

The Future of Early Communication and Language Intervention

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This article presents a vision of the future of early communication and language intervention efforts. In this vision, all young children experience highly responsive environments for as much of the time as possible from infancy onward, communication and language delays and disorders are routinely identified as close to their genesis as possible, and optimal intervention strategies are implemented as early as possible. To realize this vision, we must achieve the following on a broad scale: (a) increase support for responsive interaction styles among all parents, childcare workers, teachers, and early interventionists; (b) expand efforts to identify communication delays and disorders as early as possible; (c) move forward with the development of truly effective communication and language intervention approaches; and (d) transform research findings into day-to-day practice. The realization of this vision will necessitate a truly transdisciplinary approach to both research and practice.

Communication and language abilities are central to most definitions of human intelligence (e.g., Gardner, 1983; Thurstone, 1938). The fundamental role of these abilities in social and cognitive functioning is abundantly clear when they fail to develop as expected or are impaired due to accident, disease, heredity, teratogens, or impoverished input.

Delayed or deviant language and communication development are implicit in our definitions of mental retardation (Rosenberg & Abbeduto, 1993) and autism (Frith, 1989). Early communication and language problems are often implicated as contributing factors in later appearing learning disabilities and behavior disorders (Fey, Catts, & Larrivee, 1995; Kaiser & Hester, 1997). Communication- and language-related disorders affect several million children in the United States and are the single most common reason for special education referral (Casby, 1989).

As we move deeper into the "information age," the central role of communication and language abilities will inevitably expand. In an increasingly high-tech world, communication abilities will directly influence an individual's job prospects, social opportunities, and even overall quality of life. Individuals who fail to acquire functional and effective communication skills are likely to endure lives of undue dependency, social isolation,

and restriction, irrespective of whatever other abilities they possess.

THE FUTURE WE WANT

Many authors have documented the impressive achievements that have been made in our knowledge of early communication and language development (e.g., Berko-Gleason, 1997; Bloom, 1993) and in our ability to enhance development through early intervention (e.g., Hart, this issue; Warren & Yoder, 1997). Although this knowledge remains incomplete, I believe it is sufficient for us to see the many challenges that must be met before the potential of this work will be fully realized. To meet these challenges we must be clear about the outcomes we ultimately hope to achieve. What can we ultimately expect from early intervention for children who are experiencing problems with communication and language development? I submit the following three-part answer to this question.

1. *We want all children to experience highly responsive environments for as much time as possible from infancy onward.* By responsiveness we mean a style of dyadic interaction in which the child regularly experiences a wide range of natural teaching devices such as expansions;

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models; growth recasts; use of concrete, simplified vocabulary; talk about objects and events the child is attending to; and so forth, all finely tuned to the child's comprehension level. This style of interaction, sometimes termed "parentese" or "motherese," appears to aid the acquisition of linguistic and communicative competence in most children (Gallaway & Richards, 1994) and may be even more important for children with developmental disorders and delays (Yoder, Warren, McCathren, & Leew, 1998). It works its magic cumulatively as the child experiences its effects hour-by-hour, day-by-day, year-by-year (e.g., Hart & Risley, 1995).

2. *We want to identify communication and language delays and disorders as early as possible so that effective treatment can start as close to the genesis of the problem as possible.* We know that many delays and disorders originate very early in development, yet frequently no systematic action is taken until development has already been hindered and disrupted for months or often years. Fortunately, our knowledge of very early development is steadily increasing. For example, we can identify hearing loss shortly after birth, and we have identified some robust predictors of later language development that are evident before the end of the first year of life (McCathren, Warren, & Yoder, 1996). But this knowledge has yet to be widely applied in practice.

3. *We want to implement optimal intervention strategies as early as possible.* We want these strategies to have sufficient intensity and to extend for sufficient duration so that they will affect a given child's developmental trajectory as much as possible. We want these efforts to be individualized and carefully monitored so that they can be adjusted when a child's development either plateaus or accelerates. And, as much as possible, we want these strategies to be embedded in the child's ongoing interactions at home and in childcare or preschool in order to ensure their maximal impact. Researchers have developed a number of strategies that can be used effectively at different points in development (e.g., milieu teaching, responsive interaction, direct teaching), but the systemic use of these strategies is not yet widely evident in practice (e.g., Schwartz, Carta, & Grant, 1996).

THE CHALLENGES WE FACE

This vision of the future need not be discarded as unrealistic or infeasible. Highly responsive parenting styles are probably an outgrowth of high levels of literacy and smaller families (and perhaps other variables) and appear to be spreading throughout many relatively well-educated industrialized societies (Williams, 1998). Enhanced early screening and identification efforts are possible because of changes in our knowledge base and technology (e.g., genetic screening) and may be increasingly demanded by

parents, educators, and health-care organizations as the costs of early prevention and intervention efforts are compared to the cumulative costs of chronic, life-long afflictions. Even now such efforts are making headway in some communities and states. As for our intervention efforts, we still have some distance to travel. Yet, an empirically based, developmental model of communication and language intervention is emerging in the literature (Warren & Yoder, 1997), and efforts to develop effective interventions for children who are functioning under 1 year of age developmentally are well underway (e.g., Wilcox & Shannon, 1998; Yoder & Warren, 1998, 1999a).

