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Exploring the relationship between client perspectives, clinical expertise and research evidence

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Abstract

Purpose: This paper examines the relationship between components of evidence-based practice (clinical expertise, patient perspective and research evidence).

Method: Findings are examined from two research programs: the Better Communication Research Program and Child Talk, including exploratory studies of the views of parents and children regarding speech-language pathology and studies of current practice by SLPs in England. Systematic reviews of the research literature were also undertaken. The paper analyses relationships between outcomes valued by children and parents and those reported in the literature and in practice, parents' perspectives regarding intervention in comparison with clinicians' reports of practice and the extent to which research evidence underpins current practice is examined.

Result: Parents and children value functional outcomes and positive experiences; these are not routinely measured in research or practice. Therapy is perceived positively by most parents; however, some are ambivalent and less clear about the rationale. Commonly used interventions are supported by evidence, but there are gaps regarding some critical therapy components.

Conclusions The paper discusses four challenges to evidence-based practice: the consistency and clarity of descriptions of interventions; consensus based models of practice; understanding of the mechanisms of change; and, finally, the operationalization of client preferences within an evidence-based practice framework.

Keywords: *Evidence-based practice, clinical expertise, patient perspectives*

Introduction

The paper begins with three reflections on the relationship between client perspectives, clinical expertise and research evidence. The paper concludes with a discussion of four challenges to evidence-based practice: the consistency and clarity of descriptions of interventions; consensus based models of practice; understanding of the mechanisms by which an intervention leads to change and, finally, the operationalization of the preferences of clients within an evidence-based practice framework.

The seminal definition of evidence-based practice (EBP) provided by Sackett, Rosenberg, Muir Gray, Brian Haynes, and Scott Richardson (1996) has been well rehearsed in many articles about the nature of EBP. Authors have explored the nature of knowledge (Ryecroft-Malone, Seers, Titchen, Harvey, Kitson, & McCormack, 2004), the barriers to the implementation of EBP (McCurtin & Roddam, 2012) and ways to appraise the quality of research evidence (Greenhalgh, 1997). Sackett et al. saw EBP

(or, actually, evidence-based medicine) as the integration of systematic research evidence with clinical expertise in the light of patient preferences. Within speech-language pathology, Dollaghan (2007) has interpreted this as three elements of knowledge: knowledge gained through systematic research, knowledge gained through clinical practice and knowledge about client preferences—EBP3. Ryecroft-Malone et al. (2004) added a fourth component—local context—noting that practitioners must not only take account of client preferences in the application of research evidence, but also the local context, drawing on their knowledge of local policy and resources. The model in Figure 1 has become a familiar way of representing this view of EBP (see for example, Foster, Worrall, Rose, & O'Halloran, 2013).

The original premise behind EBP is that clinicians should base their practice decisions on systematic research evidence, since decisions made in the absence of research evidence are likely to be less

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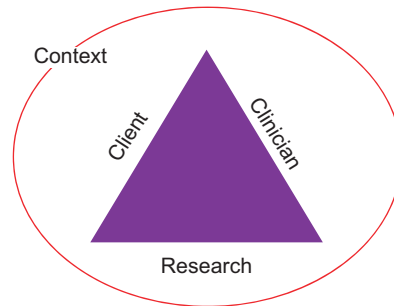
Evidence base practice - connections

Figure 1. Evidence-based practice.

robust, more variable and subject to individual practitioner bias and error. In order to facilitate this process, much emphasis has gone into supporting clinicians to access and appraise the research evidence. We have been taught how to define our clinical question, how to search databases and how to appraise studies; when the amount of research is overwhelming or inaccessible, researchers have provided systematic reviews comprising transparent and robust syntheses of high quality research. These reviews are readily available through database libraries such as the Cochrane library, the Campbell Collaboration and the Evidence for Policy and Practice Information and Co-ordinating Centre. Within the field of speech-language pathology, databases such as SpeechBITE (www.speechbite.com), the What Works database (www.thecommunicationtrust.org.uk/whatworks) and ASHA's evidence maps (http://ncepmaps.org/) provide more focused research for speech-language pathology clinicians who are attempting to identify research that is relevant to their clinical questions and to the client in front of them.

