Clinical Forum

Characterizing and Predicting Outcomes of Communication Delays in Infants and Toddlers: Implications for Clinical Practice

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Purpose: This article focuses on using currently available data to assist speech-language pathologists (SLPs) in making decisions regarding a child's eligibility and considerations for recommended “dosage” of early intervention (EI) services.

Method: Literature describing the characteristics of infants and toddlers who are likely recipients of EI services was reviewed.

Results: Current literature provides information that can be used to inform clinical decisions for infants and toddlers with established medical conditions, as well as those with risk factors, for oral language, communication, and subsequent literacy disabilities. This information is summarized.

Conclusion: Extant literature suggests that EI makes a critical difference in the developmental course of communication as well as in other learning domains for children with a variety of established conditions. The literature also provides guidance to SLPs who must evaluate and weigh risk factors for children with less clear eligibility for services.

Key Words: predicting outcomes, language, language delay, toddlers

Speech-language pathologists (SLPs) working in early intervention (EI) settings often need to determine whether a toddler who appears to be delayed in language and communication development would benefit significantly from direct intervention or whether vigilant monitoring is a more appropriate prescription. In this article, we provide SLPs with information on early communicative behaviors that are predictive of language and communication development to better inform their decision-making process.

Approximately 17% of children in the United States have a developmental disability (Centers for Disease Control and Prevention [CDC], 2007). Many of these children have communication and feeding/swallowing problems for which the services of an SLP are vital. These disabilities may appear as limited interest in social interactions, failure to respond to speech or name, reduced or atypical babbling, restricted prelinguistic communication acts such as engaging in early reciprocal social games (e.g., peek-a-boo) or sharing interests with others, limited use of communicative gestures such as pointing, delayed acquisition of first words, slow growth of or regression in vocabulary or utterance length, poor speech intelligibility for developmental level, and/or inadequate feeding and swallowing skills (American Speech-Language-Hearing Association [ASHA], 2008; Paul, 1991).

Numerous factors can place infants and toddlers at risk for atypical developmental progress and outcomes. Some factors are well established; others continue to be identified as researchers learn more about the underpinnings of early childhood development. Among the most common known risk factors for atypical development are genetic or congenital conditions (e.g., cleft palate, Down syndrome, Fragile-X syndrome), severe sensory impairments (e.g., deafness, blindness), inborn errors of metabolism (e.g., Hunter’s syndrome), severe neuropsychiatric disorders (e.g., autism spectrum disorder [ASD]), and family history of disability.
Biological/medical risk factors include conditions such as low birth weight, respiratory distress syndrome, severe asphyxia, fetal alcohol syndrome, or severe brain hemorrhage that may result in immediate or later difficulties (ASHA, 2008). Environmental risk factors include conditions such as advanced or very young maternal age, parental substance use, parental psychiatric disorders, parental abuse or neglect, exposure to chemical toxins, or poverty. Risk factors can occur singly or in combination and can result in a range of developmental difficulties. In general, the greater the number of risk factors, the greater the developmental risk to the child (ASHA, 2008; Bradley et al., 1994; McGauhey, Starfield, Alexander, & Ensminger, 1991; Paul, 2007; Rouse, 1998).

Nationally, these risk factors render more than 300,000 children between birth and 36 months of age eligible for EI services as mandated by Part C of the Individuals with Disabilities Education Improvement Act (IDEA, 2004). The wide variety of etiologies and conditions that characterize this population yield a heterogeneous group of children who demonstrate both diversity and complexity of developmental patterns. Prevalence among the conditions that lead to the need for EI also varies considerably. Intellectual impairments, for example, affect approximately 6–7.5 million individuals nationally (Ollness, 2003), with rates in children estimated from 5.2 to 16.6 per 1,000 (CDC, 1996); cerebral palsy occurs in 6% to 25% of high-risk infants (Aylward, 2005); 50% to 70% of premature and low birth weight infants manifest some degree of neurological dysfunction (Aylward, 2005; Reichman, 2005); and ASD is currently estimated to affect 1 in 110 children (CDC, 2009).

