

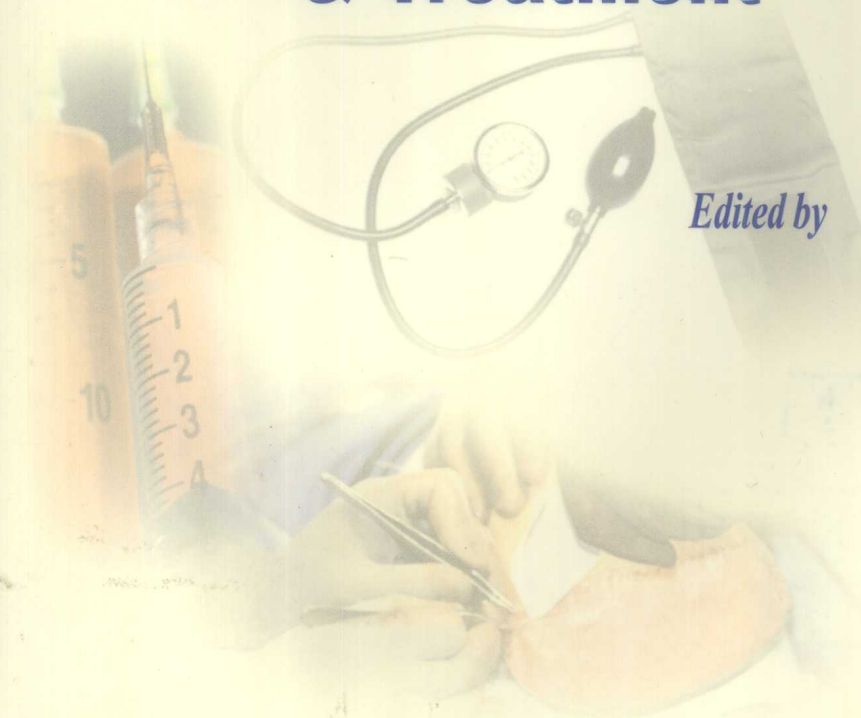
英文版教材

全国高等医药院校教材


供临床医学等专业用

# 现代儿科学英语精要

## Current Pediatric Diagnosis & Treatment



*Edited by* **William W. Hay, Jr.**  
**Anthony R. Hayward**  
**Myron J. Levin**  
**Judith M. Sondheimer**

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人 民 卫 生 出 版 社

人民卫生出版社

McGraw - Hill

A Division of The McGraw - Hill Companies



现代儿科学英语精要

Current Pediatric Diagnosis & Treatment

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### 图书在版编目(CIP)数据

现代儿科学英语精要/薛辛东摘编. —北京:

人民卫生出版社, 2003

ISBN 7 - 117 - 05490 - 5

I . 现 ... II . 薛 ... III . 儿科—英语—医学院校—教材 IV . R71

中国版本图书馆 CIP 数据核字(2002)第 085997 号

### 现代儿科学英语精要

摘 编: 薛 辛 东

出版发行: 人民卫生出版社(中继线 67616688)

地 址: (100078)北京市丰台区方庄芳群园 3 区 3 号楼

网 址: <http://www.pmph.com>

E - mail: [pmph@pmph.com](mailto:pmph@pmph.com)

印 刷: 北京人卫印刷厂(富华)

经 销: 新华书店

开 本: 850×1168 1/16 印张: 23.25

字 数: 697 千字

版 次: 2003 年 7 月第 1 版 2003 年 7 月第 1 版第 1 次印刷

标准书号: ISBN 7 - 117 - 05490 - 5/R·5491

定 价: 38.00 元

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## 序

英语是世界医学领域不可由其他语言替代的通用语言。作为医学科技工作者,只有掌握英语,才能顺利阅读日益增多的医学文献和原著或熟练地从因特网上获取医学专业发展的前沿信息,从而充实提高自己的医学专业知识;也只有掌握英语才能将自己研究的成果或经验体会报道和发表出去。

对于医学生和青年医生来说,有了一定的公共英语基础知识以后,尽快接触医学专业英语,掌握一定量的医学专业单词,有目的地训练自己在英语方面的听说读写能力,对从事专业上的对外交流和对内传播有着极其重要的意义。正是由于这个原因,经全国高等医药教材建设研究会研究决定,由人民卫生出版社邀请内、外、妇、儿四大专业具有良好英语功底和丰富临床经验的专家选摘编写了这套“现代医学英语精要”系列丛书。我相信这套丛书在引导医学生和青年医生获得医学知识的同时,还可以使他们学习到规范的医学专业英语单词和语句,对提高他们阅读英语文献和原著的能力将有很大的帮助。希望读者认真利用这套丛书,体会医学专业英语的精髓、特点和使用习惯,举一反三,触类旁通,不断提高自己的医学英语水平。

