

Research to Practice

Dual Perspectives on Choosing Treatment Approaches

To Use or Not to Use: Factors That Influence the Selection of New Treatment Approaches

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It is not possible to pick up a newspaper or weekly magazine without coming across the latest study or self-help book about what we should and shouldn't do in order to maintain a healthy lifestyle and live longer, minimize the risk of heart problems and cancer, reduce the duration of colds, make our children smarter, maintain our faculties and energy level as we get older, and so forth. For example, a "factoid" in *Parade* magazine recently claimed that the longer children are breast fed, the more intelligent they are. No details were provided, so one must assume that mothers who want the smartest children should breast feed as long as possible. My father starts each day with no less than 25 vitamin supplements, herbs, and potions of various sorts because he has read about the benefits of each one of them. Like many people, I now take zinc lozenges because a Cleveland Clinic study found that zinc supplements

reduced the duration of colds from 7 days to 4 or 5 days. It is now common for people to supplement traditional medical treatments with alternative treatments. Alternative treatments are so common that few people were surprised when the summer 1997 issue of *Asha* magazine contained a feature article on alternative treatments for speech and language disorders (Goldberg, 1997).

What makes us decide whether to take a vitamin supplement, subject ourselves to acupuncture, jog until our knees give out, or drink horrible tasting aloe, herbal, and fiber-enriched potions? Presuming that we are all not masochists, we must be convinced that we are benefitting in some way from putting all these things in our body and then trying to sweat them back out again. How many of you have actually read the studies that supposedly demonstrate the benefits of the things we take? After the study concerning the benefits of zinc lozenges came out, the suppliers could not keep up with the demand for approximately 6 months. One study was apparently enough for many of us to be willing to lose all sense of taste if our colds could be shortened by a couple of days.

And what happens when the initial studies that set us off sucking on zinc lozenges or popping echinacea at the first sign of a cold are wrong? For years, the exercise gurus were telling us that moderate aerobic exercise for at least 20 minutes a day three times a week was the minimum amount needed to keep our hearts healthy. Anaerobic exercise like tennis did not count and golf was viewed as a non-sport. It was difficult not to take these reports seriously. Although I knew that tennis was good exercise, my cardiologist friend convinced me that I needed to jog because the stopping and starting of tennis was not aerobic. I wondered how my grandparents and other older people

ABSTRACT: Clinicians are often faced with decisions concerning whether to use a new or different treatment approach. What factors influence these decisions? Are clinicians more influenced by treatment efficacy studies or their own theoretical biases? What role do parents and families play in influencing these decisions? Why are scientists so skeptical of new treatment approaches? When should a clinician try out a new or different treatment approach? Should clinicians be trusted to use the best treatment approaches? These are the central questions addressed in this article.

KEY WORDS: language, intervention, efficacy, clinical

lived so long without ever jogging, riding a stationary bike, or doing the stairmaster. Despite these misgivings, I jogged for 20 minutes a few times a week until a new study came out showing that a total of 20 minutes of activity each day led to the same cardiovascular benefits as 20 consecutive minutes of moderate exercise.

So, what does all this have to do with speech-language therapy? Think about what you did in therapy today. Did you use a proven treatment technique or approach? Can you cite studies that support the efficacy of the approach? What made you choose the approach you used? Are you primarily using the same approach(es) to treatment that you were taught to use in your graduate training programs? What would make you use a treatment approach that is different from the one you are using now? Do you have trouble answering these questions because you don't use just one treatment approach? Final question, what would you do if you discovered an incredibly effective treatment approach for speech or language disorders?

There has been a lot of interest in our field recently regarding some new treatment approaches (e.g., Fast ForWord®, Earobics®, Auditory Integration Training [AIT]), as well as renewed interest in approaches that have been around for years, such as Lovaas' behavioral approach for autism (Lovaas, 1987) and sensory integration therapy (Ayres, 1979). How does one decide whether to use one of these treatment approaches? Should we use the same criterion that leads us to try zinc lozenges?

Many parents have heard about Fast ForWord™ through the national media. A typical newspaper article might say something like: "A promising new treatment approach has been developed to improve language abilities in children with developmental language disorders. Children are making language gains in 4–6 weeks that in the past would have taken up to 2 years." Such a statement, appearing in a national newspaper (*USA Today*) or a weekly magazine (*Time/Newsweek*), has sufficient credibility for many parents to want their children with language or learning problems to receive the program. But a statement like this in the popular media is obviously not sufficient for us, the professionals providing speech-language services, to embrace a different treatment approach. What kinds of statements or evidence does it take for a clinician to embrace a different treatment approach? In order to answer this question, we need to consider the factors that influence the selection of treatment approaches.

