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# *Family Influences on Early Development: Integrating the Science of Normative Development, Risk and Disability, and Intervention*

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The focus of this chapter is on family patterns of interaction that influence the social and intellectual competence of young children. It is the development of social and intellectual competencies that enables children to pursue their own goals as effectively as possible and to do so in the context of larger family values, expectations, and routines. Of importance, the development-enhancing qualities of family patterns of interaction can and do differ substantially across families, and many of these variations can materially alter children's developmental trajectories, especially during the early childhood years. Indeed, families challenged by various combinations of environmental and psychosocial stressors or risk factors often establish family patterns of interaction that are far from optimal with respect to their development-enhancing features (Belsky & Fearon, 2002; Burchinal, Roberts, Hooper, & Zeisel, 2000; Liaw & Brooks-Gunn, 1994; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987).

From another perspective, and the one emphasized in this chapter, owing to genetic conditions, infectious agents, or other biologically based causes, many children exhibit uneven and unusual developmental characteristics that pose significant challenges to optimal family patterns of interaction for even the most conscientious and devoted of families. Nevertheless, as will be seen, irrespective of the nature and origin of stressors to optimal family patterns of interaction, a common developmental framework can be useful in understanding factors influencing children developing typically as well as those children who are vulnerable to developmental problems as a consequence of biological or environmental factors. Moreover, it is this same developmental framework that can serve as a guide to design and evaluate the effectiveness of early interventions intended to maximize the development-enhancing features of family patterns of interaction for vulnerable children. In fact, our understanding of development can be substantially enriched by a

thoughtful integration of our knowledge of the developmental science of normative development, the developmental science of risk and disability, and intervention science (Cicchetti & Cohen, 1995; Guralnick, 1998, 2001a). Each of these topics is examined in this chapter in relation to family patterns of interaction.

## Developmental Science of Normative Development

One major task of the science of normative development is to identify and organize those critical features of family patterns of interaction that influence the healthy development of young children. As one might imagine, this is a complex and demanding enterprise. Potential influential factors need to be sorted out and grounded theoretically, and measures must be established that capture the essence of the many dynamic processes of interest. A special challenge for developmental science, particularly when focusing on the early years, is to develop measurement systems for constructs that take into account the major developmental changes that are occurring even during this relatively brief period of a child's life. Moreover, determining whether, and the extent to which, specific family patterns of interaction actually influence children's social and intellectual competence demands sophisticated longitudinal studies and equally sophisticated statistical analyses. Fortunately, investigators who study family patterns of interaction have been able to identify many of these influences and establish their importance as contributors to children's social and intellectual competence (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000).

Three general types of family patterns of interaction have been clearly associated with child developmental outcomes (Guralnick, 1998). The first is the quality of *parent–child transactions*. These transactions constitute the substance of everyday exchanges between parents and children and may be said to be part of a mutually interacting system in which each participant exerts influence over the other (Sameroff & Fiese, 2000). As will be discussed shortly, a number of `"relationship constructs" have been identified, the most important of which can best be referred to as "sensitive-responsiveness" to children's actions – an interaction pattern that has been clearly linked to children's social and intellectual competence.

The second family pattern of interaction focuses on *family-orchestrated child experiences.* Included here are the routines families establish, the introduction of the child to the family's social network, organizing educational experiences for the child, including the provision of developmentally appropriate toys, selecting an appropriate child care setting, arranging play dates, and involving the child in community activities consistent with his or her interests or even special needs should they arise.

The third and final family pattern of interaction consists of those parental activities relevant to ensuring the *health and safety of the child.* Providing proper nutrition, minimizing exposure to toxins, ensuring that immunization schedules are followed, and protecting the child from injury or from violence are some of the important aspects of this family pattern of interaction. A summary of some of the specific features of these three

patterns and how they exert their influence on children's social and intellectual competence is discussed next.