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2002年10月1日

# 前 言

本书为全国高等医药院校临床医学专业《儿科学》教材的英语配套读物。编纂此书目的是:使临床医学生及年轻的儿科医生熟悉和积累儿科专业英语词汇,提高阅读医学专业英语文章的水平,了解国外儿科疾病的概况、诊治常规及进展,并通过中英文版教材的比较、学习,全面提高医学生及年轻儿科医生的专业素质。另外,本教材还可作为双语教学的教材使用。

本书摘编自北美权威儿科教材《Current Pediatric Diagnosis & Treatment》。其内容在一定程度上综合了世界儿科专业科研及临床方面的最新进展;且语句简洁明了,条理清晰,表达深入浅出,适于临床医学生及年轻儿科医师阅读。

全书各章内容的排列尽量与中文版教材《儿科学》的相应章节对应;部分章节在原文计量单位前,增加了我国法定计量单位,与中文版教材相一致;本书还精选了部分重要的图表,希望能与中文版教材起到互补作用。

本书为英文原版书部分章节的摘编,并非中文版教材译文,故书中有关病理、生理指标的标准、疾病的治疗方法与用药剂量等为西方人标准,若有与中文版教材不符时,应以中文版教材为准。

由于编者初次摘编英文原版书籍,并且全书涉及内容较多,故在节选、打印及校对工作中难免有疏漏和错误之处,恳请各医药院校师生和儿科同道们不吝批评指正。

薛辛东

中国医科大学第二临床学院

2003 年 3 月

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# Growth & Development

# 1

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*Edward Goldson, MD, & Randi J. Hagerman, MD*

摘编 薛辛东

Child development encompasses all aspects of pediatrics. It applies to somatic, psychological, and cognitive growth and to behavior. The developmental principle, that is, the concept of ongoing change and maturation, is integral to the daily practice of pediatrics. For example, we recognize that a 3-month-old infant is very different from a 3-year-old and from a 13-year-old adolescent, not only with respect to what the child can do but also in terms of the kind of illness he or she might have. This perspective is unique to pediatrics, separating it from other fields of medicine. Although the principles of child development have been the domain of the general pediatrician, the field of developmental and behavioral pediatrics has emerged as a subspecialty that addresses not only normal development—theoretical and research issues as well as clinical practice—but also the diagnosis and

evaluation of disturbances in behavior and development. This chapter does not attempt to cover the entire field of developmental and behavioral pediatrics. Instead it only discusses normal development but does not cover the newborn period or adolescence.

---

## NORMAL DEVELOPMENT

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### THE FIRST YEAR

Normal children follow a trajectory of increasing physical size and increasing complexity of function (Tables 1-1 and 1-2).

**Table 1 – 1.** Developmental charts.<sup>1</sup>

1 – 2 months	3 – 5 months
<b>Activities to be observed:</b> Holds head erect and lifts head. Turns from side to back. Regards faces and follows objects through visual field. Drops toys. Becomes alert in response to voice.	<b>Activities to be observed:</b> Grasps cube—first ulnar then later thumb opposition. Reaches for and brings objects to mouth. Makes “raspberry” sound. Sits with support.
<b>Activities related by parent:</b> Recognizes parents. Engages in vocalizations. Smiles spontaneously.	<b>Activities related by parent:</b> Laughs. Anticipates food on sight. Turns from back to side.

---

**6 – 8 months**

**Activities to be observed:**

- Sits alone for a short period.
- Reaches with one hand.
- First scoops up a pellet then grasps it using thumb opposition.
- Imitates “bye – bye.”
- Passes object from hand to hand in midline.
- Babbles.

**Activities related by parent:**

- Rolls from back to stomach.
- Is inhibited by the word *no*.

**9 – 11 months**

**Activities to be observed:**

- Stands alone.
- Imitates pat – a – cake and peek – a – boo.
- Uses thumb and index finger to pick up pellet.

**Activities related by parent:**

- Walks by supporting self on furniture.
- Follows one – step verbal commands, eg, “Come here,” “Give it to me.”

**1 year**

**Activities to be observed:**

- Walks independently.
- Says “mama” and “dada” with meaning.
- Can use a neat pincer grasp to pick up a pellet.
- Releases cube into cup after demonstration.
- Gives toys on request.
- Tries to build a tower of 2 cubes.