FACTORS THAT INFLUENCE THE SELECTION OF TREATMENT APPROACHES

A few years ago, I conducted a study on the development of clinical expertise (Kamhi, 1994). In this study, I found that clinicians, regardless of experience, rated interpersonal/attitudinal factors as significantly more important than the technical and procedural aspects of therapy. Not reported in this article were the responses to questions that asked clinicians to characterize their approach to treatment and discuss why they used their

particular approach. Most clinicians described their approach as "eclectic," and often said that they used their particular approach "because it worked." The "because it worked" answer troubled me at first, because I wanted clinicians to have a better justification for why they used a particular therapy approach. For example, I thought a good answer to the question would be to say how their approach to therapy was consistent with their view of language learning. I also thought clinicians might cite empirical evidence supporting the efficacy of their approach. As I thought more about the "because it worked" answer, however, I came to see that it was actually a very appropriate way to justify the use of a particular treatment approach.

The "because it worked" answer is consistent with a small body of well-designed experimental and quasi-experimental research that has found that a critical determinant of teacher attitudes toward change was not prior attitudes or beliefs, as was commonly thought, but whether new practices led to demonstrable gains in student achievement (cf. Gersten & Brengelman, 1996). Attitudes were found to change dramatically when teachers saw changes in their students' learning abilities. In related research, a major reason teachers continued to use an innovative teaching approach was that it enhanced performance for difficult-to-teach students (Berman & McLaughlin, 1976). Importantly, in judging the effectiveness of a lesson, teachers relied more on observable student behavior than on quantitative assessment data (Morine-Dershimer, 1978-1979, cited in Gersten & Brengelman, 1996).

It may be that clinicians have stronger theoretical beliefs than classroom teachers, but I doubt that this is the case. Even if this were the case, I think that most speech-language pathologists would still be influenced more by observable behavioral changes than by theoretical beliefs. Most clinicians are pragmatists; they have little problem with theoretical inconsistencies. For example, most clinicians still use behaviorist terminology when they talk about "reinforcing" language behaviors or choosing the best reinforcers, even though they would characterize their treatment approach as naturalistic and communication-based.

Clinicians probably do rely more on quantitative assessment data in evaluating the effectiveness of a treatment approach than classroom teachers do. Teachers have much more time to observe student behavior throughout the day and week than clinicians who, if they use a traditional pullout model, may only see students twice a week for 30 minutes or less. I think it is fair to speculate that as speech-language pathologists spend more time in the classroom working with teachers and students, there will be an increase in their use of observable student behavior to evaluate treatment efficacy.

If clinicians believe that they are using a particular approach because it works, then ethical issues must play some role in treatment decisions. If a treatment approach is not working, a clinician will have to try a different approach because it is unethical to continue to use a treatment approach that does not work. In the same vein, if a clinician learns of a new treatment approach that is more effective than the one that is currently being used, a case

could be made that one is ethically bound to try out the new approach to see if it is, in fact, more effective.

THE IMPORTANCE OF EFFICACY STUDIES ON TREATMENT DECISIONS

The "because it worked" answer also forced me to accept the reality that treatment efficacy studies may have a limited impact on the particular approach a clinician uses. I am not alone in recognizing this "reality." A recent issue of *Topics in Language Disorders* contained a series of articles on how to improve the link between science and practice (Ingram & Wilcox, 1998). Wilcox, Hadley, and Bacon (1998, p. 11) began their article by noting that "meaningful integration of empirical data into typical practice settings is a pervasive interdisciplinary problem." After a series of citations to support this statement (e.g., Powell, 1994), Wilcox et al. echoed my belief that "empirical validation is rarely a prime consideration in practitioners' selection of an educational or therapeutic technique" (p. 11).

Why does the substantial literature on communication and language intervention not have more of an impact on the selection of treatment approaches? Clinicians obviously feel that the intervention literature does not translate well into clinical practice. Wilcox et al. (1998) suggested that many validated approaches fail to meet real practice needs. This may be due in part to the quantitative experimental designs that make up the vast majority of treatment research. Many practitioner questions do not translate readily into methodologically sound experimental studies (Wilcox et al., p. 13). In the same issue of *Topics in Language Disorders*, Fey and Johnson (1998) showed how the need to preserve and enhance internal validity leads to intervention studies in which the measures used to demonstrate improvement "often fall far short of the highly general, functional outcomes desired by clinicians" (p. 26).