## *Parent–child transactions*

With respect to fostering young children's intellectual competence, the ability of parents to gauge their interactions so that they are consistent with their child's developmental level and motivational state is central to the development-enhancing aspects of the construct captured by the term "sensitive-responsiveness" (see Ainsworth, Blehar, Waters, & Wall, 1978). Clearly, for optimal interactions to occur, a highly developed sensitivity to and understanding of the cues children display are required. Over the years, a number of important dimensions of this construct have been identified, sometimes exerting their effects independently, but more often in an interrelated and interdependent fashion (see Bornstein & Tamis-Lemonda, 1989). An especially important aspect of sensitive-responsiveness is contingent responsiveness consisting of two dimensions: the ability to respond to the child in a timely and predictable fashion, and to organize the content of the transaction so as to be relevant and appropriate (see Martin, 1989). The timing of contingent responsiveness, in particular, is needed to maintain the social exchanges at a proper pace and to communicate to the child that his or her desires, interests, and interactions make a difference and exert an influence with respect to what happens next. High levels of sensitive-responsiveness also encourage social exchanges to flourish, often creating a lively "discourse" between parents and young children – highlighting salient features of the exchange and providing a context for elaborating upon topics of mutual interest. In many respects, this discourse context also allows parents to "scaffold" information by gradually extending their child's knowledge or guiding their child's skilled actions just beyond the child's current level of development (Vygotsky, 1978). "Zone of proximal development" is the term Vygotsky used to describe this process. This important dimension produces a motivating challenge to foster a child's intellectual competence and requires an appropriate level of sensitivity to a child's current state of development in addition to an interest in advancing the child's level of development (Wood, 1998). A final dimension of sensitive-responsiveness is one which requires interactions to be affectively warm, thereby demonstrating enthusiasm, attention, and affection (Steelman, Assel, Swank, Smith, & Landry, 2002) as well as highlighting critical features of the interaction.

These development-enhancing dimensions of parent–child transactions can be contrasted with those in which parents themselves control the timing and content of the exchanges – interactions that are often poorly linked to their children's needs or interests (e.g., not following the child's attentional focus). Here, parents tend to be highly directive, exerting control when it is not appropriate to do so. This intrusiveness, in the form of redirecting a child's activities or exerting excessive and inappropriate control through unnecessary restrictions on behavior, can clearly constrain many aspects of development (e.g., Parpal & Maccoby, 1985; Tomasello & Farrar, 1986).

Findings from numerous studies directly observing parent–child transactions in natural

and laboratory settings have consistently obtained positive associations between the development-enhancing dimensions of sensitive-responsiveness and children's intellectual competence (e.g., Bornstein & Tamis-Lemonda, 1989; Landry, Smith, Miller-Loncar, & Swank, 1997; Landry, Smith, Swank, & Miller-Loncar, 2000; Lewis & Goldberg, 1969; Tomasello & Farrar, 1986; Wood, 1998). The precise contribution of the various dimensions of sensitive-responsiveness to child development may differ across developmental periods (e.g., more direct guidance or control may be of value early on but is detrimental to development if the pattern continues), and specific dimensions may be linked to specific aspects of a child's competence (e.g., responsiveness to children's vocalizations is associated with children's language development) (Bornstein & Tamis-Lemonda, 1989; Tamis-Lemonda, Bornstein, Baumwell, & Damast, 1996). Moreover, sensitive-responsiveness can wax and wane across developmental periods, but consistency over time provides the best outcomes (Landry, Smith, Swank, Assel, & Vellet, 2001).

A number of theoretical positions have been advanced to account for how these development-enhancing parent–child transactions support a child's development that is sustained over time. Strengthening the broader psychological make-up of the child through these exchanges, including numerous aspects of early emerging competence such as self-regulation and capacities that allow children to explore and learn more effectively and efficiently across varying development periods, is certainly one likely explanation (see Haley & Stansbury, 2003). These development-enhancing features may also be linked to the ability of the parent–child dyad to draw closer to one another. In so doing, expertise is gained with respect to knowledge of their child's development and interests (from the parents' perspective) and how best to capture the parents' attention (from the child's perspective). Of course, the consistency of sensitive-responsiveness of parents contributes as well.

