

COMMUNICATION AND LANGUAGE INTERVENTION: WHY A CONSTRUCTIVIST APPROACH IS INSUFFICIENT

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The purpose of this article is to present the basis for a broad-based cross-paradigmatic approach to language intervention. Factors that have shaped the field over the past 40 years are briefly discussed to provide a context for considering the present state of practice and research. Three

widely used language intervention approaches are described and critiqued to demonstrate the limitations of any single approach. The main challenges facing the language intervention field and a rationale for taking a broad-based cross-paradigmatic perspective are then discussed.

The acquisition of language is the basis for virtually all other forms of symbolic activity by humans. Indeed, the majority of content areas surveyed in this special issue—reading, writing, math, science—are special cases of language use and are dependent on it as a foundation for their own development. The seemingly effortless acquisition of language by children during the first few years of life represents a truly remarkable achievement. Conversely, delayed language development can be devastating, with effects spread across other domains of development and throughout a lifetime.

The fundamental importance of communication and language development has spawned an enormous amount of basic and applied research over the past 40 years. As with other aspects of development, various forms of constructivism have been reflected in and have influenced some of this research. In this article, we will first provide a brief historical context for understanding the role of both constructivism and behaviorism leading up to current practice and research. Next, we will characterize three widely used contemporary language intervention approaches that reflect varied conceptual perspectives (i.e., constructivist, eclectic, behavioral) and discuss the strengths and limitations of each approach. We will conclude with some general comments on what we see as the main challenges facing the field and on the rationale for a broad-based cross-paradigmatic perspective on language intervention.

HISTORICAL CONTEXT

Historically, the contributions of behavioral and constructivist paradigms to communication and language intervention have been quite different. Whatever other merits they may possess, strictly endogenous views of language acquisition (e.g., Chomsky, 1965; Pinker, 1984) leave little role for formal intervention and have been largely ignored by interventionists. Behavioral, social-cognitive, and social-learning oriented approaches, on the other hand, leave the door open to varying degrees with respect to environmental influences (e.g., Bates, 1979).

Through the 1970s, the vast majority of the research and much of the practice of language intervention were from a behavioral viewpoint (Fey, 1986). This began to change in the 1980s for two principal reasons. First, by the end of the 1970s, applied behavior analysts, who had generated the great majority of intervention procedures and approaches up to that point, began to experiment with more naturalistic procedures that reflected a clear departure from the highly directive behavioral approaches utilized almost exclusively to that point. These new procedures turned the specification of the curriculum to be learned partially over to the child by following their attentional lead and embedded instruction into meaningful incidents across activities and throughout the day. This new direction reflected the partial failure of behavioral intervention protocols to produce broadly generalized effects. This was accompanied by a conceptual move away from the mechanistic behaviorism of Skinner toward a broader contextualist view (Pepper, 1942) that gave a far greater role to the immediate context in determining the form and function of any given act (Odom & Haring, 1994). This conceptual shift freed behavior analysts from the confines of their contingency driven S-R-S paradigm and facilitated a much expanded analysis of the role of antecedent stimuli (e.g., Sidman, 1986), setting events (e.g., Wahler & Fox, 1981), and the child's present knowledge base (Hart, 1985).

Second, a great deal of research in the 1970s and 1980s began to reveal the actual process of language acquisition. With it came an appreciation for both the tremendous variability of individual learning styles and the enormous range of skills to be mastered. Components of the child's language system develop in parallel down many tracks that each change in important quantitative and qualitative ways as they increase in complexity. For some aspects of the acquisition process (e.g., pragmatics, basic vocabulary, basic semantic relationships), the environment may scaffold development and facilitate the child's learning in relatively overt ways. For other components of the system (e.g., the acquisition of the linguistic rule system), the environment may be relatively less important and the process relatively more internalized. This complexity results in a dilemma for most theories of language development, which Carrow-Woolfolk (1988) aptly summarized as follows:

How can a broad theory of language development account for both positions—that of the child's role in constructing and shaping his or her language and that of the environment's role in helping in the shaping process? We know it cannot be a simple or unitary explanation of the process. The degree to which each part of the system—child and environment—play the major role may vary with the age of the child, the child's stage of language, the quality of the environment, and the special learning capabilities of the child. (p. 199)

LANGUAGE INTERVENTION—CIRCA 1990s

The findings that have moved the field of language intervention away from a mechanistic-behavioral approach over the past 15 years have not necessarily moved it toward a constructivist approach, but have instead yielded a number of relatively well developed models of intervention each reflecting greater or lesser influences of constructivism, behaviorism, and contextualism. To illuminate these differences, we have chosen to characterize three widely used approaches: responsive interaction, milieu teaching, and direct instruction. We will briefly note the basic assumptions of each approach and identify the paradigmatic view it reflects, then discuss the basic strengths and limitations of each model as we see them.

Responsive Interaction

Many terms are used to describe the responsive interaction approach in the literature, including the interactive model (Tannock & Girolametto, 1992) and the conversational model (MacDonald, 1985). This approach is widely used in parent training throughout North America. Its major immediate goal is to increase the child's social communication skills by enhancing the quality of interaction between the adult and child. Interaction is usually initiated and controlled by the child. Adults follow the child's attention lead, respond contingently to the child's behavior in a manner that is congruent with the child's immediate interests and developmental abilities, and provide natural consequences that are directly and semantically related to the child's communication or immediate interest. Modeling, recasting, and expansions of the child's communication attempts are encouraged (Nelson, 1989), while the use of directives (e.g., elicited imitation, mands, testing questions) is discouraged because it is assumed that it will disrupt the flow of interaction and the child's attentional engagement (Harris, Jones, Brookes, & Grant, 1986).

The basis of the responsive interaction model is social interactionist theories proposing that the child's active engagement in frequent social interactions is critical for language acquisition (Bloom & Lahey, 1978; Bruner, 1975). Vygotsky's theories are also frequently cited by proponents of this approach (e.g., MacDonald, 1989). This approach represents a dialectic form of constructivism. It assumes that manipulated input is important (e.g., via recasts, expansions, etc.), but that the child must guide himself or herself through the learning process. The adult's job is to assure a rich, responsive source of input while avoiding more direct instruction or teaching.

Strengths and Limitations. Responsive interaction approaches seem to be particularly well suited for facilitating the acquisition of higher level morphological and syntactic skills that can be made salient through growth recasts (Nelson, 1989, 1991; Yoder, 1992). A growth recast is a specific expansion or modification of a child's immediately preceding utterance in which new syntactic or semantic information is added. Because the function and core meaning of children's initiations are maintained during responsive interaction episodes, the immediate, appropriate use of newly learned skills should be enhanced. Finally, respon-

sive interaction approaches should be relatively easy to learn and can be used anywhere, at any time. They represent more a style of interaction (as opposed to a set of procedures) that mimics the style observed in many nondirective, responsive mothers with young children who seem to have accelerated rates of language learning (Mahoney & Powell, 1988).

In two studies, Yoder and his colleagues (Yoder, 1992) found that the responsive interaction approach may be more effective than milieu teaching (an eclectic approach that incorporates the use of specific prompts) with children who have a mean length of utterance (MLU) above 2.5, but less effective than milieu teaching with children who have a MLU under 2.5. The relative ineffectiveness of the responsive interaction approach under a 2.5 MLU may be due to the avoidance of elicited production prompts (e.g., elicited imitation, test questions, etc.) in the responsive interaction approach. During this period of development, elicited production prompts may be significant contributors to language acquisition. Imitation seems to be particularly useful as a learning strategy (Speidel & Nelson, 1989). Also, a growing body of literature demonstrates that the use of directives (as opposed to redirectives) in the context of joint-attention routines (interactions in which both the child and the adult focus their attention on the same action or activity) aids learning (Akhtar, Dunham, & Dunham, 1991) and social engagement (Yoder & Davies, 1990; Yoder, Davies, Bishop, & Munson, 1994) in both typically and atypically developing children. Finally, test questions (i.e., questions to which the asker knows the answer) are among the most frequently used question types by both mothers of children with disabilities (Yoder, Davies, Bishop, & Munson, 1994) and mothers whose children are typically developing (Olsen-Fulero & Conforti, 1983). Children are as likely to respond to these questions as any other type during the first stage of language learning (Yoder et al., 1994).