Clinicians who do wish to use empirical data to aid and support their selection of a treatment approach are confronted with an enormous and conflicting body of literature in which a wide variety of treatment approaches have been shown to be effective in improving speech and language abilities (cf. Geirut, 1998; Leonard, 1998). On the one hand, it is comforting to find that many different treatment approaches are successful in improving language and that no single treatment approach can be ideal for all children and all structures of language that might be taught (Leonard, 1998, pp. 200-201). On the other hand, some clinicians may be discouraged by Leonard's conclusion about the research that has compared different treatment approaches:

It is fair to conclude that we have not reached a point of knowing which approaches are the most effective for teaching particular target forms. Similarly, it is not yet clear which children benefit most from particular treatment approaches. (Leonard, p. 204)

There is no ambiguity, however, in the research that shows that, although treatment improves language learning in many children with specific language impairment, this

treatment "does not carry far enough to lead to normal language functioning. For such children, language problems, though mitigated, will remain as obstacles to social and academic success" (Leonard, 1998, p. 209). Given statements such as these, is it any surprise that concerned parents are continually on the lookout for more effective treatment approaches?

The situation is similar for remediating phonological disorders. Geirut (1998) recently reviewed approximately 300 articles that in some way addressed treatment efficacy for phonological disorders. She concluded that a wide variety of effective treatment methods are available for facilitating change in children's sound systems; however, she did find that some procedures were more efficient than others.

Even when research demonstrates that one approach is more efficient than another, it is not the case that clinicians will choose to use the more efficient approach. Clinicians are not naive research consumers. They know the limitations of research and also know that efficiency is not always the most important factor in treatment. Clinicians recognize that there may be significant trade-offs in efficiency and other factors. For example, child-directed treatment approaches (e.g., play therapy in which the clinician follows the child's lead) may not be as effective as clinician-directed approaches in the short-term, but clinicians may choose to use child-directed approaches because they are more conducive to establishing meaningful interactions that underlie functional communication.

In light of these points, it is not surprising that treatment efficacy studies have had little impact on the treatment approaches clinicians use. Research either cannot differentiate between the efficiency of different approaches, or in cases when it does, clinicians might not be willing to use the more efficient approach because the more efficient approach may compromise other factors, such as functional outcomes. As I noted earlier, clinicians are pragmatists; most treatment studies do not tell them what they want to know (cf. Fey & Johnson, 1998). Clinicians are thus more likely to embrace new treatment approaches if they lead to greater or quicker functional outcomes. Researchers, on the other hand, are less likely to embrace new treatment approaches because they must conform to the scientific orthodoxy and be consistent with their theoretical biases.

CHALLENGING THE SCIENTIFIC ORTHODOXY

Anyone who dabbles in the history of science knows that scientists are, by their training, a conservative lot. They are generally resistant to change and are usually unwilling to embrace new ideas or paradigms until the empirical evidence is overwhelmingly in support of them. But the history of science is about how new ideas and paradigms come to replace the conventional wisdom. This history is filled with stories of how the ideas of particular individuals (e.g., Galileo, Copernicus, Newton, Darwin, Einstein, Chomsky) replaced the existing scientific orthodoxy and in some cases, such as with Newton, were

eventually replaced themselves by new ideas (e.g., quantum theory). Goldstein (1990, p. 42) cited the following quote from Bannister (1970) as an example of how scientific orthodoxy might have influenced Columbus.

Had Christopher Columbus...possessed the mind of many modern psychologists, I am reasonably certain he would never have discovered America. To begin with, he would never have sailed because there was nothing in the literature to indicate that anything awaited him except the edge of the world. Even if he had sailed, he would have set forth bearing with him the hypothesis that he was travelling to India. On having his hypothesis disconfirmed when America loomed on the horizon he would have discovered the whole experiment null and void and gone back home in disgust.

Researchers trained in the behavioral science tradition are no different from scientists in other fields. Like our fellow scientists, we are very slow and cautious in embracing new ideas about language or new approaches to treatment. When we do not like a new idea, we offer up sophisticated arguments that question the logic and coherence of the new idea. When new treatment approaches are proposed and promoted, we question the theoretical and empirical bases of the approach. Yet, when we wish to support an idea or clinical approach, we criticize those who do not appreciate or accept our logic or the wealth of empirical support we have to support our views (e.g., Rice, 1997; Tallal, 1997).

