RESEARCH REPORT

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The perspectives of Australian speech pathologists in providing evidence-based practices to children with autism

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Abstract

Background: Bridging the research–practice gap in autism communication services is an identified priority for improving services. Limited research has investigated the views of practitioners regarding this research–practice gap. Investigation of the barriers experienced and facilitators used in clinical practice may assist to identify scalable and sustainable strategies to increase use of evidence-based practices (EBPs) in the delivery of communication services to children with autism.

Aims: To elucidate how Australian speech pathologists engage with external evidence and how communication outcomes are measured to demonstrate the effectiveness of service provision to children with autism.

Methods & Procedures: A total of 15 Australian speech pathologists, with experience ranging from less than 1 to more than 16 years, participated in three focus groups. Data from focus groups were analysed using reflexive thematic analysis within an interpretive phenomenological paradigm.

Outcomes & Results: Seven themes were identified. Participants reported on the diversity of individuals with autism, their experiences of resource constraints, seeking collegial advice and accessing a diverse range of evidence sources, the role of clinical expertise in translating evidence to practice, the barriers experienced in outcome measurement and use of stakeholders to facilitate data collection to demonstrate outcomes.

Conclusions & Implications: Individual practitioner skill and beliefs are facilitators to translating research to practice. Interventions to improve clinician use of EBP should address the skill and belief barriers, aiming to increase a clinician's EBP self-efficacy and increasing their expectation that investing in EBP activities will result in improved services for children with autism. Modelling and reflective practice are two strategies that may have an application as interventions to improve EBP use in clinical practice.

What this paper adds

What is already known on the subject

- Constrained resources, especially lack of time, is a barrier to routine uptake of best available evidence in clinical services for children with autism.

What this paper adds to existing knowledge

- In this study, the perception that speech pathologists lacked time to engage in EBP activities was linked with the speech pathologist's research skill and their beliefs about the benefits of engaging in EBP. Speech Pathologists reported using a range of information sources, as "evidence" but also reported feeling uneasy when using evidence of disputable, or unknown quality. Accessibility and relevance to their individual client were highly prioritised in selecting evidence. Clinical expertise was an essential skill for research translation.

What are the potential or actual clinical implications of this work?

- Interventions which target professional beliefs and research translation capability are requisite for motivating speech pathologists to improve their use of EBP.
- Modelling of EBP use, individual reflective practice and collegial active listening to facilitate reflective practice, might be useful strategies which target beliefs and capability of individual speech pathologists; thereby changing their EBP use.

INTRODUCTION

Quality and effective autism services

Evidence-based practice (EBP) is the integration of the best available external research evidence, perspectives and values of clients, clinical expertise and the external clinic context (Figure 1) (Satterfield et al., 2009). There are international, interdisciplinary, collaborative efforts to ensure that services for people with disability are evidence based (Locke et al., 2017; Robinson et al., 2020). This research is focused on EBP for children with autism.[1]

Several influential movements are operating concurrently to improve use of EBP in services provided to children with disability, including autistic children. First, there are mandates underpinned by legislation and government funding to ensure that therapeutic services provided to autistic children are empirically supported (Locke et al.,

2017; National Disability Insurance Agency, 2021). Some of this research has been conducted within an implementation science domain, a field which aims to achieve systematic uptake of research findings and other EBPs into routine practice to improve the quality and effectiveness of health services and care (Eccles & Mittman, 2006). Second, 'social validity', that is, the views of people with autism and their families regarding the services that they receive, is receiving increasing prominence in the media and in research. Social validity centralizes the rights of the child with autism (Trembath et al., 2021) and facilitates translation of research to practice (Callahan et al., 2016). Third, there is a proliferation of research focused on research translation. Research focused on barriers and facilitators to EBP use in autism services has identified that lack of resources, time and skill to apply evidence-based interventions (Cheung et al., 2012; Locke et al., 2017) and the interventionist's perception, attitude and expectations of
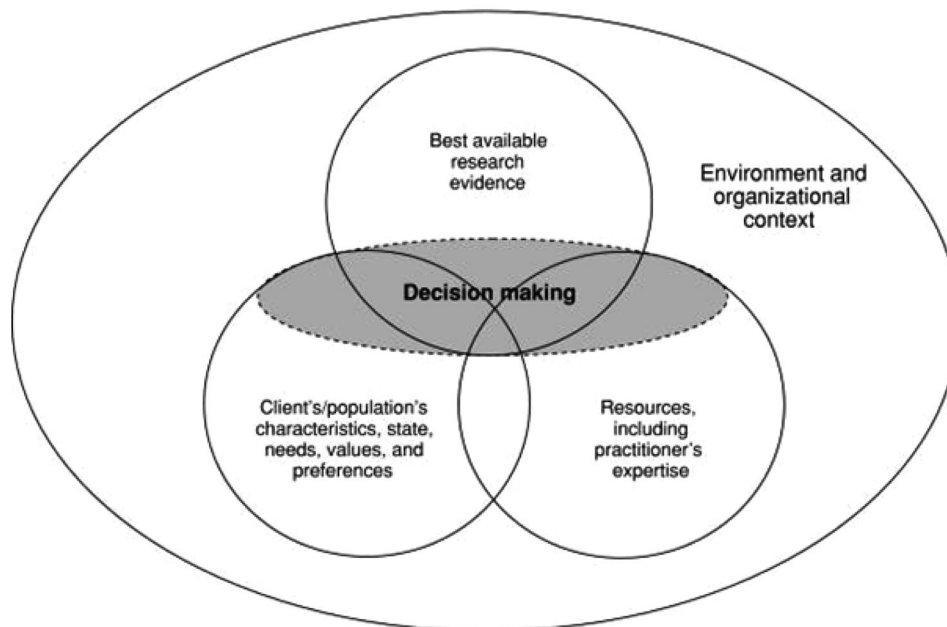
FIGURE 1 Our revised evidence-based practice (EBP) model
Source: Satterfield et al. (2009), reproduced with permission.