A related limitation of the responsive interaction approach is that it may lack sufficient intensity to be effective with children who initiate and engage the environment at very low rates (which is typical of many children with mental retardation and delayed language development). Again, the source of this problem may be the avoidance of elicited production prompts (embedded in joint-attention routines) aimed at assuring a sufficient rate of behavior to allow techniques like expansions and recasts to be effective. In short, the main limitations of the responsive interaction approach may be due to dogmatic avoidance of elicited production prompts, a result of the underlying constructivist philosophy.

Milieu Teaching

Milieu teaching subsumes several specific techniques, including incidental teaching (e.g., Hart & Risley, 1980), the mand-model procedure (e.g., Warren, McQuarter, & Rogers-Warren, 1984), and time delay (e.g., Halle, Marshall, & Spradlin, 1979). These procedures share several common features, including (a) teaching follows the child's attentional lead; (b) multiple, naturally occurring examples of target forms or functions are used; (c) child production can be prompted indirectly through environmental arrangement or directly through

explicit prompts as necessary; (d) natural consequences are used (as opposed to contingent praise); and (e) to varying degrees, teaching episodes are embedded in ongoing interaction. Responsive interaction and milieu teaching are similar in many ways, but vary substantially on one important dimension. Responsive interaction emphasizes the use of adult expansions or recasts to teach new responses, whereas milieu teaching uses elicited prompts for the initial production of target forms. In a typical conversational interaction, the adult's decision to elicit a more complete response from the child (e.g., with a mand) is incompatible with expanding what the child said; you can do one or the other, but not both within the same episode. For example, a child might initiate the word "push," to which the adult might respond, "Push what?" in milieu teaching (an elaborative question), or "push car" (an expansion) in the responsive interaction approach.

Fey (1986) categorized milieu teaching as a hybrid intervention approach representing a selective blend of techniques long used by behavior analysts (e.g., elicited imitation) with other techniques, such as basing teaching on the child's attentional lead, an approach emanating out of the Piagetian and Vygotskian influenced mother-child interaction literature (Bruner, 1975). Thorough descriptions of milieu teaching approaches can be found in Warren and Kaiser (1988) and Warren (1991).

Milieu teaching represents a truly eclectic approach to intervention. By basing teaching on the child's attentional lead (as constructivist approaches do), the child plays a significant role in determining the topic and pace of learning. But by allowing adults to elicit target production, direct teaching attempts are also built in as a critical source of input and deliberate scaffold for child conversational participation (as behavioral approaches do).

Strengths and Limitations. As we noted in the discussion of the responsive interaction model's limitations, milieu teaching interventions seem to be particularly effective in teaching basic vocabulary and semantic relationships to children with an MLU under 2.5 (Kaiser, Yoder, & Keetz, 1992; Yoder, 1992). This is probably because the use of elicited production prompts and the degree of conversation scaffolding is optimally effective at this stage of development. Adaptations of milieu teaching have also been used effectively to teach prelinguistic skills (e.g., Warren, Yoder, Gazdag, Kim, & Jones, 1993) and advanced vocabulary in a picture-book reading context (e.g., Whitehurst et al., 1989).

A strength of milieu teaching is that it can be easily embedded into home routines (e.g., Kaiser, 1993), activity-based preschool curriculum models (e.g., Bricker & Woods-Cripe, 1992), or a book-reading format (e.g., Whitehurst et al., 1989). It can be intensely applied in the context of activities that naturally support high rates of turn taking (e.g., Warren & Bambara, 1989), and/or spread episodically across the day (Hart, 1985).