Although the level of sensitive-responsiveness will vary over time, it nevertheless remains moderately stable (Bradley, 1989) and likely correlates positively with many other development-enhancing features of family interaction patterns to be discussed later in this chapter. Of importance, a major challenge for parents is to find the proper balance and developmental timing of these various dimensions in order to maximize their development-enhancing features. This balance surely depends on many factors, some of which are discussed below. One key factor is the developmental characteristics of the child, including the existence of any risk factors or disabilities. Clearly, this constitutes a circumstance that may require substantial adaptations to maintain optimal sensitive-responsiveness.

As might be expected, many of these same dimensions of parent–child transactions linked to intellectual competence are also development-enhancing with respect to children's social competence (e.g., Landry, Smith, Miller-Loncar, & Swank, 1998; Landry et al., 2001). After all, becoming socially competent has many problem-solving components as children attempt to pursue their interpersonal goals. The more qualitative dimension of sensitive-responsiveness, affective warmth, may be an especially important contributor to children's developing social competence if properly gauged to the child's developmental and motivational level (Steelman et al., 2002). Even specialized dimensions such as the

way emotional arousal is modulated during parent–child play are related to children's emerging social competence (see Parke, Cassidy, Burks, Carson, & Boyum, 1992; and Thompson & Lagattuta, this volume). Finally, these development-enhancing interactions represented by the sensitive-responsiveness construct also underlie the formation of powerful and secure emotional attachments to caregivers (Ainsworth et al., 1978; Carlson, Sampson, & Sroufe, 2003). It is these secure attachments that serve both as a safe haven to allow the child to explore the world and as the prototype for mental representations of relationships or "internal working models" that can guide the formation of subsequent relationships (see Thompson, 1999). In fact, this positive orientation and set of expectations established by a secure attachment support socially competent functioning with adults and even carry over to relationships with peers (see Guralnick & Neville, 1997; Schneider, Atkinson, & Tardif, 2001).

In contrast, the absence of adequate levels of sensitive-responsiveness often leads to the formation of various types of problematic relationships, including insecure attachments. These insecure attachments do not in and of themselves preordain later developmental problems of a social and emotional nature, but rather constitute a major risk factor for their occurrence (see Carlson et al., 2003). Correspondingly, abundant evidence suggests that low levels of parental sensitive-responsiveness during the early years are predictive of future social and emotional difficulties (Wakschlag & Hans, 1999), with their expected detrimental effects on social competence. Unusually low levels of sensitive-responsiveness or interaction patterns incompatible with sensitive-responsiveness impair many and diverse aspects of children's social competence (see Guralnick & Neville, 1997; LaFreniere & Dumas, 1992). Indeed, lower levels of social competence prevent children from becoming productively involved in social relationships, in general, including relationships with peers (Guralnick, 2001c; Parker, Rubin, Price, & DeRosier, 1995).

### *Family-orchestrated child experiences*

Parents are also primarily responsible for organizing a variety of experiences in both the home and the larger community environment that establish the conditions for other important development-enhancing experiences for their child. These include such diverse parental activities as providing an appropriately stimulating environment, for example selecting developmentally appropriate toys and materials (Bradley, 2002; Bradley et al., 1989). The orchestration of family routines and rituals involving the child provides the context for diverse and productive parent–child transactions (see Fiese, 2002). These routines, which may range from bedtime reading and other home literacy experiences, to involvement in family chores and activities, frequently serve as the occasion for development-enhancing parent–child transactions, especially the provision of spontaneous diverse use of language directed to the child (Griffin & Morrison, 1997; Hart & Risley, 1995). The sheer amount of language directed to young children, which varies enormously across families, turns out to be a powerful predictor of children's developing

vocabularies and perhaps other aspects of development as well (Hart & Risley, 1995).