Despite this support, the process of EBP has met with a number of difficulties. McCurtin and Roddam (2012) discuss a wide range of these, including the contradictory nature of research evidence and lack of clear guidance that ensues, the mismatch between research priorities and clinical priorities, clinicians preference for knowledge sources other than research such as their colleagues' clinical experience and expertise, time pressures, research competencies and personal motivations, all of which impinge on the implementation of EBP. These abundant complications make it clear that the process of EBP is not at all straightforward. In response, a seven step process by which the research (or external) evidence is considered alongside clinical expertise and client preferences (sometimes referred to as "internal" evidence) has been proposed (Melnyk, Fineout-Overholt, Stillwell, & Williamson, 2010; Stetler, 2003). This process highlights the points at which the knowledge gained from our clinical experience and about our clients' preferences should be integrated. However, in the field of speech-language pathology, there has been relatively little research on

clinical practice and expertise or on client perspectives and even less on the process of how clinicians integrate the various components within clinical decision-making. The assumption is that, if clinicians can be taught how to identify and appraise research evidence, then they will know how to use it. This process of knowledge integration and of shared decision-making remains part of the implicit knowledge of the profession that is hardest to observe, explain and replicate.

Data are available from two recent programs of research in the UK which allow us some degree of reflection on evidence-based practice and how the various elements of EBP relate to each other. This paper will present three reflections on data from the Better Communication Research Program (Dockrell, Lindsay, Law, & Roulstone, 2014) and from Child Talk (Roulstone, Marshall, Powell, Goldbart, Wren, Coad, et al., unpublished). From these reflections, this paper argues that there are four challenges that need to be addressed to ensure that EBP can be successfully implemented. First, though, it is necessary to describe briefly the two research programs from which data are drawn.

The Better Communication Research Program

The Better Communication Research Program (BCRP) (http://www2.warwick.ac.uk/fac/soc/cedar/better) was commissioned by the UK government in response to a national review of services for children and young people with speech, language and communication needs (SLCN) (Bercow, 2008). Led by Professors Geoff Lindsay, Julie Dockrell, James Law and the author of this paper, the research program ran from 2009–2012 (Dockrell et al., 2014) and has published 10 technical project reports, four themed discussion reports and a main report summarizing the overarching recommendations (https://www.gov.uk/government/collections/better-communication-research-program) along with interim reports and a number of research papers. Data in this paper will be drawn from the following projects: investigations of interventions that are offered to children with SLCN (Roulstone, Wren Bakapoulou, & Lindsay, 2012b),

systematic reviews of the literature on what works for children with SLCN (Law et al., 2012) and explorations of the perspectives of children and of parents regarding outcomes that they value (Roulstone, Coad, Ayre, Hambley, & Lindsay, 2012a).

Child Talk: Developing an evidence-based framework of interventions for pre-school children with primary speech and language impairments

Child Talk (www.speech-therapy.org.uk/projects/child-talk) is a research program that was funded by the National Institute of Health Research in the UK with a large multidisciplinary team, led by the current author. It focused on developing an evidence-based framework of interventions for pre-school children with primary speech and language impairments (PSLI). It ran for 3 years, 2011–2014. Data in this paper are drawn from qualitative investigations of speech-language pathologists' (SLP) interventions with these children, interviews and focus groups with parents and finally a systematic review of the evidence underpinning interventions. At the time of submitting this article, the report has been presented to the funding body and papers are in press.

Within the context of this paper, all those who are qualified professionals in speech-language pathology are regarded as clinical experts. However, expertise is a continuum with a number of possible dimensions (Collins & Evans, 2007). Within the field of speech-language pathology clearly there are degrees of expertise, but, within the context of our interaction with patients, any qualified SLP is acting as a clinical expert relative to their clients (who clearly have expertise of their own and about their own condition that is different to that of the clinician). Thus, from a within-profession perspective, the clinicians who took part in the two research programs had varying degrees of expertise, but have a particular expertise in speech-language pathology relative to the lay public.

The relationship between client perspectives on outcomes, clinical practice and research

This first analysis reflects on the outcomes that parents and children value and asks how far these outcomes match the ones that are measured in research and in practice. Evidence-based practice requires us to take account of our clients' preferences. We, therefore, need to be sure that the interventions that we have available can deliver outcomes that our clients (in this case, parents and children) regard as important and relevant.

Within the BCRP, two qualitative studies explored the perspectives of parents and of children regarding outcomes that they value (Roulstone et al., 2012a).

Within focus groups, parents were asked to identify the highlights of their child's life and development to date. Rather than asking directly about their preferred outcomes, this approach encouraged parents to identify those moments in their child's life, particularly related to the child's communication, that had made them excited or proud, made them smile or happy. A second study took a similar approach with the children, in this case using arts-based workshops. The children were asked to identify positive aspects of their lives, for example, through describing what a good day in school would look like and then identifying features that could be better. From the discussions around these tasks, the studies then extrapolate potential outcomes that could be considered of value to the children and parents.

