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Parent-Implemented Interactive Language Intervention: Can It Be Used Effectively?

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PEARSON Assessments

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Clinical Scenario

Rachel is a speech-language pathologist (SLP) working in an early intervention (EI) program in a rural county of West Virginia. Rachel's current caseload is relatively small, comprising 37 parents and their infants and toddlers who exhibit communication delays. She serves the majority of these families within their homes, and the remainder in one-on-one team-based sessions at the EI center located in the county seat. Although Rachel loves her job, especially the opportunity to work directly with families, she has a legitimate concern regarding the actual efficacy of her services. Because the county in which she works covers a 400 square mile radius, and as the only SLP serving the EI program, Rachel spends more time commuting between families' homes and the EI center each week than she does actually working with families and their children!

The SLP wants to identify an effective parent-training program for improving parents' communication facilitation in the home environment.

Rachel is vested in the importance of providing direct services to young children to stimulate their communication development, but she has recently begun to question whether an indirect service delivery model might be more effective than direct services given the constraints of her current work situation. During a recent meeting with her supervisor, she raised the possibility of training parents to provide communication intervention to their infants and toddlers within the home environment. Although Rachel often provides parents with useful tips and strategies, and models intervention techniques to them, she suggested to her supervisor that maybe she ought to provide more rigorous training to parents to elevate their effectiveness as intervention agents. Rachel's supervisor agreed that she ought to look into this, indicating that the EI center could cover the costs of offering such a program if Rachel could find a program or technique that was "research based."

In this brief, we describe the process that Rachel undertakes as she engages in evidence-based practice in response to her desire to offer an effective training program to the parents of those children on her clinical caseload. We detail a four-step process through which clinical professionals engage in evidence-based practice, adapted from recommendations of the American Speech-Language-Hearing Association (2005):

(1) Asking the clinical question,
(2) Searching for evidence,
(3) Evaluating the evidence, and
(4) Making an evidence-based decision.

The Clinical Question

As the SLP in an EI center, Rachel serves children from birth to three years who have communication delays ranging from relatively mild to severe. Many of these children exhibit communication delays of an unknown etiology, and show delays in other aspects of development concomitantly (e.g., motor, play); however, Rachel also serves two children with Down syndrome, two children with pervasive developmental disability (PDD), one child with congenital hearing loss, one child with a perinatal brain injury, and one child with Rett's syndrome. The families of these children are primarily of a lower socioeconomic status (SES), given the locale in which she works. Roughly half of the children live in single-parent households, and many of the children's mothers have little if any education beyond high school.

As Rachel takes on her supervisor's charge of finding a parent training program that is "research based," she is particularly interested in finding one that will be widely applicable to her diverse clientele. As Rachel begins her search, she poses this question to organize her evidence-based activities: Is there a parent-training program that research has shown to be effective for improving parents' communication facilitation in the home environment to positively benefit the communication development of

their young children with communication delays? Rachel's question articulates well with the PICO acronym used in the evidence-based practice (EBP) literature to frame questions in evidence-based decision-making, whereby P = the population, I = intervention, C = comparison, and O = outcome (see Table 1).

Search for Evidence

Finding a Treatment Option

As a member of the American Speech-Language-Hearing Association (ASHA), Rachel begins her search for evidence that might answer her clinical question using the ASHA website (asha.org). She enters the term "evidence-based practice" into the web site's search engine and locates a site of interest, the ASHA "Compendium of EBP Guidelines and Systematic Reviews" (asha.org/members/ebp/compendium/). This online compendium provides links to systematic reviews and practice guidelines on a range of topics. Rachel looks for topics related to "Parent-Implemented Intervention" and finds none, but does come across the topic of "Intervention- Infants and Toddlers" which appears worth pursuing. Of the five systematic reviews available for this topic, only one seems to be closely related to Rachel's question, namely the systematic review available through the Cochrane Collaboration titled "Speech and Language Therapy Interventions for Children with Primary Speech and Language Delay or Disorder" by Law, Garrett, and Nye (2003). Following links provided, Rachel examines the abstract for the review and notes with interest that interventions implemented by parents appeared to be included in this review; she thus downloads Law and Garrett's review from the Cochrane Collaboration website (cochrane.org). Rachel studies portions of this review as well as another meta-analysis by the same authors (Law, Garrett, & Nye, 2004) available on the ASHA website to seek more information about parent-implemented treatments for childhood speech and language disorders. In the Law et al. article, Rachel finds exactly what she is looking for when the authors reference the "Hanen Early Language Intervention" program as a type of parent intervention for expressive language difficulties" (p. 931) that they note appears to be just as effective as clinician-implemented interventions (Law et al., 2004).