Even when parents are unavailable, they nevertheless are responsible for orchestrating the quality of development-enhancing experiences. Introducing their child to their own social network is one example. Selecting child care so that it constitutes a development-enhancing experience is, of course, a critical and difficult decision for families. Although the overall effects of child care on children's intellectual competence may be relatively small, an influence is nevertheless evident (NICHD Early Child Care Research Network, 2003; NICHD Early Child Care Research Network & Duncan, 2003). Parent-orchestrated child experiences also include community activities arranged by parents, both recreational and educational, which provide numerous development-enhancing opportunities (Dunst, Hamby, Trivette, Raab, & Bruder, 2000). A critical feature here is for parents to organize those activities consistent with their child's special interests or, as discussed later, with their child's special needs. It is also the case, as revealed by a substantial body of evidence, that parents can influence their child's social competence, particularly in connection with peers, through a variety of parent-orchestrated activities. Beneficial effects are associated with parental arranging and monitoring of even young children's experiences with peers (e.g., playdates) and through direct advice and instruction provided by parents with respect to managing relationships with peers (Ladd & Hart, 1992; Ladd & Pettit, 2003; Russell & Finnie, 1990).

### *Health and safety provided by the family*

The third family pattern of interaction focuses on the crucial ability of families to attend to their child's basic needs with respect to health and safety. Maintaining a child's good health, with an emphasis on preventive health (e.g., immunizations), enables children to take advantage of many of the other development-enhancing aspects of family patterns of interaction described above. Similarly, maintaining proper nutrition is essential for optimal intellectual competence, although the processes through which this factor operates are complex (Georgieff & Rao, 1999; Gorman, 1995; Lozoff, De Andraca, Castillo, Smith, Walter, & Pino, 2003). Finally, protection from violence or even witnessing violence constitute important family .responsibilities for many reasons, including the fact that these events can influence children's social and intellectual competence (Farver, Natera, & Frosch, 1999; Koenen, Moffitt, Caspi, Taylor, & Purcell, 2003; Osofsky, 1995).

## Developmental Science of Biological Risk and Disability

Research has not yet determined precisely which of the many possible combinations of family patterns of interaction and their various dimensions will result in optimal or near optimal child development. Clearly, there are many diverse paths that families can take to optimize children's social and intellectual competence. The actual range is likely to be

quite considerable and, judging by child outcomes, the vast majority of families fall well within that range. However, circumstances arise that make this task far more challenging, such as when families have inadequate financial resources, when mothers have experienced abuse or neglect themselves, when families have limited social supports, or when a parent has a mental health problem. In fact, the challenges or stressors to establishing optimal family patterns of interaction can be so severe as to place a child at risk for developmental delays and related problems. There is, in fact, a substantial literature in which several of the mechanisms through which this occurs have been identified (Duncan, Brooks-Gunn, & Klebanov, 1994; Guralnick, 1998, 2005b; Yeung, Linver, & Brooks-Gunn, 2000). Much of this information is addressed in other chapters in this volume.

Stressors to optimal family patterns of interaction also arise when children are at biological risk for developmental problems, such as those born prematurely at low birth weight, as well as for children with established developmental disabilities whose cognitive, motor, communicative, affective, or sensory systems are substantially compromised. Children with established disabilities frequently receive diagnoses such as cerebral palsy, autism, mental retardation (cognitive or intellectual delay for young children), hearing or visual impairment, or specific language disorder. The etiologies for many of these disorders are genetic, such as for children with Down's syndrome or Fragile X syndrome (Hagerman, 1999). In the case of children with established disabilities, typical develop-mental trajectories are, of course, not likely, nor are they expected.

Yet, any disruptions to optimal family patterns of interaction, unrelated to pre-existing family environmental or psychosocial stressors, may further compromise a child's development. Unfortunately, as discussed below, it appears that these disruptions occur regularly as a consequence of information needs that are generated, interpersonal and family stress that is experienced, additional resources that must be gathered, and confidence threats related to parenting that must be addressed (Guralnick, 1998). Of additional importance, available evidence suggests that the various dimensions and activities associated with the three family patterns of interaction identified for children developing typically are just as relevant and important for children at biological risk and for those with established disabilities. For example, sensitive-responsiveness manifested in its various dimensions is also a key to maximizing the development of these young children (Barnard, 1997; Landry et al., 1997; McCollum & Hemmeter, 1997; Spiker, Boyce, & Boyce, 2002; Yoder & Warren, 1999). Consequently, it is essential to identify the kinds of stressors associated with the characteristics of children at biological risk and those with established disabilities that may perturb family patterns of interaction. This, in turn, can lead to interventions designed to maintain or restore optimal family patterns of interaction.