The themes identified from the parent groups and the children's workshops are summarized in Table I. Roulstone et al. (2012a) found that parents talked about their children's communication skills in relation to other life skills that might be achieved if the child's communication was improved, for example, that if the child's communication skills improved they might be able to buy their own sweets or challenge a shop assistant when not given the right change. With improvement in this underpinning skill, the parents saw the possibility of social inclusion and increasing independence, two overarching functional outcomes that parents valued. The theme of social inclusion covered aspects of the child's life such as making friends, belonging and interacting with their peer group and acceptance on the part of the child's peer group. The theme of independence included aspects such as academic achievement, literacy and numeracy in as far as these enabled their child to function more independently, for example, to be able to read signs, to tell the time, to handle money. Themes emerging from the children's workshops suggested that the children placed a high value on having fun and on their achievements, particularly those outside their school life, for example horse riding or singing. They did include aspects of school life such as sport, reading and maths. However, the children rarely spoke about aspects of their communication or about their school targets unless specifi-

Table I. Potential outcome domains for parents and for children with speech, language and communication needs.

Parents	Children
Communication underpins life skills	It's not all negative
	My life
	Fun
	My achievements,
	People who support
Key outcomes include:	Room for improvement
Social inclusion	Others' behaviours
Independence	My feelings
	My abilities
Other people's behaviours	

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cally prompted to do so. Thus, parents value changes in their child's communication that lead to functional changes for the child. For children similarly, the focus is not on talking *per se*, but on other aspects of their life that they enjoy and value. If we are to deliver interventions that parents and children value, we must, therefore, understand whether or not the interventions deliver the outcomes that are relevant, meaningful and valuable. For example, how far do interventions enable children to have more fun, make friends, be included, be independent and so on.

In interviews with speech and language therapists working in England (Roulstone et al., 2012b), participants were asked about interventions they used in everyday practice and what they hoped to achieve with those interventions. As well as speech and language domains such as vocabulary, sentence structure and comprehension, participants also mentioned outcomes such as access to the curriculum, self-esteem, social skills, independence, inclusion and relationships. Thus, these SLPs appeared to target those same outcomes that were of value to parents and to some extent those valued by the children. However, when asked how they evaluated the outcomes of interventions, this was typically only being carried out in relation to individual children; it was rare that data were being collated at a multi-child level. So, typically clinicians did not have access to local data that evidenced any particular outcomes of their interventions. This also suggests that aggregated clinical evidence about outcomes of value to parents and children is not being accumulated.

If we examine the outcomes that are typically measured in research studies, it is clear that evidence that links our interventions to social outcomes such as inclusion and independence is not yet available. For example, of the 33 trials included in the systematic review conducted by Law et al. (2003), only four included outcomes other than speech and language outcomes. With so few studies covering these broader outcomes, it is not possible to evidence a link between changes in the child's speech and language and any broader impact on the child's social functioning. Similar pictures emerge from other reviews of intervention literature (Pennington, Goldbart, & Marshall, 2003; Pickstone, Goldbart, Marshall, Rees, & Roulstone, 2009). By necessity, studies in these reviews are identified by their use of speech and language outcome measures. However, only a minority of studies in each case include broader social and functional outcomes. This means that we do not have research evidence to show that our interventions result in the outcomes valued by parents. Research has repeatedly suggested that children with speech and language impairments are at increased risk of poor social outcomes such as isolation and unemployment later in life (Beitchman et al., 2001; Clegg et al., 2005); however, we do not yet know that interventions prevent these longer term negative outcomes.

Reports of clinical practice and the perspectives of parents and children

This second reflection explores how far the experiences of parents who have accessed intervention reflect the purposes of clinicians who deliver interventions. As noted above, EBP requires us to take account of the preferences of our clients. An examination of how parents experience interventions may shed some light, not only on their preferences but, also, on how informed they feel about the interventions on offer.

This reflection focuses on qualitative data from the Child Talk program. A series of focus groups and interviews were conducted with SLPs and parents from six speech-language pathology services around England, recruited purposively to establish a sample of participants who had a wide range of experience of interventions for pre-school children with primary speech and language impairments. Clinicians and parents had not necessarily worked together so their descriptions of interventions are independent of each other. Clinicians were asked to talk about their interventions with pre-school children with primary speech and language impairments; they were asked to describe what they did in detail, avoiding brand names. Probe questions explored participants' underlying rationales for their choices of interventions and how interventions were varied to suit the individual children and families. Parents were asked to describe what had happened when they attended speech and language therapy sessions. Probes were used to explore parents' experiences and understanding of interventions and their views about the success of interventions. Focus groups and interviews were fully transcribed and analysed thematically as independent datasets before examining relationships between the two.

