of the three articles reported the practice creation incidentally as part of a PBR discussion. It is possible that with PBR in its infancy in speech-language pathology, those engaged in partnerships have not yet envisioned a level of partnership where new practice is being created. Another possibility is that creating practice represents a particularly challenging research purpose. Creating practice might place high demands on collaboration due to the need to work together on all aspects of both practice and research design. Further, given these high demands, another possibility is that S-LPs have limited time to engage in these types of partnerships because their workloads are very high. As potentially more S-LPs begin to engage in this type of work, one possibility is the use of a knowledge broker who collaborates with both the researchers and S-LPs to lessen the demands placed on them, support interactions, and increase capacity for partnerships (Dobbins et al., 2009). Addressing both clinical concerns and implementation aims in one study requires addressing the priorities and methods specific to each component, which can quickly become a large undertaking. It is not surprising, then, that there are few articles reporting this type of work (see Curran et al., 2012, for a discussion of different approaches).

Our second goal was to characterize the collaborative nature of PBR partnerships. Several articles reported insufficient information to allow classification of their partnerships as either collaborative or consultative. This finding is in line with reports from other knowledge translation approaches that observed the need for more consistent and systematic reporting of collaborative research (Drahota et al., 2016). One reason that reporting partnerships has not become a consistent practice may be due to the lack of common language amongst knowledge translation fields and between clinicians and researchers. One hope for the PBR cocreation model is that it provides a common language for researchers and clinicians to describe the goals of their partnership. In addition, a common

language may support an explicit conversation that identifies the type of partnership, thereby making labelling the partnership in dissemination activities easier (Frisby et al., 2004).

Two thirds of the classifiable studies were coded as collaborative partnerships. This is no doubt due to the strong interest in collaborative partnerships to build cocreated knowledge (Greenhalgh et al., 2016; Filipe et al., 2017). It is also possible that successful PBR is facilitated by more collaborative partnerships. Twelve of the studies classified as collaborative practice were coded using the PBR cocreation model as changing practice. This signifies that the partnerships were ongoing through the research project and as the change was incorporated into clinical practice. Less is known about the six collaborative studies that were coded as capturing practice. Most of these projects involved only taking a snapshot of clinical practice, making it difficult to know if the collaboration continued after capturing the current practice. Nevertheless, the value of collaborative partnerships is clear and well supported across knowledge translation approaches (Nguyen et al., 2020).

What areas of speech-language pathology are using PBR most frequently? Our scoping review included articles from a wide range of journals and encompassed all areas of speech-language pathology. In our search of the literature, there was equal representation of research articles focusing on adults and on children. Partnerships occurred in all areas included within the scope of speech-language pathology, although no substantial number of articles were found in any one disorder area. Most of this research was occurring in hospitals, treatment centres, and rehabilitation centres. Less frequent locations included public schools, home care, and long-term care centres. It is difficult to interpret (the lack of) differences in disorder areas or settings around which PBR has been reported because the importance of PBR has been recognized only relatively recently. It is possible that PBR is occurring more frequently in certain disorder areas or settings but not yet being reported in the literature. An increase in reporting on composition, types, and purposes of cocreation partnerships will support a better understanding of the practice settings and contexts best suited for PBR. The recency of PBR is illustrated in the publication dates of the included articles in the current review. The earliest article was published in 2010, and most of the articles found in this search appeared after 2017. The presence of PBR in speech-language pathology, and the recognition of the value that partnerships bring to research, is a new and unique approach to our field. In discussion about knowledge translation and implementation science, a focus on PBR would support understanding of how

partnerships can propel our field into creating research that fits the needs of researchers and clinicians.

How are data collected? Our review indicated that qualitative, quantitative, and mixed methods were employed to understand the changes and revisions being made to the various speech, language, and swallowing therapies and protocols under study. The most common method of data collection was through surveys or interviews designed to seek evaluative opinion on the effectiveness of new or changed practice. Typical interviews focused on clinicians' experiences with a specific tool or program, asked questions surrounding clinical decision making, and assessed barriers to providing clinical treatment. In our most recent search year, 2019–2020, the number of studies using participant outcomes increased compared to prior years (Francis et al., 2019; Imms et al., 2020). Prior to 2019, only one PBR study included such a measure (Jeng, 2015). Another relatively new PBR outcome measure is the use of participant qualitative reflections (Weiss et al., 2020).

Limitations

This scoping review assessed the range of available evidence related to PBR. Our search was limited to research involving a practitioner–researcher collaboration in a knowledge translation framework and situated as a study within the field of speech-language pathology. Practice-based studies without evidence of a partnership and those that did not reference speech-language pathology/speech therapy were not captured in the search process. In addition, if articles did not include data and only described theories and/or the utility of implementation science, PBR, practice-based evidence, etc., they were not included in the review. Further, studies involving program evaluation, quality assurance, codesign, participatory action research, and quality improvement were not captured in this search.

The earliest study included in the present review was from 2010, suggesting that prior practice-based evidence that did not reference a knowledge-to-action framework may not have been represented. In the field of speech-language pathology, practice-based evidence has a long tradition (Wambaugh, 2007). For example, Mecrow and colleagues (2010), who are clinicians and researchers, partnered to collect evidence for a speech and language program in schools, but their article did not describe a partnership or identify a knowledge-translation approach and therefore was not captured in the search. Because earlier practice-based evidence would align most closely with capturing practice in our model, our finding that capturing practice was the most prevalent design is accurate but possibly underestimated. An additional

limitation includes a lack of calculated interrater reliability during the article extraction. A small portion of the articles were read by all authors to confirm accurate extraction. However, further research may consider a more rigorous review, such as a systematic review, to examine PBR partnerships with a reliability coder to add strength to the data extraction.

Conclusion

The goal of the current scoping review was to examine published research broadly consistent with a PBR approach in the field of speech-language pathology. PBR involves intentional collaboration between researchers and clinicians (Epstein, 2002), and represents the pull from practice whereby knowledge is created in a clinical context and this knowledge informs future clinical practice (Crooke & Olswang, 2015). This scoping review revealed that, to date, research in speech-language pathology involving partnerships between clinicians and researchers using a PBR framework is emerging. However, inconsistencies in the terminology to define this type of research were noted. The PBR cocreation model was developed to describe the range of research questions that can be addressed using this approach. Clinicians and researchers are encouraged to determine the desired outcome (i.e., creating practice, capturing current practice, or changing practice) to establish the mutual goal of the partnership. The introduction of this model for clinical–research partnership can initiate conversations between clinicians and researchers interested in engaging in this type of research, bring new terminology to those doing this type of work, and in doing so, help connect those engaging in partnerships. Developing a community for those engaged in this work will create new knowledge surrounding the best ways to build successful PBR partnerships. Clinicians and researchers alike can use the model to define the goal of their research, align themselves with others using similar methods, and encourage use of PBR to mitigate the gap between research and practice.

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