## *Information needs*

First, and perhaps most notable, children's specific developmental characteristics and related circumstances create information needs for families focused primarily on their

child's current level of health and development as well as anticipated needs. The range of information needs turns out to be quite extraordinary, varying across developmental periods and children's particular risk or disability profiles. For example, early on, parents of children born prematurely must learn about highly sophisticated medical procedures in the neonatal intensive-care unit and the possible impact of these procedures on their child's development (Als, 1997; Als et al., 2003; Meyer et al., 1995). Even when these children are able to move from the hospital to home, differences in child responsiveness, sleep–wake cycles, and numerous other emotional and physiological regulation issues arise that substantially challenge optimal family interaction patterns, particularly parent–child transactions (Minde, 2000; Singer et al., 2003). Information is clearly needed in order to achieve optimal patterns.

The developmental delays of children with established disabilities and their sometimes highly atypical behavior, such as that which occurs for some children with autism, tend to create enormous challenges requiring parents to acquire considerable information to both understand and address these issues. Children's interactive abilities, in particular, are often perplexing for parents, frequently resulting in mismatches between their behavior and that of their child's or missed opportunities during parent–child transactions (see McCollum & Hemmeter, 1997). It is far more difficult for parents of young children with disabilities to read their child's cues accurately and to understand their needs. Broadly speaking, these children tend to be less emotionally expressive, less responsive to others, initiate social exchanges less frequently, and process information in unusual ways (Spiker et al., 2002). Many of these difficulties in parent–child transactions are apparent in the context of family routines, which potentially contain considerable development-enhancing value. This is especially the case when opportunities exist to share experiences through joint attention routines or when children are in situations in which they are uncertain as to their safety or comfort and could benefit from parental guidance (generally referred to as social referencing) (Guralnick, 2002; Kasari, Freeman, Mundy, & Sigman, 1995; Mundy & Stella, 2000; Sigman & Ruskin, 1999).

Information needs also arise in connection with the other two family patterns of interaction – ensuring optimal parent-orchestrated child experiences and the health and safety of their child. For example, parents must keep themselves informed with respect to the best programs and experts and keep current with respect to possible treatments and interventions (see Sontag & Schacht, 1994). Similarly, parents often find it difficult to provide appropriate experiences outside the family for their child with a disability. Playdates are very difficult to arrange for children with disabilities yet, unless parents make these arrangements, few experiences with peers result (Guralnick, Connor, Neville, & Hammond, 2002). This contrasts sharply with typically developing children, who frequently make their own arrangements with peers. Clearly, parents require information with respect to the best approaches to establishing experiences for their child with peers and to promoting their child's peer-related social competence (Guralnick, 1999).

The unusual difficulties parents of children with disabilities have in arranging child care exacerbates this lack of experience with peers (see Booth & Kelly, 1998). Obtaining information concerning those child care providers knowledgeable and sensitive to a young

child's special needs is a major challenge for many families. Moreover, many children with disabilities, in particular, are at increased risk for a variety of health problems, which parents must become knowledgeable about. They must also remain vigilant, urging health care providers to be especially attentive to these risks (e.g., Roizen & Patterson, 2003). Although many parents are able to adjust appropriately to their child's atypical developmental patterns or seek out relevant information on their own to enable them to engage in development-enhancing parent–child transactions, others find this task to be extremely difficult.