Analysis of the clinicians' data aimed to identify the main purposes of their work. Nine themes emerged and these are summarized in Table II. Analysis of the parents' data examined parents' experiences of intervention. This latter analysis is not described in this paper. A third analysis took each theme that was identified from the clinicians' data and examined the parent data to identify those occasions where parents and clinicians appeared to be talking about similar events or experiences. In boxes 1–7, a quote is provided from one of the clinician themes which typifies the identified purpose of the work. This is followed by illustrative quotes from the parents' data which show parents apparently describing experiences which mirror the clinicians' descriptions. As can be seen, there were times when the two accounts were very similar and the parent experience seems to mirror the intention of the clinician. For example, one of the nine themes emerging from the clinician data was "improving the child's speech". The quote in Box 1 is from one of the clinician participants as she talks about her interventions to improve a child's speech. The quote in Box 2 is from

Table II. Nine themes emerging from Child Talk focus groups with speech-language pathologists.

Title of theme	Brief definition
Adult understanding	Helping adults to understand the nature of a child's difficulties and the adult's role in supporting the child
Adult–child interaction	Establishing adult–child interactions that facilitate development in the child's speech and language
Foundation skills	Establishing skills that are precursors or underpin speech and language development
Comprehension	Improving the child's understanding of language
Expressive language	Improving the child's expressive language
Speech	Improving the child's speech
Self-monitoring	Supporting the development of the child's self-monitoring and metalinguistic skills
Generalization	Facilitating generalization of the child's speech and language skills
Functional communication	Enabling the child to communicate

a parent who clearly has had experience of the type of work that is described by the clinician.

Another similar example is shown in Boxes 3 and 4: in box 3, the clinician is describing interventions aimed at improving a child's expressive language; in box 4, a parent describes a very similar activity that she has experienced. In both of these instances, there is remarkable similarity between the parent and clinician description, where the parent has clearly understood the purpose of an intervention in similar terms to how a clinician has described it.

However, there were also examples where the intentions of clinicians were not so well reflected in the parent data. In Box 5, a clinician explains the importance of parents (or other adult carers) understanding the nature of the child's difficulties and the role that they can play in supporting the child. Participating clinicians described the work of explaining and demonstrating to parents and other adults. A quote from one parent shown in Box 6 suggests that, although she was shocked to discover the extent of her child's difficulties, she appreciated the work done by the clinician to provide an explanation. However, the parent whose quote appears in Box 7 has a somewhat different experience: her view of the value of the intervention seems negative; she cannot see the point of the activity. This parent does not seem to have challenged the clinician for further explanation, but accepts her own lack of understanding.

These data suggest that there are instances where the work carried out by clinicians is recognized and perceived as positive by parents. The descriptions given by some parents map closely onto clinicians' descriptions of the purpose of an intervention. However, this is not universally the experience for all parents. One of the major purposes of interventions described by clinicians is to help parents (and others involved in interventions) to understand the nature of their child's difficulty and to empower parents to take a role in therapy. Whilst some parents were very positive about the information and support they had received, others appeared more ambivalent, less clear about the purpose. Given the clinicians' expressed aim was to empower parents to take a role in intervention, it is worrying that some parents do not appear to have challenged or questioned the clinician, but accepted their own lack of knowledge and that maybe the clinician knows best.

Reports of clinical practice and the research evidence

Another dimension of EBP is that in which research is implemented by clinical experts. Expertise is a continuum with a number of possible dimensions (Collins & Evans, 2007). Within the field of speech-language pathology clearly there are degrees of expertise, but, as indicated above, within the context of our interaction with patients, any qualified SLP is acting as a clinical expert relative to their clients (who clearly have expertise of their own and about their own condition that is different to that of the clinician). This paper, therefore, takes as the clinical experts all those who are qualified professionals in speech-language pathology. This next section examines current practice as expressed by clinical experts to identify how closely it is related to the research evidence.

Within the BCRP, traditional systematic reviewing was combined with a search of the research literature for evidence regarding the programs of intervention used in everyday practice. The BCRP used focus groups and a survey of practice (Roulstone et al., 2012a) to identify the most commonly used interventions for all children with speech, language

Box 1. A clinician talking about her interventions to improve children's speech.

> … one task I do is sorting objects according to umm the sounds that we're working on, so if the child has got no word final consonants, you might have a group of objects ending "s" a little house, a mouse, a purse, … then some ending in a "t" so a cat, a tart, a boat … you have the pictorial representation and when you bring a toy out the bag I say it I say "mouse" and they have to put the mouse on the picture (SLT_062)

Box 2. A parent talking about an intervention about speech sounds.

> … he had the letter sounds on the cards and then he like … she'd pick up a chair and she'd say to [child] what is this, it's a chair what sound do we need a ch, a s or a k and he'd have to choose what sound it was (TEL_517)

Box 3. A clinician describing her intervention for developing a child's expressive language.