evidence (Lushin et al., 2020) are all barriers to EBP use. Research into facilitators for EBP indicate that provision of resources and training are insufficient: barriers internal to the interventionist must also be addressed to improve EBP use (Kisbu-Sakarya & Doenyas, 2021; Lushin et al., 2020).

Unique contributions to EBP

Each of these factors drives EBP uptake uniquely. Implementation science researchers aim to increase the uptake of researched interventions by clinicians (Eccles & Mittman, 2006). This contribution focuses the attention of EBP on research–evidence use. Autistic children and their families, however, emphasize the need for their child to be understood as an individual and they value the personal qualities of their therapist. These are higher priorities than receiving a researched-based treatment (Auert et al., 2012). Therefore, autistic children and their families focus their attention on the individual child and the therapeutic alliance. The construction of EBP by the clinician providing care may focus attention on research evidence, their understanding of the individual, their own clinical expertise or may integrate all components equally (Figure 1).

EBP service delivery is a construct encompassing both therapy and the evaluation of therapy outcomes in an iterative cycle. Therapy outcome measures are a vital indicator of effective service delivery. Clinicians and researchers preferentially measure service effectiveness through impairment-based outcomes (i.e., normative measures of social interaction, speech). Parents and autistic persons, however, prefer quality of life outcome measures, such as 'happiness' (McConachie et al., 2015). In a clinical scenario where quality of life may be improved from the perspective of the autistic person but a research-based intervention resulting in improved communication skill was not used, has quality and effective care been provided? This question elicits different perspectives amongst stakeholders. Pragmatically, however, the interventionist is critical for the ongoing development of effective practice. Interventionists, that is, those who provide therapy, are the EBP decision-makers for the autistic child and implementation research recognizes that barriers internal to the interventionist impede EBP use (Locke et al., 2017).

The clinician is the decision-maker for communication services in Australia

Perhaps surprisingly, given their role in EBP decision-making and evaluation, scant research has been conducted from the perspective of the clinical speech pathologist (interventionist), using the theoretical approaches of implementation science (Barker et al., 2019), and no research investigating EBP use by the clinical speech pathologist providing autism services using these approaches. The benefit of applying theories and
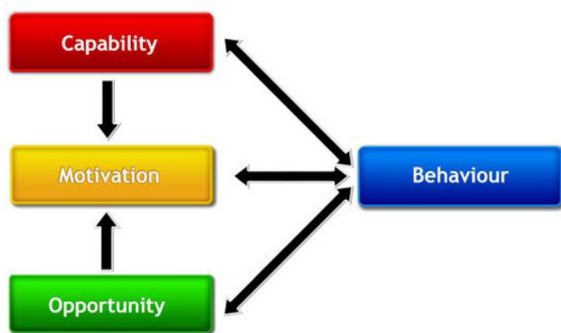
FIGURE 2 The COM-B system [Colour figure can be viewed at wileyonlinelibrary.com]
Source: Michie et al. (2011), reproduced with permission.

approaches from implementation science when investigating clinical practice is that it provides a lens through which to understand behaviour regulation and behaviour change (Atkins et al., 2017). Changing practice requires behaviour change (Atkins et al., 2017; Michie et al., 2011). For example, a study of EBP amongst speech pathologists reported that online EBP resources were available to clinicians, yet clinicians still reported limited access to online sources of EBP (Greenwell & Walsh, 2021). Similarly, providing autism intervention training to teachers did not result in uniform uptake of the trained interventions, leading authors to conclude: 'half the battle [...] may be won by understanding and modifying the teacher's perception' of the situation (Lushin et al., 2020, p. 10). Research that uses behaviour-change models may assist researchers to identify facilitators that improve the *use* of EBP.

Understanding the factors internal to the speech pathologist that drive EBP

The Theoretical Domains Framework (TDF) can be used by practitioners, as well as researchers, to understand and solve problems in translating research at the level of the individual; however, health professionals have previously reported that lack of time, resources and expertise are barriers to using the TDF (Atkins et al., 2017). In a guide that offers practical guidance to using the TDF, it is mapped onto a model of behaviour: the COM-B system (Atkins et al., 2017). The COM-B system has links to clear behaviour change interventions, as depicted in the Behaviour Change Wheel (Michie et al., 2011).

