



Editor's Comment

As we learn from research and experience that many psychiatric conditions have their roots in early childhood, we realize that identification of risk and intervention before the appearance of disorder hold the key to the prevention of mental illness throughout the life span. The current revolution in molecular biology and new imaging techniques are helping us to develop a dynamic view of development that encompasses genetic, biochemical and neurological factors as well as familial and cultural environments. This integrated view is reflected also in the current social and legislative movement to enhance the status of children in our society and to enable individuals with disabilities to become productive community members.

In this issue of the New York University *Child Study Center Letter* we discuss the developmental challenges to be met by young children, when to refer for professional consultation, issues of diagnosis and medication for young children.

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Introduction

Anyone observing a child develop from infancy through toddlerhood to preschool is aware that the ages between birth and six are among the most dynamic in human life. Rapid physical and emotional changes are reflected in the child's mastery of increasingly complex developmental milestones. Because of the rapidity of these changes, teachers and caregivers may wonder if a child's development is progressing appropriately. A perspective on normative development can serve as a reference point. See *The Developmental Milestones Chart* on page 3.

Every child progresses at his/her own pace, but if a child is lagging significantly behind his/her peers it may be useful to seek professional help.

INFANTS AND PRESCHOOLERS: DEVELOPMENTAL RISKS AND EARLY INTERVENTION

Early intervention and the law

Early intervention as key to maximizing the development of a child with difficulties is reflected in public health policy in Public Law 99-457 and the Individuals with Disabilities Act (IDEA). These laws assign professionals the responsibility for evaluating children from birth to five years of age for the purposes of screening and diagnosis, eligibility for early intervention services, and program planning. These laws require that all those working in the assessment of young children assume a broad developmental and environmental view and produce an integrated comprehensive evaluation, assessment and treatment strategy that is focused on the child within the family context.

Risk factors for developmental difficulties

Genetic

Many disorders occur at a higher rate when a family member or members have the same disorder and most likely have a genetic component.

Gender

Boys manifest delays more frequently than girls.

Environmental

- Low birth weight and prematurity
- Neonatal influences such as malnutrition during pregnancy
- Drug and alcohol use during pregnancy, exposure to lead, other toxins and infections
- Maternal depression, antisocial or drug-abusing parents, high levels of parental discord, low familial socioeconomic status

Not all children exposed to such risk factors will be affected adversely. The interplay between genetic and environmental factors is an area not yet fully explored.

When to refer

- If there is significant regression of previously accomplished developmental tasks that is more than a transient response to stress (such as a move or entry into a new school)
- If language, social skills or other developmental tasks lag behind the majority of the child's peers
- If aggression or impulsivity make the child potentially unsafe
- If a pattern or constellation of symptoms is present
- If the child's symptoms are evident across several settings
- If the symptoms are bothersome to the child and/or parents and are interfering with the child's mastery of developmental challenges

A competent multi-disciplinary evaluation, although possibly somewhat stressful for worried parents, is relatively benign for the child. The potential benefits of early intervention outweigh a "wait-and-see" attitude. Intervention at a time when a difficulty is just beginning is preferable to treatment after a difficulty is established.

What does an assessment consist of?

A multidisciplinary team should consist of experts in child development, such as psychiatrists and psychologists, speech pathologists, and motor function experts such as occupational and/or physical therapists. The team should meet to discuss the child from various perspectives and to formulate a treatment plan.

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An assessment should include multiple sources of information such as day care and pre-school teachers, caregivers and other adults who have contact with the child. It is essential to evaluate the child's interactions and attachment to important caregivers. Home and school visits can be illuminating, and they enable a clinician to observe a child in a naturalistic setting.

The diagnostic dilemma and young children

Diagnostic assessment is complicated by the limited ability of young children to describe their distress, making it crucial for the clinicians and parents to collaborate. The younger the child the more difficult it is to make a discrete diagnosis. For example, children with Attention Deficit/Hyperactivity Disorder do not manifest their difficulties in the same way at age two as they will at age nine. Mood disorders manifest themselves differently at different ages.

Diagnosis in very young children is further complicated by the fact that most of the child psychiatric categories are oriented to older children. For example, in exploring the possibility of attention issues in a five-year-old, diagnostic criteria such as "trouble with schoolwork" are not applicable.

When a child presents with difficulty in relating, regulating his/her behaviors, or a lag in achieving developmental milestones, a clinician should consider the following diagnoses:

Pervasive Development Disorders: These disorders reflect a child's struggle with grasping social and communicative nuances and with showing emotional reciprocity.

Externalizing Disorders such as Attention Deficit/Hyperactivity: If a child is too impulsive or inattentive, his ability to interact with others can be significantly impaired. (Some children with ADHD also have difficulty regulating sensory input.)