> … if it was a verb, … lotto and then encouraging them to look at the actions in the pictures so. So when it is your turn you describe what the person is doing (SLT_101)

Box 5. A clinician talking about adult understanding of the nature of a child's difficulties.

> They have to accept that there is a problem, they have to accept that it is not the child being lazy, it is a difficulty that they have got and they have to accept that they are the major tool of change (SLT_099)

and communication needs throughout England. The results from this dual process were used to develop a searchable website, "What Works", which is hosted and maintained by The Communication Trust (www. thecommunicationtrust.org.uk/whatworks) (Law, Lee, Roulstone, Wren, Zeng, & Lindsay, 2012). Research evidence was graded strong (including at least one systematic review), moderate (including at least one randomized controlled trial) and indicative (case series and pre–post designs). Of the 57 interventions that were included at its launch, three (5%) were found to have strong evidence, 32 (56%) had moderate evidence and 22 (39%) had indicative evidence, although whether or not the evidence supported or contra-indicated the use of the intervention varied (Law, Roulstone, & Lindsay, 2015). For example, one of the interventions had a systematic review of the research pertaining to its effectiveness, giving it a "strong" rating. However, the systematic review suggested that the evidence did NOT support the widespread use of that intervention.

One of the interesting findings from the BCRP survey of practice (Roulstone, Wren, Bakopoulou, Goodlad, & Lindsay, 2012c) was that the most common intervention for 21% of respondents was a locally developed programme. These programmes had either been adapted from a published programme or designed from scratch by the individual clinicians themselves and they varied from being fully developed packages with their own titles, to more ad hoc combinations and what has been termed in other papers as an "eclectic" approach (Joffe & Pring, 2008; Lancaster, Keusch, Levin, Pring, & Martin, 2010; Roulstone & Wren, 2001).

Within Child Talk, the aim was to focus on a more detailed analysis of interventions in order to understand whether the research evidence supported particular components of interventions. As reported in the preceding section, a thematic analysis of clinicians' descriptions of their interventions with pre-school children with primary speech and

language impairments identified nine key themes regarding the purposes of interventions (see Table II). A series of consensus exercises within Child Talk established that 80% of participating clinicians regarded these nine themes as comprehensive in that they covered the main aspects of work with pre-school children with PSLI. They also agreed that the aspects of work covered were either essential or desirable to working with these children.

Child Talk then conducted a systematic review of interventions targeting pre-school children with PSLI identifying 58 robust and relevant studies (Roulstone et al., unpublished). Studies were included if an empirical evaluation of an intervention was undertaken, thus the review included randomized controlled trials, multiple baseline studies, comparison studies and case studies. Using the focus of the intervention and the outcome measures as described in each paper, the papers were then mapped against the most relevant theme (Table III). Papers (or studies where more than one was reported in a paper) could be mapped against more than one theme, thus the numbers in Table III sum to more than 58.

As can be seen from Table III, some themes are better served by the research than others. For example, the themes of "speech" and "expressive language" yielded more studies than "comprehension" or "adult understanding". The high number of studies focusing on "generalization" is mainly due to the fact that most of these studies focused on the generalization of speech sounds and, thus, is related to the high number of studies that focus on speech. As with the systematic review by Law et al. (2013), there were few studies that focused on the theme of "comprehension" and the number of studies focusing on other themes was very low, with only one study relevant to the theme of "adult understanding". Further than the number of studies, the number of children included in the studies is also an important indicator of the coverage of the research (see the middle column Table III), with a high of 923

Box 4. A parent talking about an intervention about action verbs.

> … matching the cards and the dogs jumping and that was the use of verbs certainly in the second sessions was quite, it was something he wasn't tending to do at that point, he wasn't, obviously to make a sentence to encourage him to use jumping or you know verb generally. Action verbs rather than anything else (TEL_046)

Box 6. A parent talking of her experience of coming to a change in understanding of her child's difficulty.

> … it was like oh my god … this is like gonna be a massive part of his development that is missing. I mean I don't know whether I just sort of thought merrily it would all happen [laughs] it'll be fine! Um but I really appreciated that honesty, that I mean they were really supportive, and I've always felt that I've been able to just ask them something at the end of the group (TELL_521)

Box 7. A parent whose view seems to be at odds with her clinician.

