

# Early childhood intervention: a promise to children and families for their future.

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Infancy and early childhood are important times in any child's life. For children with disabilities, the early years are critical for a number of reasons. First, the earlier a child is identified as having a developmental delay or disability, the greater the likelihood the child will benefit from intervention strategies designed to compensate for the child's needs (e.g., Guralnick, 2005a). Second, families benefit from the support given to them through the intervention process (Dunst, 2007). Third, schools and communities benefit from a decrease in costs because more children arrive at school ready to learn (Carta & Kong, 2007).

As a field, early childhood intervention has been defined as the provision of educational or therapeutic services to children under the age of 8 (Sigel, 1972). Legislatively, early intervention is used to describe the years from birth to age 3, although the term early childhood special education or preschool special education has been used to describe the period of preschool years (ages 3-5). This article provides an overview of early childhood intervention as described by the Individuals With Disabilities Education Improvement Act (IDEA), Part C, which addresses services for children from birth to age 3 and their families, and section 619 of Part B, which covers services for children ages 3 through 5. The term early childhood intervention will be used to describe the population of children, from birth through age 5 eligible for services under IDEA.

This group represents a diversity of backgrounds, family structures, and disability types; the most common trait being that for some reason (biological risk, environmental risk, established risk, or a combination), their development has been compromised and they are experiencing a delay between what is expected behavior for their age and what they are able to do across one or more developmental domains (cognition, motor, communication, adaptive).

## AN OVERVIEW OF EARLY CHILDHOOD INTERVENTION

More than 50 years of research support the effectiveness of intervention for infants and young children with disabilities (Gallagher, 2000; Guralnick, 2008; Kirk, 1958; Trohanis, 2008). Although some studies have had methodological limitations (e.g., heterogeneity of the population, lack of control groups, narrowly defined outcome measures, inappropriateness of standardized measures of intelligence for the population), the data collected thus far demonstrate that early learning and development can be affected by intervention across a number of developmental domains, and subpopulations of children (Guralnick, 2005b). As society has become more aware of the importance of the years from birth to 5, early childhood intervention models, programs, and services have become an expected entitlement for families of children with disabilities.

The rich history of the field of early childhood intervention spans many disciplines and fields of study, including health, psychology, early childhood education, and special education, and collectively they

have contributed to the design and delivery of early childhood intervention in this country. Conceptualized from an ecological model of human learning and development (Bronfenbrenner, 1992), early childhood intervention views child, parent, and family functioning as complex: The processes that influence early learning and development are produced by the interaction of the environments experienced by a child and the characteristics of the people (including the developing child) within these environments. Recently, Dunst (2007) proposed a definition of early (childhood) intervention that addresses this framework:

Early childhood intervention is defined as the experiences and opportunities afforded infants and toddlers (and preschoolers) with disabilities by the children's parents and other primary caregivers (including service providers) that are intended to promote the children's acquisition and use of behavioral competencies to shape and influence their prosocial interactions with people and objects. (p. 162)

It should be noted that both the nature of early development and the heterogeneity of children who may benefit from interventions adds a dimension of complexity that is unique to this age group, as opposed to other age groups and fields of intervention that target a specific (albeit heterogeneous) disability category such as learning disabilities or intellectual disabilities. Early childhood intervention is defined by an age range, as opposed to a disability etiology or category as illustrated by the variety of needs displayed by the children and families enrolled in early intervention (Scarborough et al., 2004). The challenge inherent to meeting these needs has been addressed by legislation, in particular Part C and Part B (Section 619) of the Individuals With Disabilities Education Improvement Act (IDEA).

In 1986, Public Law 99-457 was passed as amendments to IDEA (20 U.S.C. Secs. 1471 et seq.). This law mandated preschool services for children with disabilities and extended to them all rights and protection under IDEA Part B, (Section 619). In addition, these amendments provided an opportunity for states to develop systems of services for eligible children age birth to 3 and their families (then Part H, now Part C). This latter provision left a number of service delivery decisions to states, including which agency would take the lead in the provision of services (Part C is not solely an education program), what criteria to use to determine eligibility for services and how the state would administer service coordination (42 U.S.C. sec. 671(b) (3)) (Trohanis, 2008). As a result, the way early intervention is implemented across the country varies both within and across states (Bruder, 2005b), though certain core characteristics of service delivery remain consistent because of legislative requirements that were designed to address the unique learning needs of infants and young children (Bailey, 1989).

For example, infants and young children are developing and learning in the context of their families, and this need requires that services and supports target families as well as children (Bruder, 2000a, 2001; Dunst, 2000). A second need for this age group reflects the short attention span and active learning style of most infants and young children. This limits their tolerance for isolated, episodic, and structured time-intensive interventions. As a result, effective interventions should evolve from a family's priorities for a child's everyday routines and activities (Bruder, 2001; Dunst, 2007). A last need concerns the nature of early developmental processes: the emergence and convergence of various developmental milestones across separate behavioral domains (e.g., communication and mobility) as a child grows and develops. This necessitates the delivery of services in a manner that addresses the integration of developmental and behavioral domains, primarily through a team approach with discipline-specific professionals who have the knowledge and expertise to cross traditional domains of behavior (Bruder, 1994; Hanson & Bruder, 2001). These three areas of service and learning needs are addressed explicitly in Part C and Part B (619) of IDEA, and they have also facilitated the development of practice characteristics that are the core of early childhood intervention.