The identification of delays and disabilities in a child occurs over a span of time. Some families are aware of a disability before their child is born, either through prenatal screening or problems during pregnancy. Others become aware shortly after birth due to prematurity, problems with labor and delivery, or the presence of an obvious abnormality. But most families discover their child’s disability gradually because the child’s developmental delays become obvious only as he or she fails to meet milestones of typical development. Families generally go through a process of becoming concerned, gathering information, speaking to others, obtaining an evaluation, and then receiving services for the child, and this process takes time (Spiker, Hebbeler, Wagner, Cameto, & McKenna, 2000). The longitudinal results of a large nationally representative sample of children who qualified for Part C services indicated that, on average, families reported an initial concern when their child was 7.4 months of age (Bailey et al., 2005), a diagnosis was made approximately 1.4 months later, and a referral for EI was completed 5.2 months after the diagnosis.

Again, however, considerable variability exists among disability groups. Deafness, syndromes with well-known physical characteristics (e.g., Down syndrome), and some motor disorders may be detected at birth. But, some children with hearing impairment, syndromes with less dysmorphology (e.g., Fragile-X syndrome), or syndromes with symptoms that emerge some time after birth (e.g., autism) are typically diagnosed much later (e.g., Charman & Baird, 2002). Age of diagnosis is delayed even more significantly for children from low-income families (Mandell, Listerud, Levy, & Pino-Martin, 2002).

For children without an established or diagnosable syndrome, failure to acquire first words is the most common condition that leads to referral for EI services (ASHA, 2006). Parents can become seriously concerned about their child’s development when speech fails to emerge in the second or third year of life. If further evaluation suggests the presence of hearing impairment, intellectual disability, or ASD, EI will be crucial to reduce the impact of the disability. The majority of young children with delayed onset of speech, however, are likely to fall within the category of “late talkers” (Rescorla, 2002, 2005); these are the 10% to 15% of otherwise typically developing children who are slow to acquire expressive language skills in the absence of other measurable disability.

What Do We Know About EI Services?

Research has demonstrated that EI services can prevent or mitigate the impact of various risk factors and impairments in children (Girolametto, Wiigs, Smyth, Weitzman &Pearce, 2001; National Research Council, 2001; Smith, 1999; Thelin & Fussner, 2005). In some cases, EI services can alter a child’s developmental trajectory; in others, EI services can prevent secondary complications or reduce the extent of the child’s disability (Guralnick, 2005). Thus, time is of the essence. Ideally, every child who experiences delays or appears to be at risk for delayed development during the first 3 years of life would have access to high-quality EI services aimed at improving developmental momentum and minimizing impairment.

Yet, issues arise in allotting scarce EI resources (U.S. Department of Labor, 2011; Hebbeler, Levin, Perez, Lam, & Chambers, 2009). For children with identifiable medical conditions such as Down syndrome or deafness, EI services are generally mandated. However, access to EI services may be less available for many other children, including children who present with risk factors in the absence of documented delays (such as infant siblings of children with ASD) as well as those who demonstrate relatively circumscribed delays in language in the absence of cognitive, motor, and sensory delays. Moreover, availability of services varies from state to state. Some states, for example, require evidence of significant delays (usually defined in terms of performance criteria of 1.25 to 2 SDs below the mean on a standardized assessment instrument) in several areas of development before a child can be determined eligible for services (Spiker et al., 2000).
What Do We Know About Predicting Outcomes?

Reliable predictive data are scarce. At present, few prospective, experimentally controlled studies have followed at-risk infants/toddlers longitudinally over the entire course of the language learning years. A large proportion of the extant literature consists of correlational studies that demonstrate significant associations between extrinsic or intrinsic risk factors and language/communication development with no identifiable causal link. In addition, most studies naturally focus on specific populations of at-risk children or specific aspects of language development (e.g., vocabulary) and specific developmental time periods (e.g., 9 months to 3 years). Research findings also are frequently overinterpreted in at least two ways:

- Significant statistical differences are equated with clinically meaningful differences or as indicative of disorders.
- Simple correlational data are misinterpreted using cause–effect terminology.

Despite these difficulties, SLPs can garner clinically useful information concerning EI from the emerging research literature. Understanding the factors most likely to be associated with chronic developmental disorders, mild delays, and typical development can help SLPs determine the priority for EI services when such services are limited. For example, SLPs faced with cases of delays apparently limited to expressive language sometimes have to use their clinical judgment and override local eligibility criteria to provide services for a child. The clinical question becomes: Does the expressive language delay place this child at serious risk for chronic communication disorder and warrant EI? Knowledge of the current “state-of-the-science” can inform SLPs’ decision making about the intensity of services necessary to address an identified disorder, setting priorities within their workload constraints to allocate direct intervention on the basis of severity of impairment, risk for chronic disability, and likelihood of benefit.