Intrigued, Rachel seeks out to find out a little more about this parent-implemented intervention approach to determine if it is applicable to her specific needs and, as importantly, if she can conclusively describe it as "research based" to her supervisor. She does this by turning to the PsychINFO database, which inventories more than 2,000 journals of relevance to the field of psychology, including ASHA journals and others of direct bearing on Rachel's search. She searches the database using only the term "Hanen," given her interest on studies that might have studied the effectiveness of the Hanen approach to intervention. She looks through the abstracts that surface, and identifies seven studies that appear to provide experimental evaluation of the Hanen approach – also referred to as interactive language intervention (Girolametto, Pearce, & Weitzman, 1996) - as a means to train parents to improve the communication skills of their young children. An overview of these seven studies is provided in Table 2. A description of the intervention itself, which she found in a review article by one of the Hanen authors (Weitzman, 1994), also gave Rachel a strong sense of the theory behind interactive language intervention as well as how this intervention is delivered. Key elements of this intervention approach are provided in Table 3.

It is important to note that Rachel's search likely did not find every article ever written on the Hanen approach. However, given her goal of identifying an effective approach for training parents to provide communication intervention in the home environment, Rachel's approach thus far is adequate for her purposes. That is, Rachel's goal is to identify an approach that empirical evidence has shown to be effective and, in general, one or two well-conducted experimental studies that compare a treatment to an alternative treatment or a no-treatment condition is generally adequate for this purpose (Lonigan, Elbert, & Johnson, 1998). For instance, the Oxford-Centre for Evidence-Based Medicine uses four grades for recommending use of a particular treatment, and a grade of A (the highest grade) is given to treatments for which findings from randomized experimental studies consistently show positive effects (see cebm.net). Should Rachel find a parent-implemented program that has shown consistently positive effects in one or more randomized experimental studies, she can be fairly confident that these effects will occur when she implements it as well.

Evaluating the Evidence

Evaluating the External Evidence

Engaging in evidence-based practice requires careful

consideration of the amount and quality of research evidence available for specific treatments. We can give specific treatments grades based on the amount and quality of evidence available at a specific time. Randomized clinical trials are of particular import in evidence-based practice, as this type of research design is used specifically for the purpose of establishing causality: that is, the effects a treatment has on a particular outcome of interest. For Rachel, outcomes of interest are twofold: She is interested in identifying a parent-training approach that has positive effects on both parents and children. This aspect of evidence-based practice is called evaluating the external evidence, or evidence derived from evaluation of the research evidence.

Rachel's search resulted in seven studies for her review. The seven studies included in this review (see Table 2) involved a total sample size of 126 toddlers and preschoolers with language impairment ranging in age from 15 months to 46 months. Sixty-two children participated in a home-based intervention, 18 children participated in a clinic-based intervention, and the remaining 46 children were on a waitlist for the Hanen approach (these children comprised the control condition in these experimental studies). The children received interactive language intervention in their own homes from their mothers over the course of 11 to 13 weeks while their mothers completed a parent-training program. Mothers attended between eight and nine group sessions and participated in 3 to 4 home visits, depending on the study. Outcome measures included language sample analysis (Baxendale & Hesketh, 2003; Girolametto, 1988; Girolametto, Verbey, & Tannock, 1994; Girolametto, Pearce, & Weitzman, 1996, 1997; Tannock, Girolametto, & Siegel, 1992), standardized language measures (Baxendale & Hesketh, 2003; Girolametto, 1988; Girolametto et al., 1994; Tannock et al., 1992), semi-structured probes for target words (Girolametto, Weitzman, & Clements-Baartman, 1998), and parent report measures of vocabulary (Girolametto et al., 1996; Girolametto et al., 1998). Generally, positive outcomes were seen for measures of maternal behaviors (e.g., using more focused stimulation techniques), and improved child outcomes were seen in communicative interactions and language sample analyses (particularly turn-taking behaviors and vocabulary), but not in standardized language scores.