## FAMILY-CENTERED ORIENTATION

Every child is a member of a family (however it defines itself) and has a right to a home and a secure relationship with adults. These adults create a family unit and have ultimate responsibility for caregiving,

supporting the child's development, and enhancing the quality of the child's life (Bruder, 2000a). This is in part because families spend the most time with their child. For example, formal early intervention is usually provided for far less than 20% of an infant's or toddler's awake time, and less than 30% of a preschool age child (Bruder, 2001). Thus, the caregiving family must be seen as the constant in the child's life and the primary unit for family-centered service delivery (Shelton, Jeppson, & Johnson, 1987). A family-centered approach to early intervention is demonstrated by beliefs and practices that treat families with dignity and respect, and ensures the active involvement of family members in the mobilization of resources and supports necessary for them to care and rear their children in ways that have optimal child, parent, and family benefits (Dunst, Trivette, & Hamby, 2008).

Under law, both Part C and Part B recognize the importance of families through the provision of services (Turnbull et al., 2007). Part C in particular, was designed to recognize the unique role of families in their child's learning. The preamble of the Part C (then H) amendment states that Congress identified an "urgent and substantial need" to enhance the capacity of families to meet the special needs of their infant and toddler (EHA Amendments of 1986, 42 U.S.C., sec 671 (a)). To meet this need early intervention services must be delivered through the development of an individualized family services plan (IFSP), which can include services that target families such as family training, counseling, and home visits; service coordination; social work; and special instruction. Although not including the family as explicitly as does the IFSP, an individualized education program (IEP) for a preschooler may also include family-focused services under IDEA that address family needs such as counseling, parent counseling and training, and social work in schools. Thus, families are a key component in early childhood intervention systems under IDEA and, as such, must be accommodated as a service delivery variable that contributes to the overall effectiveness of services.

There is ample evidence to suggest the powerful effect families have on their children's development (Dunst, 2007; Dunst, Trivette, & Hamby, 2006; Lynch & Hanson, 2004; Shonkoff & Phillips, 2000). These effects are the direct result of both the characteristics of the family (such as family culture, background, composition, and living conditions), and the interactions, experiences, and beliefs of the family (Guralnick, 2005b). As a result, an outcome of early childhood intervention should be the facilitation of a family's sense of confidence and competence about their child's current and future learning and development (Bailey et al., 2006).

Several practices have been shown to do this; most notably capacity building help-giving practices (Dunst, Trivette, & Hamby, 2007). A research synthesis of the relationships among help-giving practices and parent, family, and child behavior and functioning indicated that these practices are related to child and family outcomes (Dunst, Trivette, & Hamby, 2008). In particular, participatory help-giving practices impact a parent's self efficacy beliefs of their parenting abilities, and this has an impact on a child's learning and development (Dunst & Trivette, in press). The effectiveness of these practices underscores the importance of the relationships that occur between service providers and parents (Kelly, Zuckerman, & Rosenblatt, 2008). It is through these relationships that parents can realize positive outcomes for themselves and their child.

## NATURAL AND INCLUSIVE LEARNING ENVIRONMENTS

More than 30 years of research has demonstrated that young children with disabilities do benefit from participating in groups with children without disabilities (Bruder, 2001; Bruder & Staff, 1998; Campbell, Sawyer, & Muhlenhaupt, 2009; Guralnick, 2001). In fact, this practice has been cited as a quality indicator of early childhood intervention (Buysse & Hollingsworth, 2009; DEC/NAEYC, 2009). IDEA also recognizes this practice by requiring that a child's IFSP or IEP delineates the inclusive setting in which early childhood intervention will occur. For infants and toddlers, Part C of IDEA requires that services be delivered in natural environments defined as the home or in places in which other children participate; that is, those places that are natural or normal for children who do not have disabilities (sec 634(16)(A)). One reason for this emphasis is to ensure that children with disabilities and their families will be included in everyday home and community activities, and that early intervention services will not be delivered in places that will isolate the child with disabilities or their family (from everyday life) (Federal Register, 54

(11a), P 26313). Part B (619) services must meet the least restrictive environment requirements of IDEA.