What Have We Learned So Far?

**Predicting outcomes for typically developing toddlers.** Recent research has examined factors that predict later language development in typically developing toddlers. Both Chiat and Roy (2008) and Watt, Wetherby, and Shumway (2006) examined typically developing children and found that, generally, early performance in language areas predicts later language performance in the preschool years. This means that children who start out at the high end of the curve tend to remain there, and those who start out at the low end of the curve tend to remain there. These studies reported that early receptive language skill tends to be a strong predictor of both receptive and expressive performance. Watt et al. also found that typically developing children’s inventory of conventional gestures contributed to later receptive ability, whereas communication for joint attention and inventory of consonants were significantly related to expressive language outcome. These findings suggest that, other things being equal, children who are eligible for EI services and demonstrate poor receptive performance, limited joint attentional communicative acts, and small phonetic repertoires would have higher priority for EI services than those with equally limited speech but higher receptive language, more frequent expressions of joint attention, or larger phonemic repertoires.

**Predicting outcomes for infants and toddlers with developmental delays.** The following sections provide current information about five infant/toddler populations who may be candidates for EI services from SLPs: those with established syndromes of developmental delay, those with hearing impairment, those with ASD, late talkers, and internationally adopted children. Selection of these populations was based on the availability of research data on outcome predictors.

**Established medical conditions and syndromes.** In young preverbal children with established medical conditions or diagnosable syndromes who will qualify for EI services by virtue of these diagnoses, early distal pointing has been found to predict their level and rate of vocabulary growth 2 years later, and rate of intentional communication (e.g., words, gestures, vocalizations) has been found to predict spontaneous word productions over the same 2-year time period (Brady, Marquis, Fleming, & McLean, 2004; Calandrelli & Wilcox, 2000; McCathern, Yoder, & Warren, 1999). Consistent findings such as these reinforce the importance of providing EI for young preverbal children to stimulate their communication, speech, and language acquisition.

**Hearing impairment.** For children with congenital deafness or hearing impairment, better language outcomes for children with cochlear implants (CIs) are associated with earlier age of implantation, lower pure-tone average (PTA) thresholds when implanted, and higher nonverbal IQ (ASHA, 2004; Geers, Tobey, Moog, & Brenner, 2008). Moreover, compared to deaf children with hearing aid amplification, the majority of children with CIs show significantly better outcomes in oral language development, speech perception, and speech production (Kirk et al., 2002; Svirsky, Robbins, Kirk, Pisoni, & Miyamoto, 2000). Children with CIs also show rates of language learning similar to their normally hearing peers (e.g., Svirsky et al., 2000).

Yoshinaga-Itano’s (2003) review of longitudinal studies regarding children who are deaf and those who are hard of hearing also showed that language development was significantly and positively affected by age of identification of hearing loss and age at initiation of intervention services. These findings can be summarized to suggest that, in addition to advocating for thorough audiological assessment for each child referred for EI services, SLPs who work with children
who are deaf or have hearing impairments may consider providing increased intensity of services to those who begin treatment after the first year of life, have higher PTAs after implantation/amplification, and display lower nonverbal cognitive performance.

**ASD.** Several studies have examined predictors of vocabulary outcome in toddlers who have been diagnosed with ASD. McDuffie, Yoder, and Stone (2005) reported that preverbal commenting and motor imitation were the strongest predictors of vocabulary development 6 months later. Yoder’s (2006) findings revealed that frequency of communication and diversity of object play also played a predictive role in lexical growth over an early 12-month period. Taking a longer view, Smith, Mirenda, and Zaidman-Zait (2007) studied expressive vocabulary development in a relatively large sample of children (**N** = 35) with ASD over a 2-year period at 6-month intervals, beginning at 45 months of age (before the onset of intervention). The best predictors of vocabulary growth were expressive vocabulary size, presence of verbal imitation, pretend play, and gestural initiation of joint attention at intake, suggesting that children who start out at relatively higher levels of performance tend to have better prognoses.