In the COM-B system, the components *Capability*, *Opportunity* and *Motivation* interact to generate *Behaviour* which in turn influences these components (Figure 2).

Capability is the individual's psychological and physical capacity to engage in the target behaviour, including their knowledge and skills. In EBP, this may mean an individual's clinical expertise and research skills. *Motivation* is defined as the brain processes that energize and direct behaviour. It includes habitual processes, emotional responding as well as analytical decision-making. *Opportunity* encompasses all the factors that lie outside the individual that make the behaviour possible, or prompt it to occur (Michie et al., 2011). Many organization-level facilitators such as in-house professional development, mentoring and access to evidence represent *Opportunity*-level facilitators. Although speech pathologists providing autism services reported barriers to EBP use irrespective of workplace setting (Cheung et al., 2012), the identification of facilitators across different workplace contexts, using an implementation science lens, may provide additional insights into EBP use.

The influence of external context in EBP

The vast majority of EBP translational research in autism has been conducted in education settings (Hugh et al., 2021; Trembath et al., 2019). Significantly, however, autism services are more often provided at a private clinic or in a child's home in many countries, rather than in a school setting (Gillon et al., 2017). Telehealth, clinic-based and mobile services are frequently provided by speech pathologists who are geographically diffused. The EBP infrastructure and resources in these contexts are unlikely to be matched by large government organizations, such as schools, and therefore the *Capability* and *Opportunity* factors that enable EBP behaviours may also differ. Researcher–community partnerships occur more frequently in education settings, relative to other workplace settings, and are nearly always supported by grant funding (Brookman-Frazee et al., 2016). Practically it is unsurprising that large, centralized organizations attract a higher proportion of researcher–community partnerships and associated funding: community partnerships are complicated when clinicians are spread diffusely across geographical locations (Brookman-Frazee et al., 2020). Clinicians working as sole-traders or in small business may also lack the workforce required to operate collaboratively with universities as a research translation centre (Robinson et al., 2020). Therefore, if the *Opportunities* for EBP engagement are variable across contexts and less prevalent in small clinics and mobile therapy services, research efforts should canvass the experiences of autism interventionists working in such services to identify facilitators for increasing their EBP use.

Aims

The aims of this research are to explore, from the perspective of Australian speech pathologists who serve children with autism, how best available research evidence is used in clinical practice and how client outcomes are measured to demonstrate effective, EBPs. This paper focuses exclusively on the views of speech pathologists, who are a significant implementer of autism services in Australia. In Australia, the dominant service model for speech pathologists, and many other health professionals, is private, clinic-based therapy, at a dosage of less than 1 h per week, delivered in a one-on-one format (Sandham et al., 2021; Taylor et al., 2016). This research focuses on individual practitioners working in the non-government and private sector and seeks to identify what individual-level practitioner strategies are currently used by clinical speech pathologists. It is hypothesized that the experiences of speech pathologists, including the *Opportunities* available for EBP activities, may differ from those described in organizations (Trembath et al., 2019; Wilkinson et al., 2016). No a priori hypotheses were made regarding *Motivation* and *Capability* influences on behaviour of participants as they engaged in EBP.

This model of EBP by Satterfield et al. (2009) depicts EBP as a systematic decision-making process which involves reconciling many, sometimes conflicting, variables.

The shaded area in the model depicts the place where EBP is constructed by the clinician. Far left represents bias towards the preferences of the client, to the neglect of evidence and practitioner expertise. Far right depicts complete reliance on clinician expertise without consideration of evidence or client views.

Importantly, the ability to retain information, focus attention selectively on relevant factors and choose between two or more alternatives is a cognitive process, and represents a domain in the TDF (Atkins et al., 2017).

Therefore, EBP, in clinical practice, is a dynamic construct amenable to behaviour change.

METHOD

Ethical approval

This study formed part of a larger project that explored the perspectives of clinical speech pathologists providing communication services to children with children with autism. Ethical approval for the study was obtained from The University of Queensland Low and Negligible Risk Ethics Sub-Committee Approval Number 2018000612.

Sampling procedures

Speech pathologists who reported working clinically in Australia with children with Autism Spectrum Disorder (ASD) were recruited via convenience sampling. This included participants across Australia who indicated an interest in participating in future research during a previous study (Sandham et al., 2021) and clinical speech pathologists identified from the first author's professional networks, working in Queensland, Australia. A total of 15 clinical speech pathologists who provided services in Australia participated in this study. Demographic information pertaining to years of experience and qualifications were collected to inform transferability, given that there may be differences in evidence use that correlate with years since graduation and qualification level (Klaic et al., 2019) (see also Supplementary file 1 in the additional supporting information).