To practitioners, the continued jousting among researchers may seem tedious. When scientists debate clinical practice issues, there is often no middle ground. Scientists need to convince clinicians that their view is the only one that has both theoretical coherence and empirical evidence to support it. This often leads to the use of emotionally charged rhetoric and exaggerated claims of the dangers of using the wrong treatment approach and the benefits of using the right one. As an example, consider Goldstein's (1990) admonishment to clinicians about the

considerable danger in encouraging language intervention research that is consistent with current fads.... If, for example, we were to jump on the "naturalistic language intervention" bandwagon, as appealing as it seems, we might stifle future progress by ignoring the history of contributions to clients and to science that have accrued from more didactic teaching methods. (p. 47)

Goldstein's warning concerning the danger of naturalistic language intervention has been challenged by scientists (e.g., Duchan, 1995; Fey, 1990) who strongly advocate naturalistic language approaches. These researchers are just as concerned with clinicians jumping on the latest treatment bandwagon as Goldstein is. Of course, the term "bandwagon," with all its negative connotations, is never used to describe one's own treatment approach that has been theoretically and empirically validated. Bandwagons always refer to treatment approaches that purportedly lack theoretical coherence or sufficient empirical support. New treatment approaches are thus often attacked by scientists with different theoretical orientations because these approaches may challenge more than one of the current scientific orthodoxies.

Challenges to the scientific orthodoxy are not taken lightly by the scientific community. Scientists have their

empirical standards and it is these standards that allow the evaluation of competing theoretical orientations. For example, no researcher believes that a single study could provide sufficient empirical evidence to support the use of a particular treatment approach. Goldstein (1990) suggested that at least three studies of a treatment program are necessary "if you really desire to 'get it right'" (p. 43). Fey (1990), on the other hand, questioned whether the value of a treatment approach can be reduced to a quantitative number. The right kind of studies need to be performed, and Fey does not think that the kinds of research programs needed to address fundamental questions concerning treatment efficacy have been done yet.

Fey (1990) described two major types of treatment studies in language intervention—those that evaluate the effectiveness of a single procedure or a tightly constrained "procedural complex" and those that evaluate treatment packages. Both of these types of studies have serious weaknesses. Studies that focus on a single procedure or set of procedures do not reflect the programs used by most clinicians, and the effects achieved are rarely broad enough to have a clinically significant impact on a child's communication. Studies that examine treatment packages suffer from methodological weaknesses such as problems in subject selection and the use of appropriate controls, and when the appropriate controls exist, "it is virtually impossible to know precisely which aspects of the approach were essential to obtain the effect" (Fey, p. 36).

Fey is not optimistic about researchers making the commitment to do the kind of research necessary to address these concerns:

Realistically, it will be decades before researchers and clinicians converge on results that are replicable and conclusive and that clearly show that certain treatment variables can be combined in various ways to the best effect with different types of language-impaired children. (Fey, 1990, p. 39)

How does a clinician respond to comments like this? If researchers are so critical of the existing treatment literature that presumably justifies the use of current clinical practices, how is one supposed to react to their criticisms of new treatment approaches? Unlike physicians, who have to wait for approval by the Food and Drug Administration before they can prescribe new medications, clinicians do not need the scientific community's "seal of approval" in order to use a particular treatment approach. Clinicians can use whatever treatment approach they want. They may be limited by other factors (e.g., budget and time), but their concern is behavioral and functional outcomes, not research publications. Researchers, in contrast, often have to conform to the scientific orthodoxy in order to publish empirical studies. Those who go against mainstream views may have a lot of trouble getting published. For example, researchers who perform qualitative, ethnographic studies often have a difficult time publishing their work in prestigious journals such as the *Journal of Speech, Language, and Hearing Research*. Another example is provided by Goldstein (1990), who described how he was forced to "disguise practicality [i.e., operant procedures] behind a robe of [currently accepted] theory" (p. 43) in order to publish his behaviorally oriented research. Goldstein was

justifiably proud that "such deceit" was successful in leading to the publication of his work on the use of sociodramatic play and social scripts to improve conversational interaction.

Parents can also play an important role in influencing clinical practice and challenging the scientific orthodoxy. Parents want the best outcome for their children and usually have no commitment to one approach over another or one theory over another. The approach that promises the best outcome is the one they want. Researcher, clinician, parent...where is the clinician in this sequence? Caught right in the middle between the research community with its inherent skepticism and commitment to the scientific orthodoxy and parents who want the best outcome for their children. What is a clinician to do?