**Activities related by parent:**

- Points to desired objects.
- Says 1 or 2 other words.

**18 months**

**Activities to be observed:**

- Builds tower of 3 – 4 cubes.
- Throws ball.
- Scribbles spontaneously.
- Seats self in chair.
- Dumps pellet from bottle.

**Activities related by parent:**

- Walks up and down stairs with help.
- Says 4 – 20 words.
- Understands a 2 – step command.
- Carries and hugs doll.
- Feeds self.

**24 months**

**Activities to be observed:**

- Speaks short phrases, 2 words or more.
- Kicks ball on request.
- Builds tower of 6 – 7 cubes.
- Points to named objects or pictures.
- Jumps off floor with both feet.

Stands on either foot alone.

Uses pronouns.

**Activities related by parent:**

- Verbalizes toilet needs.
- Pulls on simple garment.
- Turns pages of book singly.
- Plays with domestic mimicry.

**30 months**

**Activities to be observed:**

- Walks backward.
- Begins to hop on one foot.
- Uses prepositions.
- Copies a crude circle.
- Points to objects described by use.
- Refers to self as I.
- Holds crayon in fist.

**Activities related by parent:**

- Helps put things away.
- Carries on a conversation.

**3 years**

**Activities to be observed:**

- Holds crayon with fingers.
- Builds tower of 9 – 10 cubes.
- Imitates 3 – cube bridge.
- Copies circle.
- Gives first and last name.

**Activities related by parent:**

- Rides tricycle using pedals.
- Dresses with supervision.

**3 – 4 years**

**Activities to be observed:**

- Climbs stairs with alternating feet.
- Begins to button and unbutton.
- “What do you like to do that’s fun?” ( Answers using plurals, personal pronouns, and verbs. )
- Responds to command to place toy *in, on, or under* table.
- Draws a circle when asked to draw a person.
- Knows own sex. ( “Are you a boy or a girl?” )
- Gives full name.
- Copies a circle already drawn. ( “Can you make one like this?” )

**Activities related by parent:**

- Feeds self at mealtime.
- Takes off shoes and jacket.

**4 – 5 years**

**Activities to be observed:**

- Runs and turns without losing balance.
- May stand on one leg for at least 10 seconds.
- Buttons clothes and laces shoes. ( Does not tie. )
- Counts to 4 by rote.

"Give me 2 sticks." (Able to do so from pile of 4 tongue depressors.)  
 Draws a person. (Head, 2 appendages, and possibly 2 eyes. No torso yet.)  
 Knows the days of the week. ("What day comes after Tuesday?")  
 Gives appropriate answers to: "What must you do if you are sleepy? Hungry? Cold?"  
 Copies + in imitation.

**Activities related by parent:**

Self-care at toilet. (May need help with wiping.)

Plays outside for at least 30 minutes.

Dresses self except for tying.

**5-6 years****Activities to be observed:**

Can catch ball.

Skips smoothly.

Copies a + already drawn.

Tells age.

Concept of 10 (eg, counts 10 tongue depressors).

May recite to higher number by rote.

Knows right and left hand.

Draws recognizable person with at least 8 details.

Can describe favorite television program in some detail.

**Activities related by parent:**

Does simple chores at home (eg, taking out garbage, drying silverware).

Goes to school unattended or meets school bus.

Good motor ability but little awareness of dangers.

**6-7 years****Activities to be observed:**

Copies a  $\Delta$ .

Defines words by use. ("What is an orange?" "To eat.")

Knows if morning or afternoon.

Draws a person with 12 details.

Reads several one-syllable printed words. (My, dog, see, boy.)

Uses pencil for printing name.

**7-8 years****Activities to be observed:**

Counts by 2s and 5s.

Ties shoes.

Copies a  $\diamond$ .

Knows what day of the week it is. (Not date or year.)

Reads paragraph #1 Durrell.

**Reading:**

Muff is a little yellow kitten. She drinks milk. She sleeps on a chair. She does not like to get wet.

**Corresponding arithmetic:**

$$\begin{array}{r} 7 \quad 6 \quad 6 \quad 8 \\ +4 \quad +7 \quad -4 \quad -3 \end{array}$$

No evidence of sound substitution in speech (eg, *fr* for *thr*).

Adds and subtracts one-digit numbers.

Draws a man with 16 details.

**8-9 years****Activities to be observed:**

Defines words better than by use. ("What is an orange?" "A fruit.")