Internalizing Disorders such as Anxiety: Fears in a child can make her seem oppositional and unattached. If a child has separation anxiety, he may become aggressive in response to attempts at separation.

Mood Disorders: Very young children may not present with classic mood

symptoms such as depression or mania. A young child who is depressed may seem more cranky and irritable than outright sad.

Communication Disorders: If a child's ability to comprehend or express herself is compromised, the result is often difficulty in behavior and interaction with others.

The functional perspective

Many children who come for evaluation do not meet criteria for a specific diagnosis, but are struggling in a number of different developmental domains. Because of the lack of definitive diagnostic criteria for many children, it is often helpful to break down the child's adaptive functioning by assessing the following specific developmental domains:

Emotional:

- Regulation of different emotions such as anger, happiness, sadness
- Expression of feelings
- Tolerance of unpleasant emotions and frustrations

Motor:

- Organization of physical body in space
- Movement and interaction with the environment
- Fine and gross motor coordination
- Motor planning

Sensory:

- Regulation of sensory input
- Sensitivity to specific textures, odors, sounds, lights
- Overly or underreactive to stimuli

Social:

- Connection to and interest in others
- Attachment to parents or caregivers
- Establishment of eye contact

Language and communication:

- Quality of verbal and non-verbal expression
- Ability to express needs

Cognitive:

- Ability to solve developmentally appropriate challenges and problems
- Mastery of age-appropriate cognitive tasks

Physical:

- General health; hearing and vision
- Any question of trauma or toxicity

Temperament:

- Wary, avoidant, inhibited or outgoing and adaptable

Even if a diagnosis is unclear at the time of assessment, interventions can be implemented to maximize a child's

TYPICAL DEVELOPMENTAL MILESTONES

Age	Personal/Social	Motor	Language	Cognitive
ONE	<ul style="list-style-type: none"> Plays pat-a-cake Begins to indicate wants not cry Tests parental responses to behavior 	<ul style="list-style-type: none"> Stands well Has a neat pincer grasp of small objects. "Dances" or bounces to music 	<ul style="list-style-type: none"> Uses dada or mama specifically Imitates speech sounds 	<ul style="list-style-type: none"> Looks at pictures in book with caregiver's help Likes to put objects inside one another Tries to accomplish simple goals (seeing and then crawling to a toy)
TWO	<ul style="list-style-type: none"> Imitates and helps with simple housework Increasingly interested in the company of other children Begins to show defiant behavior 	<ul style="list-style-type: none"> Scribbles spontaneously Walks up and down stairs with help 	<ul style="list-style-type: none"> Much less jargon or baby talk (60-70% intelligible) Understands between 300-500 words Combines 2 words Points to body parts 	<ul style="list-style-type: none"> Mostly parallel play Pretends to "feed" dolls Can talk about immediate past experiences
THREE	<ul style="list-style-type: none"> Likes interactive games like tag Starts to dress with supervision Understands concepts of "mine" and "his/hers" 	<ul style="list-style-type: none"> Climbs well Stands on one foot with momentary balance Good small object manipulation Uses a pedal tricycle 	<ul style="list-style-type: none"> Understands approximately 900 words 80% intelligible Plurals, pronouns Asks simple questions 	<ul style="list-style-type: none"> Matches objects in life to pictures in book Completes 3-4 piece puzzle Enjoys pretend play Counts to 3 with pointing
FOUR	<ul style="list-style-type: none"> Washes and dries face and hands, brushes teeth. Goes on simple errands Prefers playing with others to playing alone Plays games with simple rules such as hide and seek 	<ul style="list-style-type: none"> Jumps well Catches a beanbag well Even greater fine motor control Imitates a square on paper 	<ul style="list-style-type: none"> Tells a story, mixing up facts and reality Understands between 1500 - 2000 words Understands concepts such as hot, tired, and cold 	<ul style="list-style-type: none"> Cooperates with other children in play Understands dangers, both real and pretend Counts 7 objects and recognizes some letters if taught Growing imagination that may result in exaggeration.
FIVE	<ul style="list-style-type: none"> Invents games with simple rules Likely prefers same sex Understands turn taking and sharing (doesn't always wish to) Beginning basic understanding of right and wrong Can understand relationships among people and similarities and differences in others 	<ul style="list-style-type: none"> Catches bounced ball Skips, hops Copies triangle 	<ul style="list-style-type: none"> Increasingly good syntax, 5-8 words in a sentence Increasing vocabulary, (2800 to 9000 words) Good use of prepositions Tells long stories accurately 	<ul style="list-style-type: none"> Understands opposites Plays grown up dress up Likes to argue and reason Enjoys riddles and jokes Understands "more", "less" and "the same" Interested in cause and effect

development in the domain in which he or she may be struggling. Intervention in one domain is likely to have positive effects on development in other domains.