One of the most pertinent reasons that interventions should occur in natural or least restrictive settings is to take advantage of all available learning opportunities that have the potential to enhance behavior and development. As previously stated, the ecological model of learning and development suggests that behavior exists and is best understood contextually. Learning opportunities occur within all contexts in which an infant or young child participates including the family context, the community context, and early childhood program context (Dunst, 2001). The family context includes a mix of people and places and experiences such as eating during meal times, splashing water during bath time, listening to stories, and learning greeting skills at family gatherings. The same kinds of opportunities occur in the community context in settings such as neighborhood walks, children's playground, children's festivals, nature centers, and community pools. The formal early childhood context includes child-care programs, early childhood intervention, and other early childhood experiences supported by professionals. These three contexts support a variety of subcontexts that can be used to describe the experiences and opportunities given children as part of daily living. Termed activity settings that encompass routines and other everyday situations, these contexts are important features of any planned interventions for children and their families (Bernheimer & Weisner, 2007; Gallimore, Weisner, Kaufman, & Bernheimer, 1989). Activity settings involve the active participation of a child in learning, and they serve to strengthen existing capabilities as well as promote and enhance new competencies.

Natural and inclusive learning environments are also conducive to the delivery of instructional practices and therapeutic techniques because they are easily embedded into activity settings (Dunst, Bruder, Trivette, Hamby, & Raab, 2001). These practices include responsive interventions such as milieu teaching, as well as more explicit interventions such as prompting systems (Noonan & McCormick, 2006). The key to utilizing such practices is that they match the individualized nature of an activity setting for an individual child and family, as identified through input from the family (Woods & Lindeman, 2008). Instructional practices and therapeutic techniques should be implemented throughout the day in all environments in which a child participates in order to take advantage of all available learning opportunities (Campbell, 2004).

## COLLABORATIVE TEAM PROCESS

Although infants and young children with disabilities may require the combined expertise of numerous professionals providing specialized services, the coordination of both people and services is often overwhelming (Bruder, 2005b). For example, personnel having medical, therapeutic, educational and developmental, and social service expertise are traditionally involved in providing services to infants and young children with disabilities and their families. Each of these service providers may represent a different professional discipline and a different philosophical model of service delivery. In fact, each discipline has its own training requirements (e.g., undergraduate or graduate degrees); licensing or certification requirements (most of which do not require age specialization for young children); and treatment modality (e.g., occupational therapists may focus on sensori-integration techniques; Bruder, 2005a; Bruder & Bologna, 1993). In addition, many disciplines have their own professional organizations that encompass the needs of persons across the entire life span, unlike organizations focused on a single age group.

To improve the efficiency of these individuals providing early childhood intervention, researchers suggest that services be delivered through an integrated team approach (Bruder, 1994; Hanson & Bruder, 2001; Hayden, Frederick, & Smith, 2003). Components of a team-based model of intervention are explicitly detailed in Part C of IDEA: The legislation states that the general role of service providers is to (a) consult with parents, other service providers, and representatives of appropriate community agencies to ensure the effective provision of services in that area; (b) train parents and others regarding the provision of those services; and (c) participate in the team's assessment of a child and the child's family, and in the development of integrated goals and outcomes for the individualized family service plan (303.12(c)). Thus, the law itself calls for a move away from isolated discipline specific interventions

into a combined team approach.

The types of teams that typically function within service-delivery models for infants and young children with disabilities have been identified as multidisciplinary, interdisciplinary, and transdisciplinary; the last model having been identified as the most efficient for use in early intervention (Hanson & Bruder, 2001; King et al., 2009). This approach was originally conceived as a framework for professionals to share important information and skills with primary caregivers (Hutchinson, 1978), and has most recently been referred to as the primary provider model to denote one service provider's responsibilities to the other members of the team (McWilliam, 2003). The team integrates a child's developmental needs across the major developmental domains and requires that team members from different disciplines address all developmental domains during the design of interventions. Rather than have a different person from each discipline address an individual developmental domain with a child (e.g., motor), the model calls for the design of interventions that cross developmental areas (Bruder, 1994). Interventions are then delivered primarily by one service provider, who receives consultation from others with expertise in other developmental areas (Hanft, Rush, & Shelden, 2004). The communication style in this type of team involves continual give and take among all members (especially the parents) on a regular, planned basis. The role differentiation between disciplines is defined by the needs of the situation, as opposed to discipline-specific characteristics, training, or abilities. The result is a model of early childhood intervention that acknowledges the integration of the developmental needs of both children and their families. The primary purpose of the approach is to pool and integrate the expertise of team members so that more efficient and comprehensive assessment and intervention services may be provided. This model also encourages a move away from domain-specific episodic and time-limited interventions (e.g., therapy in a therapy room) that could limit application and generalization of new skills to the home and other places the child participates.

## SERVICE DELIVERY COMPONENTS

The core practice characteristics of early childhood intervention just described should be addressed in every facet of service delivery. Unfortunately, this is challenging to service systems because of numerous factors. For example, statewide service systems have been growing at a rapid rate as more children are identified as being eligible for services under Part C or Part B (619) of IDEA (Dunst, 2007; Trohanis, 2008), and the last report to Congress (U.S. Department of Education, 2006) stated that 282,733 children were served under Part C programs and 701,949 children were served under Part B (619) programs. These growing numbers have also increased the diversity of the population eligible for intervention that ranges from infants to young children qualifying for services because of such varied conditions as prematurity, genetic syndromes, autism spectrum disorder (ASD), and language delays. This in turn highlighted the difficulties inherent in providing individualized and effective service delivery across such a range of diverse needs, with a resulting increase in variability of service structures and quality across and within states (Harbin et al., 2004).