Focus groups

The focus group method of data collection was selected as it allowed participants to provide in-depth responses, enabling a description of the phenomena of evidence and outcome measurement use. It also provided multilayered data where participants could build on others' comments to offer confirmation, disagreement of the stated view or offer their interpretation. Three focus groups, each of four to six participants, were conducted across April–May 2019. This group size is recommended to retain the small-group intimacy that allows disclosure (Krueger & Casey, 2015; Terry et al., 2017). Disclosure was a particularly important consideration, as clinicians' use of EBP may not reflect their knowledge, and may therefore be a sensitive topic (Sandham et al., 2021). The groups were conducted via Zoom videoconferencing or in face-to-face mode, according to participant location and preference. Duration ranged from 52 to 78 min. Group video-recordings were transcribed verbatim for analysis by the primary author. The focus group followed procedures outlined by Krueger and Casey (2015): overview, sequenced questions, follow-up questions and summary. The aim of the overview was to develop a shared understanding of evidence and outcome measurement, prior to questioning and included definitions for EBP, external evidence and outcome measures. Additional information on the extant autism research, including current practices in speech pathology, were also provided to direct participants to specific topics on engaging with evidence and how and why outcomes are measured (see Supplementary file 2 in the additional supporting information for the overview and questions).[2] A

summary of the discussion was provided to participants and a request was made for corrections and additions. Each group confirmed the accuracy of the summary as a means of participant validation.

Approach to data analysis

Interpretive phenomenology was used as the paradigm for analysis (Eatough & Smith, 2017). Phenomenology enabled the researchers to describe the participants' experiences of using evidence and outcome measures in clinical practice. An interpretive, rather than descriptive, phenomenological approach provided the framework to explain how and why participants make decisions about service delivery.

The analytical method applied to the data was reflexive thematic analysis, with a semantic and inductive approach to coding (Terry et al., 2017). This analysis method was appropriate given the first author has worked clinically with children with autism for 8 years, and the second and third authors hold significant experience in both clinical speech pathology practice and research. Reflexive thematic analysis recognizes the role of the researchers in developing themes and acknowledges that researchers' prior experiences can be a strength in research analysis (Terry et al., 2017). In this study, the lead author's experiences of EBP in service delivery for children with ASD were considered to contribute credibility to data interpretation (Lyons & McAllister, 2019). An inductive (i.e., data-driven) semantic approach to thematic analysis, as opposed to a deductive (i.e., theory-driven) approach, was necessary due the scant literature on this research topic (Terry et al., 2017).

Data analysis procedures

The phases for reflexive thematic analysis adhered to guidelines provided by Braun et al. (2019). Dependability was achieved by having two researchers independently complete data familiarization and coding. Independent analysis by each researcher mitigated possible erroneous coding, where the clinical or research experiences of the authors unduly influenced results, in violation of the inductive approach to analysis (Terry et al., 2017). However, independence in analysis risks production of two discrepant set of codes. This risk was mitigated by meetings between the two researchers before and after the data familiarization (phase 1) and the coding (phase 2) analyses. At times, differences in coding arose and were readily resolved by discussion between the first two authors. Any lack of agreement in coding was highlighted and discussed with the third author. Mutual understanding of the research aims and concepts in data provided the basis for

the two independent analyses to be capable of convergence at the stage of defining and naming themes.

The third author did not partake in these discussions and therefore was able to provide peer scrutiny, reading transcripts and checking codes for external credibility, without detailed background knowledge of phases 1 and 2. All authors met together for discussion at seminal phases of analysis. Collaborative research team discussions were a means of transparency and allowed for reflexive, collective decision-making about codes, themes and reporting of results.

The final phase of reflexive thematic analysis, the reporting, aimed to increase transferability. Thick description, through inclusion of participant quotations, positions the reader to contextualize the results in relation to their own service context (Lyons & McAllister, 2019). The authors' attention to negative case examples, that is, statements by participants which contrasted with candidate themes, were reviewed and revisions to themes were made accordingly. This ensured themes were consistent with views expressed by all participants. Through meetings, researchers discussed the extant literature and the theoretical framing of the results. The authors kept all documents used in thematic analysis, including meeting minutes, as a traceable decision trail, ensuring dependability of the thematic analysis undertaken.

RESULTS

Seven themes were identified from participant data.

Theme 1: Children with autism are a diverse group

Participants referred to and described children with autism with whom they had worked. P4 stated, 'we usually have a client in mind [when accessing evidence] so you're following the client rather than following the information'. Participant views were grounded in their experience of the therapeutic relationship between themselves and the individual child(ren) with autism on their caseload. Participants frequently referred to children with autism as being diverse and variable, which they linked to complexity and challenges in providing care. Diversity was a challenge when reading research (P3), providing evidence-based therapy (P1) and measuring outcomes (P10, P14):

> P3: No two children with autism are the same so you can read an article about communication evidence-based therapy for children with autism but because they all present so

differently it's hard [...] no one article is going to cover it all.

P1: I think the population, even the one child, is not stable and then you can have a really good session 1 week and then the next week umm you wonder if it's the same [...] therapy in some ways even though the evidence base said we should do this, go down this path, sometimes it's not possible.

P10: What's a functional change for one child will be very different for someone else.