Seven experimental studies were identified for further review: these studies examined the effectiveness of interactive language intervention.

Rachel was curious about the quality of these seven studies, recognizing that evidence derived from well-conducted studies should receive more weight in her decision-making compared to evidence from poorly-conducted studies. Rachel conducted a quality assessment of the studies in her review corpus by examining each study for seven attributes of high-quality studies from the Scottish Intercollegiate Guidelines Network's Methodology Checklist for Randomized Clinical Trials (2004). She examined each study and evaluated these attributes using Law et al.'s (1994) scoring system in which each attribute is scored as 0=inadequate, 1=unclear, 2=adequate. Table 4 provides her quality ratings. Although there is currently no clear benchmark that demarcates higher and lower quality studies, studies that are high quality provide the most rigorous test of causality for a given treatment and thus should receive the greatest weight in any review. Although no study in Rachel's review was rated as adequate on all of Law et al.'s attributes (particularly the issue of blinding), three of the seven studies received an adequate rating on six out of seven attributes. Rachel did note that six of the seven studies were conducted by members of a single research team (Girolametto and colleagues) and that most of these involved comparison of the interactive language intervention against a no-treatment (wait list) control. The single study conducted by a different research team (Baxendale & Hesketh, 2003), while conducting an interesting comparison of conventional therapy to *It Takes Two to Talk*—The Hanen Program® for Parents (finding no differences in child outcome), exhibited a number of methodological shortcomings. Nonetheless, at least three studies in Rachel's review were of sufficient quality to support a causal relationship between the parent training in interactive language intervention and improvements in mothers' communicative behaviors or children's language outcomes.

Evaluating the Internal Evidence

When clinical professionals engage in evidence-based practice, identifying treatment approaches that have adequate empirical support from well-conducted studies is just one part of decision-making. That is, in addition to evaluating the external evidence relevant to a specific treatment, they must also consider the internal evidence. The internal evidence considers specific aspects of a treatment approach (e.g., its intensity and duration) as well as characteristics of one's clients that may influence their

responsiveness to the treatment (Fey & Justice, 2007). One can evaluate the internal evidence by carefully getting to know the treatment under consideration and ensuring that it adheres to one's philosophical and theoretical stance, as well as considering the congruence between participants in research studies who responded to the treatment and those to whom the treatment would be applied.

Interactive language intervention is based on principles adherent to a social-interactionist theory of language acquisition (Weitzman, 1994; see Table 3), which view children's linguistic experiences with others (e.g., parents) as instrumental to their developing achievements in language. This approach to language intervention is highly consistent with Rachel's own beliefs and theoretical stance.

But Rachel's beliefs and theories are not all that matter: she must also consider whether the parents with whom she works would be amenable to not only using the interactive language intervention procedures at home with their children, but also to completing the intensive parent training program themselves. Rachel considers the caregivers who were participants in the studies she reviewed, noting that in nearly all of the studies the parents were relatively older (30s and 40s) and well-educated and of a middle-income status. By comparison, many of the parents with whom she works are relatively young (early 20s), have limited education (usually a high-school diploma, but little postsecondary schooling), and are of lower-income status. Rachel has well-grounded concerns regarding whether the parents with whom she works will be able to adhere to the intensive parent training schedule as well as use of the intervention techniques at home. She also has concerns about offering the program in a rural area; it is not clear that the parents in the studies she has reviewed on interactive language intervention have involved rural parents. Many of the parents with whom she works would have to travel a great distance to come to a training site, and some do not have reliable transportation. Rachel wonders if perhaps she could adapt the training schedule to offer fewer sessions of longer duration or offer the program at two sites simultaneously within the county to offer parents several options of where to train. Neither option is ideal, however, as Rachel recognizes that if she changes the format of the training program, she might not achieve results similar to those of published reports; likewise, she also knows she cannot personally offer the parent training approach at two simultaneous sites because of her current caseload demands.