In an effort to address both the complexities of early development, the growing population and their needs, and the variability in service delivery, Guralnick (2005a) proposed a developmental system model that describes the salient structural components (and relationship among them) of an early childhood intervention system. This model simplifies the numerous elements of a system into a logical flow chart of events that collectively contribute to child and family outcomes. Each component represents a separate and sometimes overlapping phase of early childhood intervention as required by IDEA, and these will be described. It should be noted that the process described in this approach also addresses the needs of children who may not meet eligibility requirements for IDEA but who warrant monitoring and ongoing support.

The first component begins with a referral for a screening to decide if a child is eligible for a further evaluation under IDEA. This component creates an opportunity for a state to collaboratively develop an efficient system in which all infants and young children receive regularly scheduled developmental and behavioral screenings that can lead to services if determined eligible. Unfortunately, there is no agreement at this time among states as to the criteria used to define eligibility for early childhood

intervention, so screening and subsequent evaluations vary across states. If the screening suggests a need for further evaluation, a comprehensive interdisciplinary assessment can create an accurate portrayal of the child's needs across the medical, the educational, and the social systems perspective (Wolraich, Gurwitch, Bruder, & Knight, 2005). Ideally, an early childhood assessment protocol demonstrates sensitivity to the age of the child; the nature of the child's delay or disability; the family context, strengths, and desire to be involved in the assessment; the integration of a child's behaviors across developmental domains; and the child's functional competence, especially within and across activity settings (Farrell, 2009; Msall, Tremont, & Ottenbacher, 2001). It should be noted that an eligibility assessment is not needed for children who may qualify for early childhood intervention because they have received a diagnosis of an established condition that automatically qualifies them for services.

Once a child is enrolled in early childhood intervention, a comprehensive program is developed using either an IFSP for infants and toddlers or an IEP for preschoolers. These plans must be collaboratively developed by a team that includes the family, and contain integrated outcomes and objectives that cross discipline and agency boundaries as needed (Bruder, 2000b). In addition, service providers (who meet the state's highest personnel standards) must be identified to implement the plan's integrated outcomes and objectives in either a child's natural environment (Part C) or least restrictive environment (preschool). Instructional practices and therapeutic techniques are also included in the plan to ensure that both the content and methods of intervention are operationalized for measurement purposes. Once intervention begins, the IFSP and IEP outcomes and objectives must be monitored on an ongoing basis, and data continually collected on child and family service implementation, learning opportunities, intervention strategies, and developmental and behavioral progress.

The last component of the developmental systems model is transition. Successful transition is a major component of the developmental systems model, and its importance has been addressed in state and federal legislation, federal funding initiatives, and professional literature (Hanson, 2005; Malone & Gallagher, 2009; Rous, Hallam, Harbin, McCormick, & Jung, 2007). Although formal transitions for young children with disabilities typically occur at the age 3 (into preschool) and 5 (into kindergarten), transitions between services, providers, and programs can also occur at any time, as children with disabilities and their families move among different service providers, programs, and agencies as the child's and family's needs warrant (Bruder, in press). A successful transition is a series of well-planned steps to facilitate the movement of the child and family into a different service mode, without any disruption of intervention services (Bruder & Chandler, 1996). Needless to say, the type of planning and practices that are employed can influence the success of transition and satisfaction with the transition process.

These progressive and interrelated components of the developmental systems approach illustrate the many facets of a comprehensive statewide service delivery system available to all eligible infants and young children and their families. Each of these components individually present challenges to policy makers, administrators, and service providers as they strive to facilitate the delivery of timely and effective services. In combination, as a comprehensive system, the challenge is to coordinate and streamline the components and service providers into an efficient process that encompasses the core practice characteristics of family-centered interventions delivered in natural, inclusive environments by a transdisciplinary team.

## CHALLENGES AND RECOMMENDATIONS IN EARLY CHILDHOOD INTERVENTION

As presented, early childhood intervention has a rich history and a legislative mandate that is built on an interdisciplinary and interagency foundation of service delivery. The heterogeneity and increasingly complex needs of eligible infants, young children, and their families, and the variability inherent in state-specific service provision, has resulted in challenges for program implementation at the state and local levels. In addition, the multitiered developmental systems model of early childhood intervention remains a challenge to implement, as portrayed by the data reported by states in their annual performance plans on IDEA compliance to the U.S. Department of Education (2006). As a result, concerns about the

current status of early childhood intervention have been articulated on both the ability of systems to implement early childhood intervention as intended by law, research, and recommended practice and the ability of service providers to implement practices that are linked to child and family outcomes (Bruder, in press; Dunst, 2007; Rosenkoetter et al., 2009).