P14: So functional goals become something that's actually really complex and not as simple as they look on the surface. There's a lot of thought that has to go into it beforehand because as you said every client is different. Every setting is different, and every teacher is different, every parent's different and it all has to come together.

Theme 2: Resources influence why evidence is accessed

Participants reported that when engaging with external evidence, resource barriers were commonplace. They reported a desire to keep up to date with research but 'clients [...] take priority' (P10) over reading research.

P15: I find its quite sometimes frustrating cause the desire to umm want to keep up with the latest research and stuff is there but it's so much harder I think when you're in private practice umm and you've got so many other things going on [...].

P13: I'd have to agree with that, that's probably my biggest hurdle. Umm, not lacking in desire to read the stuff but I'm flat out keeping up with everything.

Participants did report accessing external evidence to find information specific to an individual client, when it became necessary for client care. P1 relayed that her impetus for attending a seminar was that she was struggling to

deliver services to the children with severe autism. P2 and P3, however, reported accessing evidence to glean therapy principles.

P13: And I like to think about principles rather than rules like, what's the principle behind what this person's been researching? What can I get from this that I haven't considered previously?

Theme 3: Internal and external barriers influence access to evidence

Participants reported barriers of time and money as influencing what sources of evidence were accessed. The barriers to reading journal articles were significant: financial cost of the article, time costs involved with database searching and time spent reading.

P8: So I don't, I don't buy them [have very often. They're very expensive. I find it is—it becomes a commitment of time as well as funds and sometimes if you've made the decision to do it sometimes you look at the article [...] then you've just kind of gone oh well, I've spent my time reading it but I haven't actually gleaned anything for me clinically and how it's going to impact my practice.

Resource limitations drove the process of accessing evidence. Time featured as a barrier to accessing evidence, but participants' descriptions revealed under-confidence with literature searching skills being linked to the barrier of time. The discussion that unfolded between participants demonstrates the interrelationships between these concepts:

P2: That scares me. If I do a search and I get 2000 articles I'm like oh it is a bit overwhelming. Is there some way it can be categorised easier to find things quicker or something? I don't know.

P3: I guess in a way it kind of reinforces what we said before about how it's difficult to find time to do that search.

P4: And then it comes back to thinking. You'd be always thinking, have I put the right search parameters in?

P3: Is there a better article out there that I haven't found?

The conversation above demonstrates that lack of self-efficacy in undertaking literature searching is linked to the perception of insufficient time to complete these tasks. Participants spoke highly of workshops, webinars and conferences, despite the monetary cost and the time commitment to attend. P14 reported enjoying workshops because time was quarantined for learning:

P14: all four of us enjoy going to a workshop because with a workshop you actually leave the clinic [...] you're not getting pulled in all these different directions.

P4, however, reported that the benefit lay in the information being provided rather than independent accessing of research literature (i.e., journals).

P4: Time prohibits us reading journal articles as well as access. So I think we like the webinars and so on where the information's already been brought to us.

Theme 4: Human resources facilitate access to evidence/the quality of 'evidence' is variable

Numerous enablers to accessing evidence were reported. As above, workshops were time-savers, open-access articles were free of charge, and the professional association provided some free content to members. The enabler which was very frequently reported, however, was to seek expertise from a secondary (human) source. The benefits included being free of charge, time saving and easier to learn from, that is, potentially bridging the gap between the research evidence and the participants' research skills or personal capacity. Third-party sources varied widely, from research teams to social media.

P7: [Our in-house research team] give little updates [...] so we don't have to go and read maybe the whole article so yeah, our in-house research team, we get a lot from them as well.

P2: And I don't like to admit it but [...] scrolling through Facebook [...] the big American guys or the big companies who do their sponsors, their sponsored ads, and I find

myself sometimes going oh following that link [...] that's my confession.

P3 continuing on from P2's comment:

P3: On that note [...] Instagram I follow quite a few umm speech pathologists on there that I've just found and they are often posting ideas.

P2's unease about the sources of evidence she uses, in stating, 'that's my confession', implied concerns about the quality of the evidence she accessed, which were repeated by many other participants (see P7 below). However, unease was not universal; for example, P1 stated, '[resource] books—they have all the blurb about the evidence base', which was sufficient in her view.

P7: I sometimes find it difficult to interpret for myself the quality of that research and maybe the program seems to works really well on a practical level but you're not exactly sure whether the research behind it is quality research, I guess.

Comments reflecting unease were stated frankly. They were not bracketed by justification for evidence used or need for future improvement in seeking quality sources; rather statements indicated acceptance of an imperfect reality. Proceeding comments by other participants supported this stance, by continuing the conversation with their own experience rather than displaying empathy over encountering barriers or suggesting solutions for improved evidence access. For example, P3's comments about Instagram (above) were a follow-up remark to P2's disclosure about Facebook. Whilst participants made comments in support of EBP, within the frank discussion regarding helpful information/evidence sources, some remarks were made that nuanced their support of the *Research Evidence* component of EBP:

P12: I don't find it [research] particularly applicable usually. If I found it of great value, I would probably do it a whole lot more.