Milieu procedures have three main limitations in our view. First, they may represent a relatively inefficient means of facilitating grammatical development because it is more difficult to find mands (i.e., questions that prompt a specific response in the ongoing interaction) on the fly that elicit production of examples of grammatical rules than it is to find mands for basic semantic relations and vocabulary. Furthermore, milieu procedures attempt to elicit production of spe-

cific sentences and phrases, thus possibly drawing the child's attention to the example phrases, rather than the underlying rule that is the real target of the intervention. Finally, fluid and effective use of these procedures may be difficult to maintain. Roberts, Bailey, and Nychka (1991) presented data suggesting that teachers often report using milieu teaching procedures in their classrooms, but when observed they seem to be using only certain components of these techniques (e.g., following the child's attentional lead). When this is the case, milieu procedures may be insufficient to facilitate acquisition.

Direct Teaching

Direct teaching, sometimes referred to as didactic instruction, has a long history as a language intervention approach (see, e.g., Schiefelbusch & Lloyd, 1974). It is typically characterized by the use of specific prompts and reinforcement, rapid massed trial instruction, the frequent direct assessment of learning, and the use of task analysis to break targeted skills down into small, easily learned parts (e.g., Guess, Sailor, & Baer, 1974). In contrast to responsive interaction and milieu approaches, direct teaching is adult directed and the specific content of teaching is carefully prespecified. It is assumed that child engagement will be maintained by well-organized instructional materials, rapid pacing, and immediate, contingent feedback (Klinder & Carnine, 1991).

In the late 1960s and 1970s, studies of various direct teaching techniques dominated several behavioral education journals (e.g., the *Journal of Applied Behavior Analysis*). Well-developed curricula, most notably the DISTAR Language Program (Englemann & Osborn, 1976), have been widely utilized in schools to teach language skills at the early childhood and elementary school levels. Carefully prescribed programs were also developed for children with mental retardation (e.g., Guess et al., 1974).

Some direct teaching approaches are compatible with an exogenous view of constructivism, although evidence does not suggest that a constructivist philosophy has had a direct influence on direct teaching. Most direct teaching approaches are clearly behavioral in orientation. They assume an important role for explicit, adult-directed input in developing language and other skills. Proponents of this approach argue that learners are quite capable of constructing meaning while being instructed by the teacher (e.g., Isaacson, 1989; Resnick, 1987). Thus, they have argued that "constructed versus instructed knowledge, understanding versus rule following, and discovery versus drill and practice are all false dichotomies" (Harris & Pressley, 1991, p. 393).

Strengths and Limitations. Despite the present whole language zeitgeist in primary education, direct teaching has some clear strengths. With language instruction, it can be used to assure that specific skills and concepts that are difficult to teach through other interaction strategies are actually taught and learned by children with learning impairments or mental retardation. Indeed, direct instruction may be more effective with skills that are more abstract in nature (Connell, 1987). This may explain why direct instruction has been shown to be relatively more effective than milieu instruction with more advanced linguistic skills (Yoder, Kaiser, & Alpert, 1991), and more effective than mediated

teaching strategies, another hybrid intervention in which teaching is based on following the child's lead but in which some direct instruction techniques are also used (Cole & Dale, 1986; Cole, Dale, & Mills, 1991).

Finally, an impressive amount of research has supported the efficacy of direct teaching approaches of language skills for disadvantaged children and children with mild mental retardation in the early primary grades (see Klinder & Carnine, 1991, for a review). Given this database, we find it difficult to avoid the conclusion that direct instruction is a proven approach that enhances certain language skills in young children.

On the other hand, direct instruction is not likely to be an effective method of teaching prelinguistic or early language skills because children do not yet have the attentional resources or abstract knowledge to integrate skills taught in a decontextualized format into their normal usage repertoires. In fact, Yoder and his colleagues found that milieu teaching is superior to direct instruction for teaching early vocabulary (Yoder et al., 1991). Furthermore, direct instruction obviously is of limited utility in facilitating the development of pragmatic skills. Its inherent emphasis on structure and form as opposed to normal function is apt to impede generalization if it is used as the sole instructional method in isolation from approaches likely to make newly taught skills meaningful for students (Spradlin & Siegel, 1982). Finally, because it is teacher directed, it may be difficult at times to maintain a high degree of child attention and interest (Bricker & Carlson, 1981).