A second stressor to optimal family patterns of interaction comes in the form of interpersonal and family distress. Families are called upon, often rather abruptly, to reassess and reconsider many of their goals and expectations individually and as a family unit, and to substantially adjust their family routines. Sources for this type of stressor are seemingly ubiquitous, easily triggered by the diagnostic process, transition points in programs, or missed developmental milestones, and are even associated with the actual process of coping with relevant problems (Affleck and Tennen, 1993; Atkinson et al., 1999; Pianta, Marvin, Britner, & Borowitz, 1996). Family distress and accompanying social isolation can also arise as a consequence of a feeling of "sharing a stigma" associated with a child with a disability (Goffman, 1963), or by experiencing similar feelings of distress associated with the birth of a child at biological risk (Minde, 2000; Singer et al., 2003). Felt personal stress is also common, such as feelings of depression or role restriction occurring as the full meaning of coping with a child with a disability emerges (Roach, Orsmond, & Barratt, 1999). For children with disabilities, accompanying child behavior problems are perhaps the most stressful (Baker, Blacher, Crnic, & Edelb rock, 2002) and require the most extensive accommodations by families (Gallimore, Keogh, & Bernheimer, 1999). Again, although many families adjust well, others experience levels of interpersonal and family distress sufficient to adversely affect family patterns of interaction and further compromise a child's social and intellectual competence.

### *Resource needs*

Resource needs generated by a child at biological risk or with a disability, the third category of potential stressors, are equally important. Child characteristics often disrupt typical family routines, placing numerous unexpected time and financial demands on family members (e.g., Bristol, 1987; Dyson, 1993). In the United States, for example, despite federal and state programs and private insurance that share the responsibility for many helpful services and supports for young children, the financial burden on families should not be underestimated, as out-of-pocket costs can be considerable (Birenbaum, Guyot, & Cohen, 1990; Shannon, Grinde, & Cox, 2003). All of these factors related to resource needs have the potential to disrupt one or more of the three family patterns of interaction (see Guralnick, 2004).

### *Confidence threats*

Finally, the constancy and pervasiveness of many of these stressors can create a crisis of confidence in a family's ability to properly parent their child. Measures of parental stress are often elevated with regard to perceived competence in carrying out the parenting role (e.g., Roach et al., 1999). It is critical that families maintain a sense of mastery and control over all aspects of decision making, as only they are capable of acquiring and integrating information and resources as well as mitigating distress and social isolation in a manner that is compatible with family goals, values, priorities, and routines (Gallimore, Weisner, Bernheimer, Guthrie, & Nihira, 1993).

## Intervention Science

For children at risk for developmental problems as well as for those with established disabilities, the developmental framework outlined above and the accompanying developmental science provide direction for the design of early intervention programs intended to help maximize children's development. Indeed, in the United States, numerous federal, state, and local programs have been established over the years to provide services, supports, and related resources to young vulnerable children and their families. Some are designed to be preventive in nature: that is, identifying children at risk (biological, environmental, or both) and then seeking to minimize that risk from being realized in the form of less than optimal child developmental outcomes. Other programs focus on children with established disabilities and are designed to maximize children's social and intellectual competence.

The most comprehensive of these programs is the state-administered but federally authorized Individuals with Disabilities Education Act (IDEA) (see Guralnick, in press). In actuality, this system consists of two major components: one focusing on infants and toddlers (Part C of IDEA), the other on preschool-age children (Part B). Encouraged by this legislation passed in the late 1980s, states first worked to integrate various service programs already in existence, such as those providing speech and language or physical therapy. This was followed by the development of new programs and services needed to ensure the availability of a comprehensive and coordinated set of services and supports for children and families within each community. Many structural components of early intervention systems were mandated by IDEA, such as creating an early identification and referral mechanism and ensuring that children make appropriate transitions from one program to another. Also contained within IDEA were certain principles to guide the system, such as those related to the importance of centering services on families (especially for infants and toddlers) and to ensuring that services are provided in ways that minimize the separation of children and families from their community (i.e., principles of natural environments and inclusion). The precise forms and nature of the community-based early intervention programs that have emerged within the framework of IDEA have varied substantially from state to state, but all are informed to some extent by both the

developmental science of normative development and the developmental science of risk and disability.

## *Knowledge base*

The complexity of the task of integrating and utilizing information from the developmental science of normative development and the developmental science of risk and disability to design early intervention programs is considerable. It is, of course, possible that we may actually be heading in the wrong direction. After all, establishing causal relationships in developmental science poses an unusual set of challenges (Shonkoff & Phillips, 2000). Moreover, there may have been important influences on children's development that were not assessed in the developmental science studies noted earlier in this chapter that were responsible for some of the patterns obtained. Besides the prospect of having failed to identify important features or dimensions of family interaction patterns, we must also consider the possibility that intrinsic child characteristics were the driving force for many of the developmental relationships that were found.