There is ample evidence to suggest a growing gap between what we know we should do and what we are doing in early childhood intervention (Dunst & Trivette, 2009a; Odom, 2009). For example, the Division for Early Childhood, Council for Exceptional Children, facilitated the identification of recommended practices to guide service delivery almost 20 years ago (Hemmeter, Joseph, Smith, & Sandall, 2001; McLean, Snyder, Smith, & Sandall, 2002; Odom & McLean, 1996; Sandall, Hemmeter, Smith, & McLean, 2005). Unfortunately, data collected since their inception have concluded that these practices have not been embedded into higher education personnel preparation programs (Bailey, Simeonsson, Yoder, & Huntington, 1990; Bruder & Dunst, 2005; Campbell, Chiarello, Wilcox, & Milbourne, 2009; Kilgo & Bruder, 1997), nor are they used by practitioners (Bruder, Dunst, & Mogro-Wilson, manuscript submitted for publication; Campbell & Halbert, 2002; Dunst & Bruder, 2006; McLean et al., 2002). There have been many reasons cited for this and other translational research failures in the field. Among the most salient are (a) an overreliance on process variables in intervention as opposed to operationalized child and family intervention outcomes, (b) a lack of a systematic and reliable process to identify evidence-based practices (EBP) and translate them into viable service delivery models that address the individualized needs of children and families, (c) a lack of a systemic process to enhance the skills of practitioners to implement evidenced-based practices and collect outcome data to document the effectiveness of services for children and families, and (d) a lack of a fiscal infrastructure to support and expand evidenced-based models of service to all infants and young children and families.

Challenge: The collection of outcome data as evidence of effectiveness. The accountability movement has surfaced in early childhood and early childhood intervention (Kagan & Scott-Little, 2004; Schultz & Kagan, 2007). Both the broad population of children receiving services under state-funded early care and education programs, and the children with disabilities receiving services under Part C and Part B (619) are required to meet state and national learning guidelines and outcomes (Scott-Little, Kagan, Frelow, & Reid, 2009). The call for accountability in the Part C and Part B (619) programs directly came about because of an examination of the program by the U.S. Office of Management and Budget (OMB). The results for both programs were nil; that is, results were not demonstrated. Although early childhood efficacy data does exist to support the effectiveness of early childhood intervention, most data were collected through targeted research studies. OMB examined state and national outcomes as a result of a child's participation in IDEA. One subsequent federal recommendation for the survival of these programs was that child measures needed to be collected in a consistent, valid and reliable manner to demonstrate accountability and effectiveness. As a consequence, both federal and state policy makers are requiring the field of early childhood intervention to become precise and transparent in the measure of outcomes for both children and families as a result of participating in IDEA.

To meet this need, a recent requirement of state early childhood intervention systems under Part C and Part B (619) of IDEA is to report child and family outcomes on every child and family receiving services at program entry and exit as articulated by the U.S. Department of Education, Office of Special Education Programs, as evidence of the effectiveness of these programs under IDEA (see Bailey et al., 2006; Hebbeler, Barton, & Mallik, 2008). These outcome categories were developed through an iterative consensus-building process that included multiple stakeholder groups across the country. The resulting child outcomes are integrated across developmental domains and they represent functional applications of behavior and development as suggested by IDEA, in their requirements for an IFSP and IEP. There are three: (a) children have positive social-emotional skills (including social relationships), (b) children demonstrate acquisition and use of knowledge and skills (including early language/communication and early literacy), and (c) children use appropriate behavior to meet needs. States have a choice over how the outcomes will be measured, but all states must report the percentage of children who make progress and meet criteria benchmarked to typical development. The outcomes for families are (a) families know their rights, (b) families effectively communicate their children's needs, and (c) families help their

children develop and learn. These outcomes are summarized as the percentage of families who report success on these indicators. Again, states have choices over how these will be measured for reporting purposes. A major challenge lies in the reliability and validity of state and local data systems as they collect and report these outcomes.

Recommendation: Adopt a culture of accountability across all dimensions of service provision. The field of early childhood intervention must focus on developing valid, reliable, and transparent state and local accountability systems: not only for the child and family outcomes that are required but also across all dimensions that comprise both the service delivery infrastructure and components of service delivery. If this is done, conditions, practices, and outcomes (both direct and mediated), and the relationships among them, could be measured across and within subsamples of the population served in Part C and Part B (619) and these data can be used to document effectiveness. These variables of interest could include cost (Hebbeler, 2005; Hebbeler, Levin, Perez, Lam, & Chambers, 2009); personnel standards (Stayton et al., 2009); specific approaches to the provision of intervention such as home visiting (Klein & Chen, 2008); collaborations with early care and education programs (Schultz & Kagan, 2007); etiology-specific instructional methodologies for children (e.g., those with ASD, hearing impairments, behavior challenges, or multiple disabilities); and accommodations for families with unique characteristics (e.g., non-English speakers; young mothers). These variables all affect service delivery within and across all program components. One additional challenging, but necessary, measure of accountability should be the development, measurement, and acquisition of IFSP/IEP outcomes and goals and their relationship between the intensity, duration, frequency, and location with which children and families participate in interventions. This will require that all personnel in early childhood intervention are able to reliably assess and report child and family outcomes, as well as other outcomes of service provision for accountability purposes.