> ... as a parent it did seem like there was more important things to concentrate on than her using the word "the" and "is" but like I say I don't understand the grounding behind it I guess and the reason for doing it in that particular way (TELL_515)

(median: 18) for expressive language and lows of four and 11 for adult understanding and self-monitoring, respectively. So, irrespective of the study outcomes and whether or not they support interventions for that theme, it is clear that the evidence for any particular area of interventions is often based on very small numbers. Similarly, an examination of the age range of the included children, even within the pre-school range defined by the Child Talk study, suggests that the evidence is often related to quite a narrow age range, For example, the median age of children in the speech studies is 53.0 months (mean = 51.5; range = 32.0–66.0)—the top of the pre-school age range, meaning that there is less evidence related to speech interventions with younger pre-school children; on the other hand, the median age of children included in studies of adult-child interactions is 31.0 months (mean = 35.9; range = 25.0–57.5), with less evidence relating to interventions for the older child.

Within both the BCRP and Child Talk, the way that interventions were described varied considerably, with clinicians listing resources, talking about goals and using shorthand terms to describe their work. There was no apparent consistency in the way that interventions were described. This is perhaps a reflection of the research literature, which also lacks consistency in how interventions are described. The authors of systematic reviews (Law et al., 2003; Pickstone et al., 2009) have remarked upon the lack of detailed descriptions of interventions in research studies. An examination of the description of interventions in this review reveals varying levels of explicitness. Studies often mentioned in passing particular components such as parent training or self-monitoring or children's attention, but did not include an explicit description about how they approached that aspect of the work or whether

outcomes were measured for that component. Thus, it is not clear whether or not those components are active ingredients in the intervention and critical to the success of the intervention. So, in summary, whilst there is growing evidence that the interventions in common usage can be successful, the research evidence is focused on relatively few aspects of the work of SLPs and evidence regarding components that clinicians view as critical to their work is not available in the research literature.

Four challenges to the implementation of evidence-based practice

This final section considers four challenges to the implementation of EBP. These have arisen from the above analyses of data from the BCRP and Child Talk. Some reiterate advice and recommendations that have appeared and reappeared over the years. However, the data presented here, which have examined relationships between components of EBP, suggest that these are ongoing issues. If these issues are not resolved, it is argued, the further development of EBP within our field may be inhibited.

The language of intervention

The first challenge is to increase the clarity and consistency with which we describe interventions both in the research and in practice. It has been a repeated criticism from commentators of the field, from systematic reviewers of the intervention literature and a finding of the Child Talk programme, that descriptions of intervention studies do not provide sufficient detail to allow replication of their study either in research or in practice. In particular, the descriptions of aspects such as how we work to empower parents or the specifics of how we inform parents about the nature of their child's difficulties seem to be part of the tacit knowledge of the field rather than being made explicit in the descriptions of our interventions. Yet, aspects like this are considered by practitioners to be just as important to the success of interventions as are the more explicit components that focus on the child's speech or language.

Table III. Descriptive data about the papers identified by systematic review for each of the nine typology themes.

	No. of studies in theme	Total no. of children in the studies (median)	Median age (Mean; Range) in months
Speech	33	542 (4)	53.0 (51.6; 32.0–66.0)
Comprehension	6	135 (27)	40.5 (40.0; 27.5–50.0)
Expressive language	28	923 (18)	43.0 (43.2; 25.0–66.0)
Self-monitoring	2	11 (5)	51.8 (51.8; 43.0–60.0)
Generalisation	26	210 (3)	52.3 (50.7; 35.0–66.0)
Foundation skills	4	59 (7)	43.0 (44.6; 37.0–60.0)
Functional communication	5	82 (6)	48.3 (48.1; 42.0–54.0)
Adult Understanding	1	4	57.5 (57.5; 48.0–67.0)
Adult child interaction	9	1011 (36)	31.0 (35.9; 25.0–57.5)

There have been attempts over many years in the literature to provide structural frameworks for describing interventions. For example, McCauley and Fey (2006), building on much previous work by Fey (1986, 1990), describe the components that must be addressed in the development of an intervention, including goals, intervention agent and context, procedures, dosage, activities, assessment and program modification. McCauley and Fey suggest that consciously addressing each of these components facilitates the "deconstruction of an intervention into its constituent parts" (p. 5), thus enabling comparison between interventions to take place. If interventions are described in only general terms, it is difficult to be able to say if and how they differ and, therefore, if they are likely to have differential effects. Fey (1990) has also argued that such deconstruction and specification of key variables is what is needed for research to identify the critical components of an intervention.