The Evidence-Based Decision

As discussed early in this brief, Rachel was charged by her supervisor to identify a "research based" option for training parents to serve as intervention agents within their home environment. Working as the only early intervention SLP in a rural setting, Rachel believes that an indirect service delivery model that involves parental implementation of intervention within their homes might be more effective than or at least an important supplement to her direct speech-language services. This brief illustrated Rachel's activities as she engaged in the first three steps of evidence-based practice, through which she formulated a clinical question, identified a body of research evidence relevant to that question, and evaluated that evidence. We also described how Rachel's evaluation of the evidence involved not only consideration of the external evidence (amount and quality of published research literature) but also the internal evidence, including whether interactive language intervention was consistent with her theoretical orientation and whether the parents with whom she worked would be able to participate in the rigorous training schedule featured in the studies she reviewed.

Three studies were of sufficient quality to suggest a causal relationship between parent training and positive outcomes.

The final step for Rachel is making the evidence-based decision. Rachel draws upon the approach used by the Scottish Intercollegiate Guidelines Network (SIGN; available online at http://www.sign.ac.uk/guidelines/fulltext/50/index.html), which provide grades of A through D to identify the strength of evidence for different treatments. A grade of A is appropriate for bodies of work comprising a series of high-quality randomized experimental studies that have consistent outcomes. Rachel has concerns about the lack of blinding across the individual studies she reviewed (which increases the risk of bias), but also notes that findings are generally consistent across this body of work. After some deliberation, Rachel gives interactive language intervention a grade of A based on the available evidence.

Approximately three weeks after her initial meeting with her supervisor, Rachel requested a meeting to discuss the outcomes of the evidence-based process in which she engaged. Rachel shared with her supervisor the research papers she had reviewed as well as her notes concerning the strengths and weaknesses of the individual studies in her

corpus. Rachel also described how she arrived at a specific grade for this body of work to specify her confidence in its potential effects on parent-child communication interactions and spontaneous language use by children. Rachel did report, however, being less confident regarding the long-term impacts of parent use of interactive language intervention and gains in children's standardized language scores, as this had not been demonstrated in the literature, possibly because of the relatively short duration of the studies. Rachel further shared her concerns about offering such an intensive training program to her rural parents, who seemed quite different than those who were participants in the research articles she reviewed.

The use of interactive language intervention received a grade of A, indicating its likely effectiveness for use.

All of this noted, Rachel summarized her evidence-based decision to her supervisor, which was to offer an eight-week training program to carefully selected parents that would teach them to implement interactive language intervention per the Hanen protocols. Rachel proposed to involve in this first cohort of trainees five relatively well-educated mothers who she felt would be most able to adhere to the rigorous training schedule and who lived in close proximity to the early intervention center. Rachel would also include two mothers who were slightly more characteristic of parents on her caseload: that is, they would have to commute about 30 miles to the EI center and they were relatively less educated than the other mothers. Rachel wanted to involve these mothers on a pilot basis to see what kinds of supports they might need to participate in the program and adhere to its schedule and principles of implementation. Throughout the entire program, Rachel would collect data on all of the parents and their children to document the effects of participation of parent-child communicative interactions and children's speech and language development. She would also use an end-of-program survey to gather information from parents on what aspects of the training they found most beneficial and those that might need improvement.

Following Rachel's sharing of her decision, her supervisor commended her for engaging in a systematic process of decision-making that involved careful evaluation of the empirical literature. Rachel's supervisor indicated full support of the plan, pledged the financial resources that Rachel would need to get started, and requested periodic appraisals of progress. With that, Rachel was ready to get started on testing her hypothesis that the children and parents with whom she worked would benefit from an indirect service delivery approach that trained parents to be intervention agents within their home environments.