Challenge: The institutionalization of EBP into effective program models. EBP has been an important topic in educational reform for children with and without disabilities. The requirement to use scientifically based practices under IDEA has been in place since the last set of amendments to the law in 2004. The challenge lies in the identification, use, and dissemination of practices and model programs that can be linked explicitly to child, family, and program outcomes. A definition to help articulate this process was recently published by Dunst and Trivette (2009b) who defined EBP in the following way:

Practices that are informed by research, demonstrate a relationship between the characteristics and consequences of a planned, or naturally occurring, experience or opportunity; where the nature of the relationship directly informs what a practitioner can do to produce a desired outcome. (p. 41)

A research design that results in a defined set of independent variables is the first step in this process. The second step is the identification of a defined group of validated practices that in combination can be used to address a service problem reliably, over time, and under similar conditions.

This process of knowledge transfer from EBP into widespread practice has been described as the scaling up of innovations to institutionalized models at state and local service levels (Fixsen & Blase, 2009). To accomplish this process, researchers have recommended that three groups of people must be recruited, acknowledged, and supported throughout the knowledge-to-practice transfer. These are a state management team, who directs a state transformation team, to work with an implementation team. The implementation teams are usually regional or local and are able to train others on the innovation with fidelity and demonstrated effectiveness. What is most important about this process is that it is guided by continual collection and analysis of data on both the implementation of the innovative practice (s) and the demonstration of subsequent outcomes (Sugai & Horner, in press). In the field of early childhood intervention, this process is beginning to be applied to a variety of service delivery components, across both targeted and general population parameters. However, challenges remain in both the identification and consistent translation of EBP into program models that address all components of service delivery across a variety of conditions and settings

Recommendation: Utilize a specific process to identify and institutionalize EBP. A recommendation for improvement in this area is to expand the knowledge base on effective service delivery practices through the design and implementation of precise, rigorous, and targeted research studies that result in a rich data set of evidence to inform practice and build models that positively impact children and families. More than 10 years ago Michael Guralnick (1997) proposed that the field of early childhood intervention adopt a new paradigm to support and expand research effectiveness because prior research had provided little to the details of the design and implementation of service delivery systems. Referred to as second generation research, designs that meet these criteria focus on operationalized aspects of service delivery that contribute to positive child and family outcomes for specific samples of the population. Guralnick recommended three sets of variables (child and family characteristics, programs features, and outcomes) as being integral to intervention research, and designs should focus on the examination of both specificity within and across these, and the subsequent interactions among them. Any future research in early childhood intervention must embrace the challenge of second generation research design in order to establish an evidence base that can contribute to the findings of intervention effectiveness.

Paine, Bellamy, and Wilcox (1984) proposed a process to expand such specific research findings into effective service delivery models. Although not targeting the age group served by early childhood intervention, the process they presented is applicable across ages and service structures and problems, and it begins with the implementation of second generation research designs. Their first step is the identification of experimentally valid research relationships between one or more independent (program features and practices) and dependent variables (outcome). These validated practices can then be applied alone, or in combination, as a demonstration of a solution to a service problem (e.g., curriculum specificity). After results from the demonstration remediate the service need, a program model could be implemented across a wider audience of populations and settings. The test of knowledge transfer and application is the fidelity with which the model is applied, and the reliability to the results across sites and populations, most notably in solving the service problem. These authors focused the process of scaling up models to the development of operational definitions, measurable outcomes, and well-documented interventions that could be replicated with fidelity. The extent to which similar intervention practices are related to similar outcomes within and across varying implementation conditions provides the basis for the transfer of knowledge and institutionalization of evidence-based practice. The field of early childhood intervention must adopt such a step-by-step process to articulate the set of EBP that can be directly and reliably linked to improved intervention outcomes for targeted populations with varying background characteristics and programmatic needs. Statewide systems will only improve if such a process is used to dictate service implementation across program dimensions.

Challenge: Workforce development. Another challenge facing the field of early childhood intervention is the adoption of effective training models to build the capacity of the workforce to implement evidence-based practices across and within all service delivery components and measure outcomes for effectiveness. Unfortunately, data collected thus far by the Center to Inform Personnel Preparation Policy and Practice in Early Intervention and Preschool Special Education (<http://www.uconnuconnedd.org/Projects/PersonnelPrep/Default.htm>) suggests that preservice, inservice, and technical assistance opportunities are limited in the field of early childhood intervention (Bruder & Dunst, 2005; Bruder, Mogro-Wilson, Stayton, & Dietrich, 2009; Campbell, Chiarello, et al., 2009; Woods & Snyder, 2009). For example, service coordinators within Part C programs received an average of 2.5 days of training with limited follow-up in the 22 states that reported they provided training specific to the role and functions of service coordination (Bruder, 2005b). An additional complication to this lack of training opportunities is a lack of cohesiveness across states on the professional standards that teachers and others have to meet to be credentialed or certified to provide services under Part C or Part B (619) (Stayton et al., 2009). As a result, it is not surprising that over half of the Part C and 619 state coordinators in the country have stated that their workforce was undertrained to work with infants and young children and families.