Fortunately, intervention science provides an opportunity to examine and evaluate the influence of these suggested family patterns of interaction on child development more directly. That is, experimental tests can be arranged by manipulating the factors of interest (e.g., a program to improve sensitive-responsiveness) and determining whether the expected outcomes occur. In essence, developmental science provides a theory of change and intervention science allows us to test that theory. When combined with clinical expertise and experience, the various aspects of developmental and intervention science can work together to provide a more accurate portrayal of family influences on children's development and generate feasible practices that can be applied in community settings that are effective in fostering children's social and intellectual competence.

Available evidence from intervention science now permits us to be more specific about how such early intervention programs should be organized and, as it turns out, that evidence is entirely consistent with the goal of minimizing the stressors to family patterns of interaction discussed in this chapter. Indeed, results from numerous studies, many very well controlled from a scientific perspective, suggest that when resource supports, social supports, and information and services are provided in the context of organized early intervention programs that are responsive to the stressors outlined above, both short- and long-term benefits with respect to children's social and intellectual competence can be achieved (Guralnick, 1997, 1998; Hill, Brooks-Gunn, & Waldfogel, 2003). To obtain these child developmental outcomes, services and supports responsive to assessments of stressors to family patterns of interaction are carefully individualized and implemented in a manner intended to strengthen families. Important features of these model interventions include administrative procedures to integrate and coordinate the diverse services that may be needed. Indeed, families have considerable access to services such as audiology, assistive technology, transportation, family counseling, family training, genetic counseling, and evaluation. These are in addition to more traditional health and therapeutic

services (e.g., physical therapy). Clearly, coordination and integration are critical.

Some model programs that have been evaluated as part of intervention science have provided a unique array of services and supports. For example, in the United States, the Infant Health and Development Program is a preventive intervention program focusing on children born prematurely at low birth weight (Infant Health and Development Program, 1990). A critical component of that program was offering intervention-oriented day care in which a specific child-focused curriculum was implemented. The curriculum was pegged to children's developmental skill areas organized into themes related to cognitive and fine motor, social and self, motor, and language. It consisted primarily of games and activities easily integrated into established routines, along with strategies to develop the skills of adults to provide development-enhancing activities for the child. Other specialized programs include highly intensive applied behavioral analysis techniques for young children with autism (National Research Council, 2001). In this instance, carefully structured environments are created in which basic behavioral patterns and skills, such as imitation, are established through direct instruction and reward systems to provide the foundation for the establishment of more complex behavioral repertoires.

To be sure, much work remains in order to thoughtfully and sensitively design assessment protocols for stressors to family patterns of interaction, but considerable progress is being made (Guralnick, 2001 b, 2005a). Nevertheless, among the lessons learned from intervention science are that interventions will only be successful if they are compatible with a family's culture, values, and priorities, particularly as they are realized through their own family structure and family routines. This requires thoughtful individualization of services and supports as each stressor successfully addressed contributes to the eventual positive outcome. Moreover, the intensity of service provided has emerged as a central element of effective interventions (see Guralnick, 1998). This requires a strong commitment of resources and the persistence of all those involved. Accordingly, the results from intervention science suggest we are clearly on the right track and point to directions for future refinements.

## Summary and Future Directions

This chapter has outlined the important family influences on young children's social and intellectual competence based on developmental science. Three categories of family patterns of interaction were identified that independently or in concert influence children's developmental trajectories. Also discussed was the fact that it is difficult for parents to provide the development-enhancing features of these family patterns of interaction when challenged by stressors emanating from certain family or child characteristics. Fortunately, research and theory from the developmental science of normative development and the developmental science of risk and disability have enabled child developmentalists to gain a firm understanding of how these processes operate and how each influential factor relates to the others.