Online evidence sources, such as social media sites, made speech pathology trade knowledge easily accessible to participants. Clinical expertise was also sought through mentoring relationships and advice from colleagues. One benefit reported to arise from these relationships was the time saved in being directed to helpful sources of evidence

rather than searching independently for evidence. In some cases participants reported colleagues who did the work of engaging with the evidence *and* translating it for them, as if gaining EBP by proxy.

> P5: Working with [colleague's name], I'll say, oh I'm not familiar on that, and she'll say oh ok well it's about this principle, she'll show me the therapy in session and she'll say, ok go read this article and then it's much more again, user friendly to see it happen in real life. I might go and present a case from another clinician and say this is what I'm seeing in the session how can I treat this and they might say well you can do x y z because the evidence says so and here's an article that you can go and read to support that if you want […] it's also saved me going through 2000 articles […] so I'd be going to another clinician probably before I'd be going to a search.

Although P5 states that she has been referred to the primary research, this was not always the case for participants:

> P10: I think colleagues can sometimes be quite useful but umm you do also wonder where they get their information from sometimes.

Not all sources of evidence were deemed by participants to be indisputably high-quality (see Supplementary file 3 in the additional supporting information for the list of sources described by clinicians).

Theme 5: Translation: It requires clinical expertise

Participants reported that seeing a therapy delivered in a context similar to their own facilitated translation. P5, who sourced evidence from a colleague, described that seeing how the therapy worked out in the clinic setting was 'user friendly'. In contrast, participants who reported reading original research described numerous barriers when attempting to replicate the therapy in their clinical setting. Some translation barriers included that the client was different from research participants, that the dosage/location of therapy was unable to be replicated and that the research outcome measures, which demonstrated efficacy, were not a valid measure of functional communication change for their client.

> P7: I also had a child on my caseload that's deaf and has ASD and so I guess those dual diagnoses as well umm often there might not be much out there that you know does this thing that normally works with just an ASD population. Does this work when you've got ASD and something else as well I think makes that confusing too.

> P8: The comment about it being research that isn't sometimes clinically translatable is very valid […] in private practice […] wanting to umm translate some [of] that research in that time but knowing you might have 30 or 45 min and not the required 2 h in their home.

These barriers represented replicability issues for the clinician in their context. One participant, P14, also commented on barriers internal to the speech pathologist, such as their identity as a clinician:

> P14: […] we're going to feel insecure and uncertain when we're reading something we have to also be questioning your part of that evidence-based triad it's not a pleasant thing to do […] you have to be quite […] quite […] robust to be able to do that yourself I think.

Participants also reported that there were still many gaps in the research, such as 'what's going to work with girls' with ASD (P9) or what assessments to use across the spectrum.

The primary facilitator for those who did engage in original research was to accept the limitations of the research, accept the resource limitations of their service context and make adjustments using clinical reasoning.

> P8: There is always limitations on what you can do practically day to day. Fact of life.

> P10: As well as like the way that as clinicians we do adapt treatments and we use our clinical judgement and things like that as well. I think it would be quite rare that you would use an approach *exactly* as it had been manualised or written every single time.

Clinical reasoning was the pragmatic means by which the gaps or conflicts between research and practice were addressed.

Theme 6: Practical, personal and child-specific barriers impede outcome measurement

Participants reported numerous barriers to outcome measurement. The diversity of the population, the lack of research to guide selection of functional outcome measures and resource constraints, such as 'the cost to the client' (P11), were cited as barriers. Barriers internal to the parent, the clinician and the child were also cited. For example:

> P12: [Parents] tell us what they think we [practitioners] want to hear.

> P14: If I'm [clinician] having a day where I feel like the world's imploding on me, I'm not going to get such good stuff [outcome data] out of my client.

> P13: There's sometimes sessions that are totally out of control [because of the child's behaviour]. And in those situations, you're not focusing on measuring what's going on, you're focusing on being able to actually get through and you know, diffuse the situation.

Despite many barriers, clarity around how to measure functional outcome measures for this diverse population was offered:

> P1: The child actually tells you [because they have an] awareness they've actually achieved something.

> P2: Unprompted communication attempt […] to me that have tick[ed] the box.

Theme 7: Stakeholders facilitate data collection

Parents and teachers were the primary data collectors referenced by participants. Most participants reported

challenges collaborating with stakeholders, including parents who lean towards passivity, placing sole responsibility on the therapist and being unable to establish communication with educators. A select few participants reported these barriers but viewed it as their responsibility as the therapist, to build successful collaborative relationships.

> P2: Some [parents] sit back and go you're the therapist you deal with it.

> P14: It's kind of our job to build relationships with those other stakeholders.

> P10: The teacher's in class, so we end up playing phone tag about 10 times before we get to have the a phone conversation. So that can make it more challenging […] but you still umm yeah get there. Make sure it happens.

Productive collaborative relationships were reported to result in a positive feedback loop. Parents and teachers provided data of the child communicating in their usual settings, which the therapist used to inform intervention and stakeholder education. The stakeholder education facilitated both therapy homework and frequent, reliable data collection by stakeholders.