This lack of available and appropriate professional development opportunities for service providers understandably affects the quality of services that are provided to children and families, and contributes

to the lack of data supporting positive child and family outcomes as a result of early childhood intervention. This situation grows more critical every day as the numbers of service providers who serve infants and young children with disabilities and their families grows to meet the increased population being served. The number of personnel serving infants and young children reported to Congress in 2006 was over 100,000 and did not include categories reporting personnel shortages (across disciplines). There are also additional providers who represent the early childhood workforce and serve children with disabilities in early care and education settings (e.g., Head Start; state pre-K programs). Compounding these large numbers is the growing specificity of skill sets needed by personnel under IDEA to meet the needs of the growing numbers of children who have complex and unique disabilities such as ASD.

**Recommendation:** Reclaim a system of evidence-based professional development. Professional development is the term used in education to describe activities to enhance the knowledge and skills of those in the workforce (Buysse, Winton, & Rous, 2009). In early childhood intervention, professional development is described as consisting of two separate educational components: preservice (prior to completing degree or certificate) or inservice (ongoing job-related training). Technical assistance should also be included in professional development systems to facilitate the dissemination and replication of evidence-based practices linked directly to child and family outcomes. In order to provide the diverse interdisciplinary early childhood intervention workforce with the skills they need to implement evidence-based practices across the core practices characteristics and to scale up effective service models, it is recommended state systems of early childhood intervention return to using the framework of comprehensive system of personnel development (CSPD) as originally required under IDEA.

A CSPD must be seen as a necessary component of early childhood intervention service delivery, and funds must be allocated for the development and implementation of targeted personnel needs assessments to define, implement, and evaluate preservice, inservice, and technical assistance opportunities that will impact behavior change in the adults who provide services to infants, young children, and their families. A CSPD should have as its foundation established principles of adult learning, as identified by the National Research Council (Donovan, Bransford, & Pellgrino, 2000). These should be applied to all professional development modalities (coursework, computer based, self-instruction) to facilitate the acquisition and subsequent use of EBP by all practitioners. These learning practices include the following guidelines: (a) activities should be learner centered; (b) attention should be given to what is taught (information), why it is taught (understanding), and what competence or mastery looks like; (c) formative assessments should occur frequently, including follow-up; and (d) learning should be contextually referenced and applied in the context it is needed. These principles are core to any training and technical assistance methodology and numerous applications are available in the early childhood intervention literature (Dunst, 2009; Dunst & Trivette, 2009a; Winton, McCollum, & Catlett, 2008). What is most important is that training and technical assistance impacts service providers' behavior so that EBP is implemented with fidelity to improve child, family, and program outcomes. One way to ensure this is to embed comprehensive measures of training outcomes in a CSPD. Although the term highly qualified has not been operationalized for service providers of infants and young children, it seems reasonable to suggest that personnel competencies be included as a measure of fidelity for a CSPD specific to Part C and Part B (619), across the disciplines involved in the provision of services. Another outcome could be the number of effective service models that are scaled up with fidelity by service providers and result in positive outcomes for programs and infants, young children, and their families.

**Challenge:** Financial infrastructure. A last challenge in early childhood intervention is fiscal. Many states have struggled to implement the IDEA as was intended; however, the funding base at both the national and state levels has proven inadequate to support the major components of service delivery as was intended. For example, IDEA has never been funded at the levels initially promised by Congress, and this past year the lack of a fiscal infrastructure resulted in 11 states being in jeopardy of dropping out of Part C of IDEA because they did not have the funds to implement all requirements of the program (K. Musheno, personal communication, March 13, 2009). This occurred under conditions in which third party payees (insurance, Medicaid, family fees) were also used to assist in the funding of developmental and therapeutic services. Although this additional funding has helped states provide services, it should

be noted that one negative outcome has been that these intervention services are delivered as paid, as opposed to meeting the intent of the law and core practice characteristics. This occurs because most third party insurers pay for individual therapy sessions that are not always in natural, inclusive environments, without reimbursable time being available for team and family meetings.

Unfortunately, in Part B (619) programs the funding situation is the same (i.e., not enough), though the payer of services is usually the public school. This does not mean, though, that services are funded at an adequate level to implement core or recommended practices. For example, rather than provide the costs and consultation to support eligible children in community nonspecial education programs, many preschool special education programs provide services within a public school self-contained or "reverse" mainstreaming classroom (Carta & Kong, 2007). And, as with Part C, many related service providers (including paraprofessionals) are not funded to attend planning or team meetings, or provide services in natural inclusive environments, or meet and teach families strategies to expand a child's learning. It would seem that Part C and Part B (619) practices, services, and programs are driven by cost rather than by evidence (Dunst, 2007). A solution must recognize that services delivered in this way will not result in positive child and family outcomes, and may even cause harm.