Despite the availability of frameworks such as that proposed by McCauley and Fey, they have not translated into a standard way of reporting interventions in the research literature and are not used routinely to describe interventions in practice either, although there is a welcome trend to "manualize" the intervention that has been evaluated (Adams, Lockton, Gaile, & Freed, 2012; McCartney, Boyle, Bannatyne, Jessiman, Campbell, Kelsey, et al., 2004). Nonetheless, there is still much of our intervention that is left at a tacit level, under-specified and under-researched. Whilst it is impossible to specify every small component of an intervention (Collins, 1990; Fey, 1990), the more we can be explicit and agree about the specifics of our interventions and describe them consistently, the more we will be able to evaluate the contribution that each makes to the overall impact of our work.

The models of practice

The second challenge is to identify some valid and consensus based models of practice. The evidence that we have gathered in our research supports the view that the models of intervention underpinning the way that clinicians work are eclectic; that is, they seem to draw on all different kinds of theory, components and resources from different intervention programs to construct their interventions.

There are a number of possible explanations for this eclecticism, although research has yet to address the question of why clinicians take an eclectic approach. At a straightforward level, it has been suggested (Joffe & Pring, 2008; Lancaster et al., 2010) that it could simply be a question of resources: perhaps, in restricted financial situations and unable to afford the full training and kit of a particular program, a clinician adapts materials and programs already in the cupboard to construct something approaching an expensive program. These authors further suggest that these adaptations and combinations may reflect beliefs on the part of the clinician

that utilizing different parts of different programs may make it more likely to be effective for the individual child in question and Lancaster et al. add that this may be consistent with good practice.

This latter explanation seems to fit with what is known about the practice of experts. The job of every clinician, within an evidence-base practice framework, is to apply research evidence judiciously and conscientiously (Sackett et al., 1996). Although there is plenty of evidence now that interventions can be effective, the clinician still has to be able to apply them "skilfully and appropriately" (Roulstone, 2011). So, for example, there may be a large randomized controlled trial which suggests that a particular intervention can be effective. However, it may be that the child in the clinic is slightly younger than those included in the trial or with a slightly more severe language delay. It may be that the study was conducted on middle class children and the child in the clinic is from a socially deprived background. It may be that the trial shows the intervention to have an effect size of 0.4. All of these features may mean that, on balance, the intervention is a good bet for the child. The clinician may try the intervention exactly as tested (if the description is clear enough for replication—see above) and after careful evaluation show that it is not working as planned. Does the clinician then abandon the intervention altogether or try to adapt components to better suit the child's age, difficulties and background, bringing in components that have apparently been effective with other similar children? Merely to apply the intervention without such adjustments would cast the clinician in the role of technician rather than the expert, as someone who is following the instruction of a cookery book of intervention rather than applying them skilfully and appropriately (Sackett et al., 1996). So, it would seem that, as long as clinicians are indeed building both the research and clinical data into such considerations of their practice, then this "eclecticism" may not only be legitimate, but is indeed a necessary feature of evidence-based practice.

However, the challenge of this whole process is in knowing the impact on effectiveness, since any move away from the intervention, as originally trialled, potentially undermines its effectiveness. If fidelity to the original intervention is not possible, then systematic variations, driven by hypotheses which predict the possible effects, will help to evaluate and monitor the outcomes. Models of interventions which differentiate between those components that are critical and those that can be varied would also be helpful. This process, therefore, requires researchers to specify and clinicians to collect data. The collection of outcome data about the use of interventions in the field is vital to validate the generalizability of the intervention beyond the research context. However, it is particularly incumbent upon clinicians who adapt researched interventions to collect data on the

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implementation in practice to monitor the effect of that adaptation. The data needed would include a measure of the outcome alongside data on the context in which the intervention was used and the characteristics of the clients. A standardization not only of the intervention descriptions but also of participants, as recommended by Pennington, Marshall, and Goldbart (2007), would also be helpful here.

The mechanism of change

A third challenge is to develop our understanding of the mechanism by which an intervention leads to change, not just in terms of proximal outcomes such as increases in vocabulary or sentence complexity or changes in a child's sound system, but also in the more distal and functional changes such as a child's independence or friendships. As indicated above, research now suggests a high-risk relationship between poor speech and language skills and negative life outcomes. Parents and children value outcomes that lead to these functional life changes. However, our current evidence base links our interventions only to the more proximal outcomes and there is a gap in our explanatory models regarding how changes in children's speech and language skills impact upon the life skills.

The causal chains between an intervention and observable changes in our client's speech and language are in themselves often complex and difficult to evidence. Pawson (2006) notes that such chains are "long and thickly populated" (p. 28), with a propensity for non-linearity. Evidencing these more distal outcomes is, therefore, an enormous challenge, with the potential for many other factors to become influential. Collecting evidence regarding the impact of interventions thus requires an explicit surfacing of the hypotheses underpinning our interventions and then building data collection that targets each step in the chain. This kind of evidence takes time and programmatic research to progress, but can also be supported by clinical data. Measures do exist that capture the social and functional aspects of the lives of our clients. For example, a systematic review that was part of the BCRP identified a number of self-report quality-of-life measures which captured outcomes of interest to children with SLCN (Roulstone et al., 2012a). However, these instruments have not been routinely used with children with speech and language impairments and, thus, may need work to establish their sensitivity to change.