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Table 1. Rachel's PICO Question

Population P	Intervention I	Comparison C	Outcome O
Parents of children with young children with communication delays	Parent-training program	No parent training	(1) Improve parents' communication facilitation in the home environment and (2) Improve the communication development of young children with communication delays

Table 2. *Description of Studies in Rachel's Review Corpus*

Study	Design	Sample Description: Parents	Sample Description: Children	Intervention/ Comparison	Outcome/Results
Girolametto (1988)	Randomized Clinical Trial n=20 children 9 children in treatment group	20 mothers; mean age = 35 years (range 26 to 50); mean years of education = 13.5 (range 10 to 18)	20 children; mean age = 37 months (range 15 to 62); all had developmental and communication delays of mixed etiologies (11 Down syndrome, 4 cerebral palsy, 2 chromosomal abnormalities, 3 unknown)	Hanen Program vs Wait-List Control (no treatment) Hanen Program implemented for 11 weeks (8 3-hr group sessions + 3 home visits)	Hanen mothers showed a significant increase in use of responsive behaviors (e.g., turn continuations, contingent replies) and exhibited more balanced communication exchanges with children Hanen children showed a significant increase in number of turns and used a more diverse vocabulary Hanen children did not show a significant improvement in standardized language scores
Tannock, Girolametto, & Siegel (1992)	Randomized Clinical Trial n=32 children 16 children in treatment group	32 mothers; mean age = 35.0 years (experimental group), 31.8 years (control group); 63% college graduates (experimental group), 69% college graduates (control group)	32 preschool -age children at risk for developmental delays (9 Down Syndrome, 2 chromosomal abnormalities, 1 William Syndrome, 1 mild Cerebral Palsy, 19 unknown etiology); 6 children exhibited mild hearing losses	Hanen Program vs Wait-List Control (no treatment) Hanen Program implemented for 12 weeks (9 group sessions + 3 home visits)	Hanen mothers used more language-modeling strategies, increased their use of comments (e.g., expansions, parallel talk), and reduced their directiveness. There were no increases in maternal stress. Hanen children showed a significant increase in use of vocal turns. Hanen children did not demonstrate significant improvement in standardized language scores

Table 2, continued

Girolametto, Verbey, & Tannock (1994)	Randomized Clinical Trial n=14 children 7 children in treatment group	14 mothers from the Tannock, Girolametto, & Siegel (1992) study	14 preschool-age children from the Tannock, Girolametto, & Siegel (1992) study	Hanen Program vs Wait-List Control (no treatment) Hanen Program implemented for 12 weeks (9 group sessions + 3 home visits)	Mothers and children in the Hanen group increased the frequency and duration of joint engagement episodes. However, changes to joint engagement did not generalize to unfamiliar contexts.
Girolametto, Pearce, & Weitzman (1996)	Pretest-posttest control group design with random assignment to immediate treatment condition or delayed treatment condition n=25 children 12 children in treatment group	25 mothers; mean age 35.0 years; all high school graduates; 10 in experimental group and 11 in control group with additional post-secondary education.	25 children 23-33 months of age; single-word vocabulary; no major sensory problems, oral motor problems, neurological problems, PDD, or autism; English only language spoken at home.	Hanen Program incorporating focused stimulation (for select target words) vs Wait-List Control (no treatment) Hanen program implemented for 11 weeks (8 group sessions + 3 home visits)	Hanen mothers used fewer words per minute, shorter utterances, used a greater number of target words in their interactions, and a greater amount of focused stimulation of target words than control mothers. Hanen children used more target words and more words overall, had larger vocabularies, more multiword combinations, and more early morphemes than control children.
Girolametto, Pearce, & Weitzman (1997)	Pretest-posttest control group design with random assignment to immediate treatment condition or delayed treatment condition n=25 children 12 children in treatment group	25 mothers who were participants in Girolametto et al. (1996)	25 children who were participants in Girolametto et al. (1996)	Hanen Program vs Wait-List Control (no treatment) Hanen Program implemented for 11 weeks (8 group sessions + 3 home visits)	Hanen children used more complex syllable shapes and expanded their speech sound inventories to include more consonant sounds in initial and final positions than control children. Speech intelligibility and production accuracy were not significantly better for the Hanen children compared to the control children.