Other prospective research on language development in children with ASD has looked more broadly at communication profiles and outcomes. Significant relationships have been found between early expression of joint attention and later language (e.g., Charman, Drew, Baird, & Baird, 2003; Dawson et al., 2004; Mundy, Sigman, & Kasari, 1990; Sigman & Ruskin, 1999; Thrum, Lord, Lee, & Newschaffer, 2007; Toth, Munson, Meltzoff, & Dawson, 2006). Imitation has also been shown to be related to language growth (Rogers, Hepburn, Stackhouse, & Wehner, 2003; Thrum et al., 2007), as has symbolic play (Paul, Chawarska, Cicchetti, & Volkmar, 2008; Thrum et al., 2007) and nonverbal cognitive ability at age 2 (Paul et al., 2008; Thrum et al., 2007). Wetherby, Watt, Morgan, and Shumway (2007) also found that frequency of communicative requests was a significant predictor of language development, whereas Paul et al. (2008) showed that children with better language outcomes showed more consistent responses to bids for joint attention and fewer repetitive behaviors as toddlers than peers with poorer language outcomes at preschool age. Thus, it appears that a range of communicative behaviors in children with ASD are related to their rate of language acquisition. Collectively, though, findings from these prospective longitudinal studies can be interpreted to suggest that toddlers with ASD with the highest risks for chronically delayed language will be those with several of the following:

- low nonverbal IQ;
- significant repetitive and stereotypic behaviors;
- few conventional or symbolic play schemes;
- limited vocal and motor imitation;
- poor expression of or response to joint attention;
- limited consonant repertoire.

**Late talkers.** In the past 20 years, several research groups have studied the development of late talkers who are slow to develop expressive language skills in the absence of other measurable disabilities. These children are usually identified between 18 and 30 months of age when parents become concerned that their child, who appears to be developing normally, fails to begin speaking or has a very small expressive vocabulary.

A variety of criteria have been used to identify these late-talking toddlers; most commonly, they include a vocabulary size below the 10th percentile for age (Fenson et al., 2007; Rescorla & Lee, 2000). Studies following these children through the preschool years have shown that they tend to combine words later than other children their age (Carson, Klee, Carson, & Hime, 2003; Dale, Price, Bishop, & Plomin, 2003), have less advanced sentence structures than other children their age (Dale et al., 2003; Hadley & Holt, 2006; Paul, 1996; Paul & Riback, 1993; Thal, Reilly, Seibert, Jeffries, & Fenson, 2004), and are delayed in their development of speech sounds (Law, Boyle, Harris, Harkness, & Nye, 2000; Paul & Jennings, 1992; Rescorla & Ratner, 1996; Rice, Taylor, & Zubrick, 2008; Thal, Oroz, & McCaw, 1995). Zubrick, Taylor, Rice, and Slegers (2007) also reported that late talkers are more likely to be male; to have a family history of language delay; and to have experienced prematurity, low birth weight, or other early neurobiological growth difficulties.

A few researchers have followed these children beyond the preschool years to examine their longer term outcomes. These studies revealed that more than 75% of the children who had been identified as late-talking toddlers moved into the normal range for vocabulary by 3 years of age and performed within age-appropriate psychometric limits on standardized tests of grammar and discourse skills by kindergarten (Paul, 1996; Rescorla, Dahlsgaard, & Roberts, 2000; Rescorla & Lee, 2000; Rice et al., 2008; Roos & Weismer, 2008; Whitehurst & Fischel, 1994), even though only a minority (approximately 1/3) of the children received language intervention before school entry (Paul, 1996; Whitehurst & Fischel, 1994). However, although most late talkers would not be identified as having language disorders by school age, they continue to score significantly lower, as a group, than typically developing controls from similar backgrounds, particularly in the area of grammatical development (Paul, 1996; Rescorla, 2002; Rice et al., 2008; Thal, 2005).

In addition, Rescorla (2005) found significant group differences in reading at ages 8 and 9 for late talkers, even though none of the children had been formally diagnosed with a reading disorder. Data from Rescorla suggest that...
these students continue to score within the normal range on tests of language and reading and do not qualify for special educational services or a diagnostic label such as specific language impairment. However, their scores are significantly lower than those of peers with similar socioeconomic status (SES), and they continue to demonstrate weaknesses in basic and higher order language skills, including vocabulary, grammar, verbal memory, figurative language, and reading comprehension. However, they perform similarly to age peers on reading mechanics and writing. Only a few studies have examined outcomes in adolescence in children who were late to talk as toddlers. Rescorla (2009) reported that although children who were late talkers as toddlers performed in the average range on all language and reading tasks at 17 years of age, and were not identified as having special educational needs, they continued to obtain significantly lower scores on measures of vocabulary, grammar, and verbal memory than SES-matched peers.