Enabling informed client choice

The final challenge is how we operationalize that component of EBP which specifies the implementation of research evidence in the light of patient preferences. Clinicians in our studies commented on the need to empower parents to take a positive role in interventions with their child. Parents' descriptions of their experiences suggest that some can remember and recount intervention activities and the purposes of interventions. However, other parents were uncertain about the purposes or value of intervention. However, the issue of client choice and preference was rarely discussed, except to express anxiety about parents' expectations of services; the care pathways described by clinicians rarely had elements of choice.

The process of involving clients in the decision-making about their care is an established part of healthcare policy worldwide. In the UK, the principle of shared decision-making with clients within health services is now enshrined in the policy mantra of "no decision about me without me" (Department of Health, 2012) and is included in the form of quality statements in a number of the National Institute of Clinical Excellence (NICE) guidelines (NICE, 2008, 2012a, b). However, the practice has not been widely adopted in the broader healthcare system (Légaré, Ratté, Stacey, Kryworuchko, Gravel, Graham, et al., 2010) and the extent to which it is enacted in speech-language pathology practice is unclear. As a result, it is argued that the quality of decision-making that takes place in healthcare generally is inadequate, since clients have unrealistic expectations of what can or cannot be achieved and clinicians are poor judges of what clients value (O'Connor, Wennbery, Légaré, Llewellyn-Thomas, Moulton, Sepucha, et al., 2007).

Selecting interventions within speech-language pathology is arguably a tricky context in which to apply shared decision-making, in particular because of the relative dearth of evidence supporting interventions and the lack of explicit clarity about the intervention options themselves. Elwyn (2010), for example, argues that three conditions are necessary for shared decision-making to become embedded in everyday clinical practice: access to evidence about the various options; guidance about how to evaluate those options; and, thirdly, a culture that facilitates engagement with clients. However, the very absence of evidence that favours one approach over another suggests that speech-language pathology interventions may well be "preference-sensitive" treatments (O'Connor et al., 2007). In "preference-sensitive" treatments, the potential benefits and harms of any particular intervention depend on how the patient values the particular aspects of the interventions and its potential outcomes. O'Connor et al contrast this with "effective" treatments where the benefits clearly outweigh the harm and the role of the clinician would be to promote the effective treatment. Whilst the presenting nature of a client's difficulty will clearly determine the possible range of options, in many areas of speech pathology there is no single approach that has been shown to be uniquely effective.

Finally, as noted above (Elwyn, 2010), a positive culture is also required. A recent systematic review of shared decision-making concluded that, contrary to the beliefs of clinicians, many patients do want to

engage in shared decision-making but do not feel that they can participate (Joseph-Williams, Edwards, & Elwyn, 2014). The authors of the review concluded that power imbalance between clinician and client constitutes a key barrier and that patients need to believe that their contribution is valued and will not interfere with the care they are likely to receive. Whilst the studies in this review do not include speech-language pathology contexts, it would be unwise to assume that SLPs are significantly different to other healthcare colleagues. Thus, empowering clients to make choices requires clinicians to provide honest, transparent and accessible information about interventions and their underpinning evidence. Clients need an honest appraisal of how the evidence fits with their needs profile. The notion of informed choice also pre-supposes that choice is built into the services offered and that clients are supported to make their contribution within a positive culture.

Conclusion

The emphasis within the EBP movement has focused on the process of identifying and understanding the research and the barriers facing clinicians as they attempt to get to grips with a large body of research. Although the contribution of clinical expertise and client preferences is widely recognized and accepted within speech-language pathology, there has been less research to investigate this and even less about the clinical decision-making that is required to integrate the various components of EBP. The reflections in this paper have focused on data from three components: research, clinical expertise and client perspectives. These reflections led to a consideration of four challenges which, it is argued, must be addressed if our profession is to move forward in its implementation of EBP. These challenges focus first on our understanding of the theory underpinning our interventions, what has been referred to as theories of therapy (Law et al., 2008) or of practice (Argyris & Schön, 1974) rather than a theory of deficit. Second, they focus on our ability to enable our clients to participate in the decision-making. Whilst the latter is an acknowledged part of EBP, there is also an ethical motivation behind the latter. The conclusions of the Francis report (Francis, 2013) challenge all healthcare professions to develop compassionate care that promotes the consideration of the individual, their values and preferences.

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