Given the progress we've already made, I believe the vision outlined above is more than merely conceivable; it may even be achievable in the next decade if it is made a priority. However, we must meet (at least) four major challenges to achieve this vision.

Challenge 1

Increase support for responsive interaction styles among all parents, childcare workers, and early interventionists. Increasing evidence suggests that highly responsive parenting styles foster the development of communication and language skills, as well as other important skills related to self-concept and emotional development (Hart & Risley, 1995; Landry, Smith, Miller-Loncar, & Swank, 1998; Mahoney, Boyce, Fewell, Spiker, & Wheeden, 1998; Ramey & Ramey, 1998). The emerging developmental model of language intervention posits that frequent daily interaction with highly responsive adults is necessary but often not sufficient by itself to ensure an optimal outcome (Warren & Yoder, 1997). Paul Yoder and I have reported (Yoder & Warren, 1998, 1999a, 1999b) that the effects of prelinguistic milieu teaching were greatest for children with mothers who were above average on a measure of maternal responsivity to their child's communication acts prior to intervention. Conversely, adult responsivity to communication attempts of young children with developmental delays may have minimal effects on their language development in the absence of specific elicitation techniques (Tannock & Girolametto, 1992; Wilcox & Shannon, 1998; Yoder et al., 1998).

Challenge 2

Greatly expand our efforts to identify communication delays and disorders as early as possible. For example, newborn infants can be effectively screened for impaired hearing (National Institutes of Health, 1993). Despite extensive efforts by the American Association of Speech-Language-Hearing to promote and even mandate this practice, it is not yet routinely done in the United States

despite the high frequency and well-documented effects of hearing impairments, and the availability of powerful early interventions (e.g., cochlear implants, hearing aids, early signing interventions, etc.). Researchers have also identified robust early predictors of later language development in infants under 1 year of age. This small set of predictors includes babbling, the development of pre-linguistic forms of pragmatic functions (e.g., requesting, commenting), and vocabulary comprehension (McCathren et al., 1996). Yet with the exception of a few comprehensive assessments, for example, the Communication and Symbolic Behavior Scales (Wetherby & Prizant, 1993) that are not widely used by clinicians, most early assessments do not adequately measure these skills. Hopefully this situation will eventually be reversed with the introduction of a short form of the Communication and Symbolic Behavior Scales (Wetherby & Prizant, 1998). In summary, we have made substantial progress in identifying some very early predictors of communication and language problems. While further research is clearly needed, a major challenge now is to move these recent developments into widespread practice.

Challenge 3

Move ahead with the development of truly effective communication and language intervention approaches. Despite three decades of steady progress, there is still a great deal of work that remains before we can reliably prescribe and implement interventions capable of minimizing the long-term effects of a young child's communication or language impairment. Unfortunately, much of the research that now needs to be done will necessitate comparative, longitudinal intervention studies that are usually complicated, lengthy, and relatively expensive to conduct. For example, we need more studies that test the relative efficacy of different intervention approaches (Is treatment *A* more effective than treatment *B* at a given point in development?) and between a given intervention and the developmental or temperamental characteristics of the learner (e.g., young children with expressive language impairments vs. children with expressive and receptive impairments). Genetic differences have been almost totally ignored in intervention efficacy studies to date. Nevertheless, it is likely that the characteristics associated with specific phenotypes (e.g., Prader-Willi syndrome, fragile X syndrome) may influence the effectiveness of some intervention approaches (Hodapp & Fidler, 1999). Cross-sectional studies (e.g., Cole, Dale, & Mills, 1991) are needed to effectively separate developmental level from individual subject differences to allow us to fully understand the sources of variance in intervention outcome studies.

Further progress in understanding the basis of specific language impairments should also eventually lead to

more effective interventions (Leonard, 1998). For example, if the underlying reason for a child's impairment is attributable to his or her inability to discriminate brief grammatical morphemes (e.g., “—ed” or “—s”) in speech (e.g., Leonard, Eyer, Bedore, Grela, 1997), intervention might focus on providing the child with many sentences in which such morphemes are more salient. Until we develop more reliable knowledge of the bases of these and other difficulties manifested by young children with specific language impairments, treatments must necessarily be more general in nature and, therefore, perhaps less than optimally effective.

Research is particularly needed on the effects of more comprehensive interventions that integrate various components that have been previously studied in limited contexts and shown to be effective. An obvious characteristic of most intervention studies reported is their relatively narrow focus. For example, most early language intervention studies focus on expressive skills, whereas comprehension, despite its fundamental importance, has rarely been studied as an outcome. Furthermore, virtually no studies have been reported that attempt to achieve what many believe to be the crucial goal for young children with language impairments—preparation to meet the written language and social demands of elementary school (Fey et al., 1995). Accomplishing this will require that language intervention be linked to emergent literacy skills as well as general social competence.