> P3: Invested parents will like send us emails with videos during the week […] which obviously can make it easier to measure [outcomes].

> P2: The more we can demonstrate progress through using more functional outcome measures, the more parents seem to be on board because they get to see that change rather than just see a number on a piece of paper.

> P14: And I get them [parents] to actually tell it to me before the session and then I plan I plan my agenda based on what that feedback is.

The facilitators related to collecting valid, reliable data on the child's communication appeared to be contingent on effective stakeholder collaboration, given the resource limitations which constrain clinician-collected data across environmental contexts.

DISCUSSION

The aim of this study was to explore the perspectives of clinical speech pathologists in using evidence and measuring outcomes to demonstrate effective practices for children with autism. This research will preferentially refer to the COM-B system in discussing results, to assist clinician–readers to understand and apply behaviour change interventions in their own service. This research will also refer to domains of the TDF where fine-grained description of behaviour is required.

Summary of the findings

All participants reported that time and capability resources were a barrier to accessing evidence and that evidence translation was made more complex by 'no two children' being the same. 'Evidence' as a construct differed widely amongst participants: from peer-reviewed research, to evidence summaries, to any information/resource (i.e., podcasts, collegial advice). Participants linked the concepts of research capability, time expended and lack of positive reinforcement resulting from accessing peer-reviewed research in their statements about why they made decisions about accessing evidence. Some participants conveyed that their reduced research abilities resulted in being unable to locate articles in the time they had available. Others who were able to locate articles reported expending time reading an article but not gaining from that article information that would assist them clinically. In both scenarios, participants reported experiencing lack of positive reinforcement for their expended time and effort which reduced the likelihood of them seeking evidence from journals next time they were seeking information. Participants reported that they sometimes used irreputable sources of evidence because they were time-efficient and accessible. Additionally, preferred sources sometimes reduced the work undertaken by participants if clinical resources or information for clinical translation were included. Conversely, participants who undertook translation of peer-reviewed evidence reported the cognitive workload (i.e., clinical reasoning) to solve translation barriers and achieve replication in the clinic setting.

Data collection to measure outcomes was similarly constrained by resources, and therefore, data across communication environments were often collected by willing stakeholders, instead of clinicians. This method of data collection relied on intact stakeholder relationships and working stakeholder relationships were not universally established by participants.

Integration with previous research

Findings from this research correspond to previous reports that EBP activities are deprioritized due to reduced research skill, reduced time available and reduced perception by individuals that it is not valued relative to direct clinical services (Harding et al., 2014). Participants in this study reported a desire for easily accessible and immediately replicable evidence. Perceived accessibility, similarly to Greenwell and Walsh (2021), was influenced by a participant's research skill to digest articles and their clinical expertise to translate the research. Significantly, however, participants with adequate research skill to find and read research also reported being unable to glean information for clinical use. In this instance, it may be that important details in methods were omitted, such as the intervention materials used and where they could be accessed (Ludemann et al., 2017). Another barrier may have been that the clinician gained knowledge of an intervention but did not find it clinically useful due to a perceived poor fit for their client or work context (McNeill, 2019). The prevailing views of participants were therefore, that their experiences accessing evidence from research fell short of their needs and expectation, that is, to gain clinically relevant information. This made them less likely to attempt access to original research in the future.

Capability and opportunity

The COM-B system provides a useful framework for conceptualizing the barriers and facilitators that participants experienced in using EBP (Figure 2). As depicted in the COM-B system, *Capability* and *Opportunity* are components that interact. For example, EBP training represents an *Opportunity* which may increase clinician *Capability*. Provision of training in research translation is linked to improved use of evidence clinically, thus affecting clinician EBP *Behaviour*. Improved skill reduces the time required for EBP tasks, with time being a well-established barrier (Greenwell & Walsh, 2021). Clinicians have reported preferences for learning face to face in their own workplace (Trembath et al., 2019) and therefore, peer-mentoring might be used to train colleagues in research translation. Online resources are also continually expanding and offer education in relation to EBP and autism best practices. However, a key limitation identified by participants in this study is that some online resources are generic rather than translated to their clinical setting. The view that clinicians prefer to seek evidence from colleagues is better understood when considering that EBP by proxy is also gained when accessing

evidence from colleagues, compared with empirically based alternatives, a view shared by other autism interventionists (Trembath et al., 2019). Borrowing translation from colleagues may be a means of leveraging the clinical expertise or time for translation activities where either is lacking.

Motivation

The COM-B system centralizes motivation in its view of *Behaviour*. There were numerous barriers reported by participants in accessing research, translating research and measuring outcomes; yet some participants did report succeeding on these fronts. Terms used by these participants revealed motivation which stemmed from their perceived professional identity 'it's our job'. Such participants also revealed confidence in their beliefs about their capabilities 'we do adapt treatments and we use our clinical judgement' and their expectation of a positive outcome '[you] make sure it happens'. Equally, statements regarding participants' reduced motivation revealed their beliefs about the consequences of using research evidence 'we're going to feel insecure and uncertain when we're reading [research]'; and '[colleague have advice has] saved me going through 2000 articles'. Participants who reported barriers but not facilitators may know the value of EBP but such knowledge is insufficiently motivating to result in EBP use when it competes with the clinician's lack of capability or lack of motivation.