TO USE OR NOT TO USE: THAT IS THE QUESTION

Last year, one of my students told me to read Catherine Maurice's (1993) book, *Let Me Hear Your Voice: A Family's Triumph over Autism*. It was one of the more powerful books I've ever read. When Maurice's first child was diagnosed with autism at age 2 by some of the best professionals in New York City, she was told that he would never be normal and that no type of treatment could ever make him normal. Maurice listened to this prognosis, and although she knew it might be correct, she sought out treatment approaches and practitioners that promised a more optimistic outcome. She decided on a combination of Lovaas' behavioral approach, speech-language therapy, and holding therapy. For a long time, she thought that the holding therapy was making the most difference. She hated the behavioral therapy and came close to stopping it many times. With time, however, she came to acknowledge that it was the combination of the rigid behavioral program and the speech-language therapy that was having the most impact on her child. By the time he entered school, Maurice's son was essentially normal—so normal, in fact, that when she took him back to be reevaluated by the same physicians and psychologists who made the initial diagnosis, they told her that they obviously had misdiagnosed him. The 5-year-old child they saw now could never have been autistic.

This book had a significant impact on my views of treatment. Although I have never considered myself an expert in autism, in the few classes in which I discuss autism, I clearly conformed to the scientific orthodoxy. I reviewed the current functionally oriented, communication-based therapy approaches and did not even mention Lovaas' approach because it was "old history" as far as I was concerned. I knew that the 2-4-hour-a-week treatment that many children with autism receive from speech-language pathologists would never make these children normal, but I thought that no treatment could ever make these children normal. Maurice's book forced me to think that maybe I was wrong. Even if she fabricated the entire story, or overstated the early autistic behaviors and minimized the

later language and learning problems, a basic point remains: By believing that children with autism will never be normal (i.e., the "deficit" view), we run the risk of using treatment approaches that support this belief. We also may not be willing to try approaches that promise significantly better outcomes than our current approaches provide because we think that such outcomes are unattainable and unrealistic.

The parallel with developmental language disorders should be apparent. Recall Leonard's statement (Leonard, 1998) that language intervention, though effective, does not result in normal language functioning. The language problems, "though mitigated, will remain as obstacles to social and academic success" (p. 208). Statements such as these should be troubling for clinicians and even more troubling for parents of children with language problems. When parents hear about treatment approaches that promise better outcomes for their children, it is natural for them to inquire about the availability of these approaches. If the clinician does not think the alternative approach is a viable one, some parents may seek out a clinician who is using the different approach.

Why shouldn't a clinician use a promising new treatment approach? At least three reasons are usually given. Scientists, as I have shown, often warn against jumping on the latest intervention bandwagon because the new approach has not been empirically validated. But, as I pointed out earlier, empirical validation has little influence on the treatment approaches clinicians use, so it would be inconsistent for clinicians to let empirical validation play a decisive role in determining whether to use a new approach.

Another reason not to use a new treatment approach is that we may raise false hopes and expectations in parents. Parents, however, are not naive consumers; a "caveat emptor" (buyer beware) mentality is an integral part of our society. Most parents know that the benefits reported concerning new treatment approaches in the media are sometimes overstated, and even if they are accurate, their child may not respond the same way to the treatment. Clinicians also are not easily brainwashed. The profession's experience with facilitated communication is a case in point. Although many clinicians may have initially jumped on the facilitated communication bandwagon, most quickly jumped off when they saw that it did not work. In any event, clinicians routinely caution parents concerning expectations and clinical outcome regardless of the approach they use. The stories we see on television or read in the newspaper regarding inappropriate clinical practices are the exception, not the rule.

The third reason not to use a new treatment approach is that we do not understand what it is about the approach that makes it work. For example, one cannot deny that Fast ForWord[®] improves children's performance on standardized measures of language. It is unclear, however, what it is about Fast ForWord[®] that is causing these language improvements and what has actually improved in the child. Is Fast ForWord[®] simply improving attention rather than improving children's temporal processing abilities? Is the intensity of the program primarily responsible for the language gains? Is it the systematic language instruction

presented with cartoon characters on the computer?