Studies on “general effectiveness questions” can be methodologically and financially daunting, yet there is no denying their potential value. To reap the most potential from such studies, researchers must move beyond simple “main effects” analyses aimed at showing that “more is better” or “earlier is better.” These are not trivial points. A more sophisticated knowledge of how an intervention can interact with the forces of the natural environment and the child's own emerging abilities may be achieved by pursuing theory-driven aptitude by treatment interactions. These types of analyses can lead to more precise, elegant interventions that are truly cost-effective for young children and societies with limited resources.

It is obvious that the further development of increasingly effective early intervention approaches will require the participation of highly trained scientists and the provision of substantial resources. Longitudinal intervention studies that utilize controls, such as random assignment, and maintain a high degree of treatment fidelity simply cannot be done without these supports. The good news is that the field has now reached the point in its evolution where such studies are likely to yield highly valuable information. Important questions await such efforts. For example, we may presume that interventions that start earlier in development and continue longer afford greater benefits to the participants

than ones that start later. However, there is little empirical support for this premise. The same holds true for program intensity; we presume it is an important variable in determining outcomes, yet there is less empirical support for this premise than some may realize. Generating clear, unambiguous answers to these questions is an important task for the future.

Challenge 4

Move research findings into day-to-day practice. We all know only too well that the development of highly effective early assessment and intervention approaches does not mean these innovations will soon be found in routine use throughout the field. Only a handful of studies have examined the use of naturalistic language intervention approaches in practice (e.g., Roberts, Bailey, & Nychka, 1991; Schwartz et al., 1996). In general this tiny literature suggests that effective communication intervention practices are being only partially implemented in early intervention programs (Carta & Greenwood, 1997; Roberts et al., 1991; Schwartz et al., 1996). Fortunately there is some evidence that when these practices are fully implemented, more positive child outcomes are generated (Peterson & McConnell, 1996; Schwartz et al., 1996). The disconnection between research and practice has become increasingly apparent in recent years (e.g., Carnine, 1997; Carta & Greenwood, 1997). Perhaps the most important challenge we face in the years to come is bridging this divide while operating in increasingly inclusive contexts.

THE ROAD AHEAD

Communication and language play central roles in human development and behavior across the life span. This broad, pivotal role suggests that anything beyond the most simplistic, narrow intervention will benefit from a transdisciplinary perspective on the part of researchers and practitioners. However, the inherent complexity and ubiquity of language and communication has tended to encourage conceptual and clinical fragmentation instead (Warren & Reichle, 1992). Hence, in practice “turf” tensions and clashes are all too common. Communication and language skills are learned and used in meaningful, ordinary day-to-day contexts such as the home and classroom. Whose turf is this? Who is responsible for a child’s communication and language development? The answer is obvious—almost everybody! At the very least the list includes early childhood educators, parents, speech–language pathologists, and whoever else is directly invested in the development of the child. Logic and research suggest that the most effective intervention will involve a conspiracy by all responsible parties to provide the most responsive

and developmentally progressive learning environment possible for as many of the child’s waking hours as possible. Thus, the road to further progress will require a far more transdisciplinary approach than is evident in common practice at present.

The continued movement away from “pull-out” models of intervention and into homes and inclusive classrooms presents its own set of challenges (e.g., McWilliam, 1996). Two particularly critical questions concern how the fidelity of specific intervention practices can be maintained and how sufficient intervention intensity can be ensured. These concerns are far from trivial. Nevertheless, I believe that curriculum approaches such as activity-based instruction (Bricker, Pretti-Frontczak, & McComas, 1998) can provide the type of classroom structure that supports the embedded, appropriately intensive use of “naturalistic” communication approaches such as milieu teaching and responsive interaction (Warren, McCathren, & Yoder, in press).

Moving toward inclusive, transdisciplinary approaches does not mean that we should abandon the use of direct instruction in the form of short, intensive applications targeted on specific skills (e.g., Goldstein, 1985). Abundant research indicates that direct instruction approaches characterized by the use of specific prompts and reinforcement, rapid mass trial instruction, and frequent direct assessment of learning can be efficient and effective strategies for teaching advanced language skills (e.g., grammatical morphemes) to young children (Klinckler & Carnine, 1991). The emerging developmental model of language intervention (Warren & Yoder, 1997) recognizes the effectiveness of direct instruction as a means of teaching a range of higher-level skills. Likewise, making sure that a child with a communication and language delay receives some daily one-on-one or small group intervention in the classroom may assure that sufficient intensity is maintained and optimal results achieved.

We should celebrate the enormous progress in the science and practice of early communication and language intervention that has been made in the past three decades. The challenges ahead are clear and substantial. But they are far from insurmountable. We know what truly responsive parenting in highly educated industrialized societies looks like (Hart & Risley, 1995); now we need to promote the spread of these practices. We can increasingly identify communication and language development problems very early in childhood. We have developed an array of interventions that appear to enhance development when applied with sufficient fidelity and intensity. Finally we have acknowledged the very real difficulty of translating research into effective, widespread practices. In short, while we have much to do, we have at the very least constructed a firm foundation from which to work. ♦

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