Early intervention and the brain: the power of experience

By the time a baby is born she will have 100 billion brain cells, but the cells aren't yet connected in circuits the way they will be as the brain matures. Most of a child's brain development occurs after birth and is greatly impacted by experience. From birth the brain is rapidly creating cell-to-cell connections and circuitry, and ultimately a single cell can connect with as many as 15,000 other cells. By the time a child is three the brain has formed about 1000 trillion connections, more than it will ever need. Early experiences determine which connections are kept and which don't survive. It is theorized that when a connection is used it becomes permanent, but when it is not used it is unlikely to survive.

The absence of sensory stimuli during critical periods can have a lasting impact. We know that if a child does not focus one eye appropriately during the critical period of visual development (by six years of age) the child will never achieve normal vision in that eye, because the brain was

not stimulated during the critical period. In contrast, if an adult eye is deprived of similar input after the critical period of ocular development, there will be no lasting sequelae.

There are also critical periods for the development of language and emotional development. Infants and toddlers deprived of significant amounts of human contact during critical periods may fail to thrive and have difficulty in connecting to others.

The notion that a child's early experience interacts with brain development to stabilize brain connections and behavior underscores the importance of identifying children with difficulty as early as possible. This point of view does not discount the value of intervention at any time of life, but the responses to intervention that occurs in the early years are relatively more robust than those that occur later.

The implications of early assessment and intervention

The nature of intervention is dictated by the assessment and delineation of the child's needs.

Not every delay or deficit bodes poorly for future development. Children with difficulty in a number of domains,

such as speech, motor, and social, are likely to need more rigorous intervention than a child with a problem in a single domain.

Speech and language therapy is indicated when a child is struggling to communicate. Occupational and physical therapy can help children with problems in motor areas and sensory integration. Behavioral therapy can assist parents and children with attenuating a variety of bothersome behaviors or help children master developmentally appropriate behaviors and adaptive skills. Psychological interventions with parents and young children can enhance the attachment between child and parent, maximizing the pleasure both receive in interacting, and can help the child obtain the emotional nurturance critical for good development. Parents, day care centers and preschools, other caregivers, and all professionals offering intervention services need to work collaboratively.

Medication and young children

Most of what is known about the use of medication in children is based on data from adults that has been extrapolated to children. With children under six, there has been very little

scientific study of the efficacy of psychiatric medications. Aside from efficacy questions, it is unclear whether young developing brains respond the same way on a molecular level as do older brains. Yet, when faced with a child (and family) who is unhappy, struggling, and not meeting developmental tasks, we must consider that the psychiatric or behavioral difficulty itself may be damaging to a child's long-range outcome. To refrain from acting in situations where a child is truly impaired, despite uncertainty, is not an acceptable option.

It is essential for parents to participate in decision-making. Parents should be informed of the relative lack of empirical data in psychopharmacology of very young children, and should be educated as to the risk/benefit of attempting a trial of medication. The more parents are active partners in the decision-making process, the greater the efficacy of the entire intervention.

Conclusion

Early child development is a unique period remarkable in its dynamic fluidity and potential. Interventions for children experiencing difficulty can take different forms, but all should be contextualized within the child's caretaking environment and should be implemented across all of the child's activities. The field of early intervention is relatively new but filled with great optimism, founded on the perspective that the earlier struggles are dealt with, the better and more positive will be a child's ultimate development.

ABOUT THE AUTHOR

David Steinberg, M.D., is Assistant Professor of Clinical Psychiatry at the NYU School of Medicine and Director of the Infancy and Early Childhood Treatment Program at the NYU Child Study Center. Dr. Steinberg's research interests are in early intervention, and he has lectured and published numer-

ous articles on developmental and psychiatric issues affecting children under the age of six and their families. Dr. Steinberg thanks Monica Catani for her assistance.

REFERENCES

- American Academy of Child and Adolescent Psychiatry (1997). Practice parameters for the psychiatric assessment of infants and toddlers. *Am Ac Ch Adolesc Psychiatry*. 36:10 Supplement, October.
- Campbell, S.B. (1995). Behavior problems in preschool children: A review of recent research. *J Child Psychology and Psychiatry and Allied Disciplines*. Vol. 36 (1), 113-149.
- Essau, C. & Petermann, F. (1977). *Developmental Psychopathology: Epidemiology, Diagnostics and Treatment*. Amsterdam, Harwood Academic Pub.
- Meisels, A.J. & Provence, S. (1966). Screening and assessment: guidelines for identifying young disabled and developmentally vulnerable children and their families. *Zero to Three. National Center for Infants, Toddlers and Families*. Washington, D.C.

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