These data suggest that children with early expressive language delay, in the absence of other warning signs, continue to show weaknesses in language and literacy, relative to SES-matched peers, throughout the school years. However, these weaknesses are not severe enough to qualify them for identification as having significant learning disabilities or to make them eligible for special educational services in school.

But, expressive language delay can sometimes be only the most obvious difficulty a child presents and may mask other deficits to which families may be less sensitive. Research described below has been useful in identifying factors seen in children with apparently circumscribed slow expressive language development that tend to be more strongly associated with long-term difficulties, and we are now in a better position to evaluate risk for long-term developmental disorders in toddlers who are late to acquire spoken language, based on detailed assessment of their behavioral profiles.

Distilling the findings across studies of toddlers who fit the late talker profile or who have specific communication deficits, Ellis and Thal (2009) and Paul (2007) identified several “red flags” for chronically delayed language development. These factors include:

- the presence of significant delays (>6 months) in comprehension as well as production,
- limited response to name and language,
- few vocalizations,
- limited number of consonants in babble,
- few spontaneous imitations,
- lack of object or symbolic play,
- few communicative gestures or vocalizations,
- reduced rate of nonverbal communication,
- communicative intents limited to requesting,
- difficulty gaining access to peer interactions,
- preference for adults over peers, and
- family history of language delays or reading problems.

Children who show several of these signs could be considered at risk for chronic difficulties and would merit higher priority for services than a child who has not yet begun using words but shows none of the other symptoms on this list.

**Environmental risks.** Although there is a range of environmental risk factors that can affect development, some discussed later, the present discussion will focus on international adoption as just one example of a nonbiological risk factor on which some research exists.

The United States is experiencing an increasing number of internationally adopted children from countries throughout Eastern Europe and other regions (Glennen, 2005). According to the U.S. Department of State (2006), the number of immigrant visas issued to orphans increased from 8,097 in 1995 to 22,728 in 2005. A large proportion of these children resided in institutional settings from a very young age, where they may have experienced deprivation of stimulation, interpersonal interaction, and adequate nutrition (Hwa-Froelich, 2009). As a result, they are at increased risk for a variety of chronic developmental problems. Language, communication, social, and cognitive deficits are among the most common deficits exhibited by these children, with attachment disorders as a core component of their developmental profile. Zeanah, Nelson, Fox, Smyke, and Koga (2003) and Nelson, Zeanah, and Fox (2007) reported, in a longitudinal study (infancy through 54 months) of children from Romanian institutions, clear linkages between behavioral findings and brain differences. Annual testing on a battery of developmental measures and electroencephalograms showed strong and sustained connections between language and cognitive development and altered levels of brain activity in several regions.

One of the most relevant sets of findings for a discussion of EI services was the apparent effects of timing of deinstitutionalization and initiation of intervention services received by the children. Specifically, placement in a nurturing environment before 26 months of age yielded a greater “catch-up” rate in language acquisition after placement than placement at later ages. A supportive environment also dramatically counteracted the detrimental effects of institutional care on cognitive functioning for children who were placed before 2 years of age.

**Summary.** SLPs have a good deal of information available to them when faced with a child about whom a family has expressed concern regarding apparently delayed communication development in the second or third year of life. When diagnosable conditions such as intellectual disability, hearing impairment, or ASD are present, SLP services will be a central part of the EI service plan. Guidelines for evaluating the intensity of services needed for conditions like these are provided by literature on predicting outcomes in these conditions, as discussed above.
For toddlers for whom detailed assessment suggests that expressive language delay is the only problem, with language comprehension, vocal, play, motor, social–communicative, and cognitive development intact, a “watch and see” recommendation has been proposed in the literature (e.g., Paul, 1996), although it is not universally accepted (Robertson & Weismer, 1999). This recommendation entails reevaluation in 3 to 6 months to ensure that other areas of development continue to unfold in a typical way and that the expressive language begins to catch up. For toddlers who evidence some of the warning signs listed here, an SLP is justified in arguing for the need for immediate provision of services because these signs suggest greatly heightened risk for longer term difficulty. A summary of risk factors is provided in Table 1.