An additional challenge to the funding of early childhood intervention systems has been the increased emphasis on the importance of early childhood education that has surfaced across the country (Shonkoff & Phillips, 2000). Even though this may seem to be the antithesis of a challenge, this increased emphasis has resulted in the addition of separate and sometimes competing state and national funding initiatives by such groups as Head Start, Pre-K Now, the National Governors Association, the National Council of Chief State School Offices, and the Federal Interagency Early Childhood Consortium. Of interest is the fact that as these programs grow, they are facing many of the same challenges as early childhood intervention. These challenges include those involving outcomes and accountability, the development of quality programs across diverse populations, workforce development, and other infrastructure supports (Kagan, Kauerz, & Tarrant, 2008).

Although this increased activity in early childhood has created opportunities for early childhood intervention to be included in these statewide early childhood initiatives, in many states this is not happening. Confusion remains across restrictive policies, funding streams, and practices that are developed for certain segments of the early childhood population. In addition, policy makers and service providers are challenged as to how to build sustainable, collaborative, and effective service structures for all children and families. For example, in some states there are as many as 10 competing state and national initiatives directed by separate agencies, organizations, and leaders who are trying to facilitate change in some aspect of service delivery for infants and young children, some of whom may or may not be eligible for services under IDEA. There is one constant that crosses the boundaries between services and programs for children with and without disabilities, and that is the need for continued and expanded funding.

Recommendation: Combine forces with statewide systems of early care and education for sustainability of programs, practices, and accountability.

State and national policy makers and program administrators must commit to integrating all early childhood initiatives. They must also commit to joining forces to enhance child and family acquisition of target skills and outcomes, program quality, workforce development but most of all to unite and leverage funding streams. This will only enhance the opportunities for infants and young children with disabilities to receive intervention in places in which their peers participate. This will take time, creativity, and most of all accountability to a vision of community-based services and program continuity for all young children

An example of one strategy that demonstrates an efficient application of collaboration across programs for children with and without disabilities is tiered models of instructional practices.

The strategy assumes that all the children, regardless of ability, will participate in a broad-based, high-

quality, and developmentally appropriate evidence-based curriculum. As children demonstrate learning or behavioral difficulties they are then provided interventions that increase in intensity as their needs warrant. The model allows for an early response to children's difficulties, specific instructional strategies matched to their needs, and data-based decision making throughout (Fox, Carta, Strain, Dunlap, & Hemmeter, in press). Although there will always be a need for ongoing intensive intervention for a small proportion of children (most of whom will be eligible under IDEA), the model is designed to be implemented to benefit all children in inclusive early childhood settings. At the intensive or smallest tier of intervention, the strategies used reflect diagnostic prescriptive methods of intervention and differentiated instruction (Bruder, 1997). The current application of this instructional practice is referred to as response to intervention (RTI). Evidence is being gathered on the effectiveness of the practice in early childhood (Greenwood, Carta, Baggett, Buzhardt, Walker, & Terry, 2008), and it represents a promise to unify the field of early childhood as it addresses the needs of all children for a quality early childhood experience that prepares them for school.

## SUMMARY

As a nation, we have many challenges to meet if we are to guarantee that all eligible children and families reach their potential through the provision of early childhood intervention. In particular are the following: (a) service delivery systems are complex and diverse and composed of a multi-rude of practices to meet the individualized needs of a growing population of infants, young children, and families, and as yet, an ability, to use EBP to impact outcome data has not happened; (b) the numbers, competence, and qualifications of service providers who need training and retooling are large and varied, yet professional development resources are not; (c) infants, young children, and their families are needing comprehensive services supports, yet funding is not adequate; and (d) services and programs for all infants and young children in our country are growing, yet systems of early childhood intervention are not consistently integrated into these initiatives.

Under these conditions, the gap between the knowledge base on evidence-based practices and the consistent application of these practices to impact outcomes across systems, service providers, children, and families is then understandable, if not acceptable.

Going forward, those in the field of early childhood intervention must embrace both the field's history and challenges as they strive to deliver services under the spirit and intent of legislation, research, and practice. That is, these professionals must continue to honor the early childhood foundation on which the system of services has been built, while acknowledging that this system is in need of improvement. In order to ensure the future sustainability of early childhood intervention and a positive future for all eligible infants, young children, and families, the field must not only survive but also it has to thrive. A paradigm shift must occur in which the identity and culture of early childhood intervention is associated with the implementation of effective evidence-based practices for all children and families, as delivered by a highly qualified and collaborative workforce, across natural and inclusive settings.

The primary task in early childhood intervention is to ensure that specific child and family characteristics unique to those with disabilities and delays are fully and effectively addressed within this framework. To do this, the professionals in the field must commit to demonstrating the leadership and vision required to sustain and continually improve an early childhood intervention system that is responsive to the growing needs of society and the latest evidence on effectiveness.

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