CLINICAL IMPLICATIONS AND FUTURE RESEARCH

Capability and opportunity

Future translation efforts by both the individual clinician and implementation researcher benefit from using a COM-B lens. First, *Opportunity* represents all factors which lie outside the individual that make the behaviour possible or prompt it (Michie et al., 2011). Examples include increased resources (i.e., time, money) for translation of research and assessment of outcomes or access to a colleague with research experience. Efforts by researchers or clinicians to increase the *Opportunities* available to clinicians are not guaranteed to be fruitful: they are by definition outside of the control of the individual clinician. Participants in this study spoke often of barriers to evidence use and outcome measurement; those who attempted to bridge the gap between research and practice viewed resource limitations as a 'fact of life'. Accepting that *Opportunities* (or

lack thereof) are uncontrollable may dispose individual clinicians to focus on their own *Capability* and *Motivation* when providing clinical services.

A clinician's *Capability* to undertake translation can certainly be improved: it is within their control to update their skills through independent learning modules on EBP and autism, such as through the Practice Portal (American Speech–Language–Hearing Association, n.d.) or AFIRM (National Professional Development Center, n.d.). However, the current study indicates that research capacity and knowledge of EBP is half the picture only; clinicians require *Motivation* to use learning resources and existing knowledge of best practice when making clinical decisions.

Targeting motivation

Motivation is a lever that must be explored to improve clinician EBP. Motivation has been linked to numerous constructs in the TDF, which were also identified by participants in this study, including emotions, professional identity, beliefs about capabilities, beliefs about consequences and reinforcement (Atkins, 2017). Designing an intervention to drive motivation at the individual practitioner level is a complex task, beyond the scope of this research. Active ingredients which might be considered include modelling, reflective practice and active listening. Modelling the use of EBP is a well-established intervention to improved professional competency in EBP (Michie et al., 2011; Trembath et al., 2019; Wilkinson et al., 2016), although its utility hinges on availability of colleagues with expertise to model. Reflective practice is also a well-established intervention and has the added facilitator of being an independent exercise (Galbraith et al., 2017; Skeat & Roddam, 2010). It does, however, require the clinician to undertake honest evaluation of their behaviour, including identification of their shortfalls (Skeat & Roddam, 2010). In this study, P14 reported 'you have to be […] robust' to reflect on your own beliefs and practices, and therefore, feelings of unease resulting from self-reflection may be a barrier to clinicians in using reflective practice. Notably, however, the majority of clinicians seek advice from other therapists, friends and relatives (Paynter et al., 2018). Future research may explore reflective practice, conducted using active listening within these trusted relationships, to motivate self-efficacy in EBP.

Limitations

The original purpose for the data was to support findings of a broader research program. The data collected in this

study was richer than anticipated and led the authors to the decision to analyse and report it in a stand-alone study. Therefore, the focus group questions were not constructed a priori within an implementation science framework; nor were they formulated as open-ended ethnographically situated questions might be. A second limitation is that a large number of participants were recruited from South East Queensland, Australia and therefore the transferability of results across Australia and more globally is unclear.

CONCLUSIONS

This study sought to determine the use of evidence and measuring outcomes in services to clients with autism, from the perspective of the clinical speech pathologist. It identified that an individual's *Capability* and *Motivation* influence the use of EBP. Peer modelling and reflective practice may have application to improve both clinician *Motivation* to use EBP and clinical *Capability*, and should be subjected to feasibility studies.

CONFLICT OF INTEREST
The authors report no declarations of interest. The authors alone are responsible for the content and writing of this article.

DATA AVAILABILITY STATEMENT
The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials. However, focus group transcript data are not publicly available as these data contained information that could compromise the privacy of the research participants.

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NOTES

[1] The authors acknowledge the flaws of labelling children. Participants in this study unanimously referred to children in their care as 'individuals', demonstrative of their view that each child in their care is a unique person. Participants used various terms to reference children with a diagnosis of autism spectrum disorder (ASD); however. the most common term used was 'child with autism', and therefore this paper was intentionally written with a variety of terms, with preference given to 'children with autism' to reflect the views of our participants.

[2] There is a dearth of outcome measures for children with ASD focused at the participation level, despite this outcome level being the priority of autistic children and their families. Participation-level measures require the measurement of the child in all communication contexts, that is, they require external validity. Stakeholders (i.e., parents) best able to measure this outcome for their autistic child are unable to assess communication objectively. Choosing what to measure, what tool to use and who will collect data is a complex decision (McConachie et al. 2015). This topic was probed by questions on 'functional' outcome measures in the focus group to elucidate current perspectives demonstrating gains in communication that were acceptable to the child and family (i.e., socially valid outcomes).

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