Many questions can be asked about why children improve with this treatment approach, but these same questions can be asked about other treatment approaches as well. Should clinicians wait until these questions are answered before using a particular treatment approach? If physicians had to know why aspirin and other medications worked before prescribing them, many illnesses would have gone untreated. Practitioners must weigh the cost and risks of alternative treatments against the possible benefits. As I've noted earlier, however, practitioners are pragmatists. Dramatic behavioral changes with low cost/risk factors will almost always override uncertainty about underlying causal mechanisms.

TRUSTING CLINICIANS

In practitioner-oriented fields such as ours, there is a perceived gap between research and practice, which is exacerbated by a communication gap (Butler, 1998). There have been repeated attempts to reduce this gap in our profession through formal and informal processes. For example, the recent issue of *Topics in Language Disorders* (Ingram & Wilcox, 1998) has a number of excellent articles that discuss ways to improve interactions and communication between researchers and clinicians. A common theme throughout these articles is that researchers and clinicians need to work together, not only to improve clinical practice through research, but also to make researchers more responsive to practitioner needs. This is a goal worth striving for.

The problem is that such a goal may be unattainable because of the fundamental differences between researchers and practitioners: Researchers are bound by theory and scientific orthodoxy, whereas practitioners are driven by behavior change that will often reflect a plurality of theories (cf. Kamhi, 1993). Apel (1999), in the commentary that follows, writes about how he finds it perplexing that members of our profession are often categorized as scientists or clinicians because he operates as a scientist whether he is in the clinic or classroom, or conducting research. Apel focuses on commonalities between researchers and clinicians rather than on differences, as I have done. For example, researchers and clinicians both use a systematic logical process to search for solutions to problems. These commonalities are not insignificant, but the science that researchers practice with its emphasis on reliability and validity (cf. Fey & Johnson, 1998) is very different than the science clinicians practice, which focuses on behavior change and functional outcomes. Underscoring this difference is the fundamental difference between the doctoral degree, which is a research degree, and the master's degree, which is the terminal degree for practitioners.

An understanding of the fundamental differences between scientists and practitioners seems crucial in order to improve interactions and communication between the two groups. I think that interactions between scientists and practitioners also would be improved if scientists could

better communicate the respect I assume most of them have for clinicians' skills and decision-making abilities. Although most clinicians are not scientists, they also are not technicians. Clinicians in our field have been trained and educated to make informed decisions concerning clinical practice. This is why the master's degree is the entry-level degree in our profession. One of my favorite quotes in the literature makes the point that no assessment protocol is a substitute for an informed clinician:

The most useful and dependable "language assessment device" is an informed clinician who feels compelled to keep up with developments in psycholinguistics, speech pathology, and related fields and who is not slavishly attached to a particular model of language assessment. (Siegel & Broen, 1976, p. 75)

The same is true for intervention. There is no substitute for an informed clinician who is willing to try different treatment approaches and is able to critically evaluate the effectiveness of these approaches for improving various aspects of communication.

In other words, clinicians are well-qualified to evaluate the effectiveness of new treatment approaches. If a new approach proves to be no better than the currently used approach, or its cost and risks outweigh the potential benefits, it will become one more blip in a long history of treatment fads. If, on the other hand, the new approach proves to be better, and the benefits outweigh the cost and risks, it will be added to clinicians' treatment arsenal. In time, the new approach may come to be viewed as the "traditional" approach, and its theoretical orientation may become the scientific orthodoxy. Thus the endless cycle of change: New and innovative becomes old and traditional only to be challenged again by new and innovative. I have no problem entrusting clinicians with the responsibility to make sure that only the best treatment approaches become the traditional ones.

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Checks and Balances: Keeping the Science in Our Profession

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ABSTRACT: Kamhi (1999) suggests that clinicians may choose to use an intervention approach "because it works" rather than relying on their theory of language learning. This suggestion spawned a number of concerns, including who the scientists in our field are, whether our professional definition of language is used in our language theories and intervention approaches, and what we say the "best" intervention is. In this article, these issues are discussed as discrepancies, along with some suggestions for addressing these gaps, in order to integrate science into all of our professional endeavors.

KEY WORDS: language, intervention, theory, science

I am not good at balancing my checkbook. When I try, I am faced with one discrepancy after another. No matter how hard I strive, I never quite make the process work out the way it should. Now, I could try to take a methodical, one might even say scientific, approach to solving these discrepancies. I could follow the accepted procedural definition of check management and actually record checks as I write them. I might take the time to notice when I believe that I have \$12.95 left in my account and the bank says that I have \$10.95. I could even painstakingly cross-reference each check with my monthly statement, being true to what most typical