It was further suggested that a common developmental framework can be applied to

children developing typically as well as to children at risk for developmental problems and those with established disabilities. This is a critically important point, as this developmental framework can serve as a guide to providing supports and services to families with vulnerable children. Most directly, it appears that successful efforts with respect to prevention or intervention will be those that strengthen families by minimizing stressors to family patterns of interaction. As noted, available evidence from intervention science supports this contention. Clearly, much can be learned from the integration of developmental and intervention science, as each informs the other as to the validity of its assumptions and assertions and suggests future directions to better understand the influences governing children's development and the best ways to enhance that development.

The fact that there is so much variability in response to early interventions, however, creates a sense of urgency to achieve an even better understanding of the developmental processes involved and the types of interventions that are most effective. Developmental and intervention science are hard at work on this "specificity" issue. Indeed, as we learn more about the responsiveness, or lack thereof, to existing early intervention programs of certain identifiable subgroups of children at risk and those with established disabilities, the form and intensity of interventions can be adjusted accordingly.

To gain more information, researchers and clinicians in the fields of genetics and neuroscience have joined with behavioral scientists in order to identify these subgroups of children and families and to characterize the developmental processes that may be uniquely associated with each (Bailey, Phillips, & Rutter, 1996; Nelson, 2000). Of importance, these collaborations are helping us to understand some of the "core deficits" affecting various subgroups of children. In turn, this information will be used as a form of "translational research" to inform child-focused and even family-based interventions which will be evaluated using the techniques of intervention science.

Finally, it is important to point out that developmental and intervention scientists have an important responsibility to maintain close contact with clinicians and community programs. Unfortunately, despite many excellent community-based systems and individual early intervention programs, services and supports for vulnerable children are not nearly as state-of-the-art or as evidence-based as we would like (Guralnick, 2005b, in press; Spiker, Hebbeler, Wagner, Cameto, & McKenna, 2000). Indeed, in the United States and elsewhere fragmentation of services remains a critical problem (Shonkoff & Phillips, 2000). This early intervention systems development issue constitutes one of the most formidable challenges to fostering the well-being of vulnerable children and their families.

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Early brain development forms the basis of learning, behavior and health over the entire life span.Â  As Evans indicated, families which adapt well to their developmentally disabled children have relatively strong marital relationships, deal well with their childrenâ€™s specific characteristics (e.g., mild communication impairment), have the availability of parental support groups, small intense social support networks, higher SES, fewer offspring and more supportive communities (Kwaiâ€sang Yau, Cecilia, & Liâ€Tsang, 1999).Â  Compared to normative families, these target families were highly adaptive, but were understandably also more highly stressed over time. The child-parent relationship has a major influence on most aspects of child development. When optimal, parenting skills and behaviours have a positive impact on childrenâ€™s self-esteem, school achievement, cognitive development and behaviour. Introduction. Synthesis.Â  Most intervention programs for parents involve teaching effective strategies for managing childrenâ€™s behaviour. But problems can also arise when parents engage in maladaptive thinking.Â  Encyclopedia on Early Childhood Development [online]. https://www.child-encyclopedia.com/parenting-skills/according-experts/parents-attitudes-and-beliefs-their-impact-childrens-development. Updated December 2014. Accessed August 2, 2021. Numerous family influences on children's peer competence have now been identified including the degree of socioemotional connectedness between parent and child, especially attachment relationships, as well as specific aspects of parent-child discourse. More direct family influences such as helping to establish their child's peer social network as well as parental monitoring and directly facilitating their child's peer interactions also have been shown to contribute to children's peer competence.Â  The expectation is that by bringing developmental and intervention science into better alignment, core aspects of children's peer competence will more likely be affected. The psychological development of chil-dren in the family is affected not only by what happens in the other environments in which children spend their time but also by what occurs in the other settings in which their parents live their lives, especially in a place that children seldom enterâ€”the parents' world of work.Â  The simplest form of chronosystem focuses around a life transition. Two types of transition are usefully distinguished: normative (school entry, puberty, entering the labor force, mar-riage, retirement) and nonnormative (a death or severe illness in the family, divorce, moving, winning the sweepstakes). Such transitions occur throughout the life span and often serve as a direct impetus for developmental change.