PRESENT CHALLENGES

We agree with Harris and Pressley (1991) and others (e.g., Carnine, 1990) that constructed versus instructed knowledge creates a false dichotomy. Young children clearly develop the means to learn from a great range of inputs during their first few years of life. Teachers, parents, other adults, and peers clearly instruct them frequently, as well as provide models for them to construct knowledge. Either way, they own what they learn whether constructed through an internalized, discovery approach, via a direct instruction approach, or from a hybrid such as milieu teaching. Our view is that each instructional approach has its place. The real work for language interventionists and other educators is threefold: (1) to match interventions with the characteristics of individual learning challenges (e.g., acquiring pragmatics vs. syntax) and individual learner styles and levels; (2) to combine approaches to create truly rich, stimulating, responsive, and varied environments for children to learn in 14 hours a day; (3) to avoid being deflected away from the first two challenges by fallacious arguments about whether this or that approach fits this or that single theoretical paradigm.

Indeed, an important advantage of the three approaches just characterized is that they can sometimes be combined and used in complementary ways to provide a more optimal, comprehensive intervention. For example, Rogers-Warren and Warren (1980) used a milieu teaching procedure, the mand-model technique, to enhance the effectiveness of a direct teaching intervention. Kaiser (1993) reported the combination of responsive interaction and milieu approaches as part of a program to train parents to facilitate their children's language devel-

opment. In fact, we see no logical or procedural reason why any of these three approaches (or other approaches, such as whole language applications) cannot be utilized across the child's day in combinations appropriate to the skill being taught. This does not imply that any type of combination is appropriate. For example, direct instruction of early vocabulary or prelinguistic skills is probably never sensible, irrespective of what it may be combined with.

CONCLUSION

One lesson of the past 40 years of research on human development is that children are remarkably adaptable learners. Their learning strategies are likely subject to the forces of evolution like everything else. Assuming this is true, there should be an evolutionary premium placed on being able to adapt and learn from a wide range of environmental inputs, including those you have sought out yourself and those that someone has provided (i.e., taught) you. In other words, it may be an advantage to children if we teach them using many different approaches because it encourages them to develop and fine-tune truly effective, adaptable learning strategies. This does not mean that all strategies are equal. On the contrary, some surely work better at different points in development, in different situations, or for teaching different types of skills. That is precisely the point we have tried to make. As our brief characterization of language intervention strategies suggests, the effectiveness of a given approach is both a relative question (effective compared to what alternative?) and an absolute question (different instructional approaches may vary in effectiveness based on the characteristics of the learner, instructional context, and skills being taught).

We advocate a cross-paradigmatic approach to communication and language intervention because its inherent flexibility fits with what we know at present about the overall process of language acquisition, the relative nature of different intervention approaches, and the nature of human development. This perspective can encompass behavioral approaches (e.g., direct teaching), constructivist approaches (e.g., responsive interaction), and eclectic approaches (e.g., milieu teaching). More importantly, when this approach is guided by empirical, ecologically valid research, we believe it is more likely to lead to optimal intervention than a theoretically cohesive, but narrow or inadequate, approach.

A common criticism of cross-paradigmatic approaches is that their lack of focus and conceptual clarity will impede progress. We recognize this possibility and stress that focus and conceptual clarity must be addressed in cross-paradigmatic approaches. But at present there is no viable general theory of language development and use that accounts for the totality of this extraordinary human ability. Instead, we have many partial theories relevant to this or that part of the overall system. These theories can and should be used to bring a degree of focus and clarity to our efforts, but undue allegiance to a philosophy in the absence of strong empirical support may not be in the best interests of the children we seek to assist. We are optimistic that a comprehensive model of language intervention and language learning will eventually emerge out of the current quagmire of complex results and partial theories, just as disequilibrium typically precedes

assimilation throughout child development. In the meantime, no philosophy or approach, constructivist or otherwise, should be viewed as sufficient. Instead, the enhanced development of the children we serve should be the ultimate guide for research and practice.

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