Table 2, continued

Girolametto, Weitzman, & Clements-Baartman (1998)	Pretest-posttest control group design with random assignment to immediate treatment condition or delayed treatment condition n=12 children 6 children in treatment group	12 mothers; all high school graduates; 6 in experimental group and 4 in control group with additional post-secondary education.	12 children 29-46 months of age; Down syndrome; English only language spoken at home.	Hanen Program vs Wait-List Control (regular language intervention services) Hanen Program implemented for 13 weeks (9 group sessions + 4 home visits)	Hanen mothers maintained a stable rate of talk from pre-test to post-test, used significantly more target labels, and more focused stimulation than control mothers. No changes were observed for mean length of utterance or type-token ratio. Hanen children used more target words according to parent report and free-play interaction than control children, but these results did not generalize to semi-structured situations.
Baxendale & Hesketh (2003)	Pretest-posttest design with geographic assignment to the Hanen Parent Programme or conventional clinic therapy n=37 children 19 children in treatment group	Parents were not described.	37 children 30-42 months of age; diagnosed language impairment	Hanen Parent Program vs conventional clinic therapy Hanen Program implemented for 11 weeks (8 group sessions + 3 home visits)	No statistically significant differences were observed between children in the two therapy groups at any measurement point.

Table 3. Overview of Interactive Language Intervention: Hanen Program

Theoretical Framework	Based on social interactionist theory; emphasizes the importance of caregivers' use of "contingent, simplified language input" to elicit "motivational and informational functions that help the child" to learn language in naturalistic contexts (Girolametto, Pearce, & Weitzman, 1996; p. 1274); adheres to principle that "child's active engagement in frequent, reciprocal social interactions is critical for language acquisition" (Weitzman, 1994, p. 175).
Parent Training Purpose	Promote caregivers' use of optimal language input with their children, and increase frequency of caregiver-child conversational interactions and joint engagement. Caregivers learn to (1) reduce directiveness, (2) increase responsiveness, and (3) apply specific strategies to increase periods of joint engagement (Weitzman, 1994)
Parent Training Principles	Training program designed to bring about first-order change (change in participant behaviors) and second-order change (change in participant beliefs and knowledge); training designed to be intensive and experiential, and features discussion, self-reflection, self-evaluation, and extensive practice; also features individualized mentoring (Weitzman, 1994).
Specific Techniques	Caregivers taught to use three sets of techniques when interacting with children: (1) child-oriented strategies (e.g., follow child's lead); (2) interaction-promoting strategies (e.g., cue child to take a turn), (3) language-promoting strategies (e.g., expand, extend)
Training Format	Six to eight group sessions of 2- to 3-hours in length, each corresponding to a specific topic; delivered by a Hanen-certified speech-language pathologist. Group sessions supplemented with three individual feedback sessions involving videotape collection, review, and coaching.
Materials	It Takes Two To Talk (Pepper & Weitzman, 2004): 9-chapter, 170-page parent manual. Leaders Guide and teaching videotapes for Hanen Certified SLP.

Table 4. *Evaluation of Study Quality on Law, Garrett, and Nye's (2004) 3-Point Scale (I=inadequate; U=unclear; A=adequate)*

	Study						
Criteria	Girolametto (1988)	Tannock et al. (1992)	Girolametto et al. (1994)	Girolametto et al. (1996)	Girolametto et al. (1997)	Girolametto et al. (1998)	Baxendale & Hesketh (2003)
Study addressed an appropriate and clearly focused question	A	A	A	A	A	A	A
Participants are randomized	A	A	I[1]	A	A	A	I[2]
Study authors are blind to group assignment	U	U	U	U	U	U	I
Study assessors are blind to group assignment	A	A	A	A	A	U	I
Groups are similar at start of study	U	I	A	A	A	A	A
Study outcomes are measured in standard, valid, and reliable way	A	A	A	A	A	A	A
Attrition of participants is equal across groups, and dropouts are accounted for	A	A	A	A	A	A	A

Source: Scottish Intercollegiate Guidelines Network's Methodology Checklist for Randomized Clinical Trials (sign.ac.uk/methodology/checklists.html)

[1] Used a pairwise matching procedure with subsample of children from a larger study

[2] Treatment status determined by geographic location