**What Do We Not Yet Know?**

Thorny issues remain in the EI field. One such dilemma is posed by younger siblings of children who have been diagnosed with ASD. These children are known to have an elevated risk for autism, with more than 10% of siblings of children with ASD meriting an ASD diagnosis of their own (Landa & Garrett-Mayer, 2006; Zwaigenbaum et al., 2005). In addition, as many as 20% of siblings of children with ASD show a deficit in social, language, or communicative functioning (Bolton, Macdonald, Pickles, & Rios, 1994; Pickles et al., 2000; Rutter, 2000) that does not meet full criteria for an ASD diagnosis—what is often called the “broader autism phenotype” (Le Couteur et al., 1996; Micali, Chakrabarti, & Fombonne, 2004). Parents of infants who have siblings with ASD may have above-average sensitivity to the signs of this disorder and express concerns about the development of a younger sibling. As a result, these parents may notice developmental deficits within the first year of life (Zwaigenbaum et al., 2005).

Is concern on the part of a parent for a younger sibling of a child with ASD sufficient for eligibility for EI services? Unfortunately, at this time, there are few data to guide SLPs in making decisions on difficult questions like this one. In an ideal world, perhaps children with risk factors about whom parents were concerned could receive intervention in the first year of life, and if they did, their developmental trajectories might be significantly altered in a positive direction. But EI is expensive (Hebbeler et al., 2009), SLPs are in short supply in many areas of the country (U.S. Department of Labor, 2011), and the evidence that this scenario is valid is currently absent, as is the evidence as to what would constitute an efficacious treatment. Several research groups (summarized by Zwaigenbaum et al., 2009) studying the development of this population are experimenting with offering training to parents to maximize at-risk infants’ opportunities for social–communicative development, but the results of this research have not yet been published. At the time of this writing, then, SLPs have little to guide them in making intervention decisions in difficult situations such as this.

A background of poverty presents an additional challenge for SLPs determining service eligibility, with long-term

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<td>Higher pure tone average hearing after implantation/amplification</td>
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<td>Autism spectrum disorder</td>
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<td>Lack of preverbal comments/joint attention</td>
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<td>High level of repetitive behaviors</td>
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<td>Family history of language or reading delay</td>
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<td>Environmental risk</td>
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<td>Low socioeconomic status</td>
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<td>Nonresponsive home language environment</td>
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policy, resource, and practice implications for EI (Coleman, Roth, & West, 2009; Roth & Troia, 2009). Children who are reared in poverty are at considerable risk for delays in oral language and emergent literacy development (e.g., Barnett, 2001; Hart & Risley, 1995; Roth & Troia, 2006; Snow, Tabors, & Dickinson, 2001). Youngsters with limited early language and print interaction experiences are vulnerable to learning deficits that may not be detected until they enter school (Oxford & Spieker, 2006; Whitehurst et al., 1994). Yet EI services currently are not available to enhance the early language and literacy environments of all children in poverty. Similarly, children from families with histories of delayed language and reading problems are significantly more likely to display difficulties in later language and literacy development (Lyytinen, Poikkeus, Laakso, Eklund, & Lyytinen, 2001). Again, though, EI services are not consistently available to these children during the first 3 years of life.

Finally, the rapidly growing population of internationally adopted children poses a challenge for the EI field. Many of these children may have experienced early and chronic social deprivation associated with institutionalization and are at significant risk for developmental problems, including language and communication disabilities. Those adopted after their second birthday experience increased risk; yet there is no system in place currently to provide EI services to such children on the basis of this risk alone; instead, services are typically provided only when delays become apparent.

Given our knowledge of early biologically sensitive periods during which certain types of stimulation have the greatest impact on development in different domains of functioning, these and other situations of enhanced risk may require the field of early childhood development to revisit eligibility criteria for EI services in order to maximize the learning potential and outcomes for young children (Knudsen, 2004). These factors also raise several other issues, including which combination of risk factors makes a child more or less vulnerable to language deficits? What child/family/environmental attributes increase a child’s resilience? And what kinds of services would be most effective to counteract the potential effects of risk factors (e.g., parent education programs, infant stimulation programs)?

It is to be hoped that emerging research will, in the near future, assist SLPs in dealing with the wide range of issues and dilemmas faced in providing the highest quality services and in computing the cost–benefit relations that arise in EI practice.

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