Can give an appropriate answer to the following:

"What is the thing for you to do if ...

—you've broken something that belongs to someone else?"

—a playmate hits you without meaning to do so?"

Reads paragraph #2 Durrell:

**Reading:**

A little black dog ran away from home. He played with two big dogs. They ran away from him. It began to rain. He went under a tree. He wanted to go home, but he did not know the way. He saw a boy he knew. The boy took him home.

**Corresponding arithmetic:**

$$\begin{array}{r} 45 \\ 67 \quad 16 \quad 14 \quad 84 \\ +4 \quad +27 \quad -8 \quad -36 \end{array}$$

Is learning borrowing and carrying processes in addition and subtraction.

**9-10 years****Activities to be observed:**

Knows the month, day, and year.

Names the months in order. (15 seconds, 1 error.)

Makes a sentence with these 3 words in it: (1 or 2. Can use words orally in proper context.)

1. work...money...men

2. boy...river...ball

Reads paragraph #3 Durrell:

**Reading:**

Six boys put up a tent by the side of a river. They took things to eat with them. When the sun went down, they went into the tent to sleep. In the night, a cow came and began to eat grass around the tent. The boys were afraid. They thought it was a bear.

**Corresponding arithmetic:**

$$\begin{array}{r} 5204 \quad 23 \quad 837 \\ - 530 \quad \times 3 \quad \times 7 \end{array}$$

Should comprehend and answer the question:  
"What was the cow doing?"

Learning simple multiplication.

### 10 - 12 years

#### Activities to be observed:

Should read and comprehend paragraph #5 Durrell:

#### Reading:

In 1807, Robert Fulton took the first long trip in a steamboat. He went one hundred and fifty miles up the Hudson River. The boat went five miles an hour. This was faster than a steamboat had ever gone before. Crowds gathered on both banks of the river to see this new kind of boat. They were afraid that its noise and splashing would drive away all the fish.

#### Corresponding arithmetic:

$$\begin{array}{r} 420 \quad 9 \overline{)72} \quad 31 \overline{)62} \\ \times 29 \end{array}$$

Answer: "What river was the trip made on?"

Ask to write the sentence: "The fishermen did not like the boat."

Should do multiplication and simple division.

### 12 - 15 years

#### Activities to be observed:

Reads paragraph #7 Durrell:

#### Reading:

Golf originated in Holland as a game played on ice. The game in its present form first appeared in Scotland. It became unusually popular and kings found it so enjoyable that it was known as "the royal game." James IV, however, thought that people neglected their work to indulge in this fascinating sport so that it was forbidden in 1457. James relented when he found how attractive the game was, and it immediately regained its former popularity. Golf spread gradually to other countries, being introduced in America in 1890. It has grown in favor until there is hardly a town that does not boast of a private or public course.

#### Corresponding arithmetic:

$$\begin{array}{r} 536 \overline{)4762} \quad \frac{1}{3} \quad 7\frac{1}{6} \\ + \frac{1}{3} \quad - \frac{3}{4} \end{array}$$

Reduce fractions to lowest forms.

Ask to write a sentence. "Golf originated in Holland as a game played on ice."

Answers questions:

"Why was golf forbidden by James IV?"

"Why did he change his mind?"

Does long division, adds and subtracts fractions.

<sup>1</sup> Modified from Leavitt SR, Goodman H, Harvin D: Pediatrics 1963;31:499.

Table 1 - 2. Normal speech and language development.

Age	Speech	Language	Articulation <sup>1</sup>
1 month	Throaty sounds		Vowels: \ah\, \uh\, \ee\
2 months	Vowel sounds ("eh"), coos		
½ months	Squeals		
3 months	Babbles, initial vowels		
4 months	Guttural sounds ("ah," "go")		Consonants: m, p, b
5 months			Vowels: \o\, \u\
7 months	Imitates speech sounds		
8 months			Syllables: da, ba, ka
10 months		"Dada" or "mama" nonspecifically	Approximates names: baba/bottle
12 months	Jargon begins (own language)	One word other than "mama" or "dada"	Understandable; 2 - 3 words

(Continued)

Age	Speech	Language	Articulation <sup>1</sup>
13 months	Vowels uttered correctly	Three words	Consonants; t, d, w, n, h
16 months		Six words	
18–24 months		Two – word phrases	
24–30 months		Three – word phrases	
2 years		Approximately 270 words; uses pronouns	
3 years	Some degree of hesitancy and uncertainty common	Approximately 900 words; intelligible 4 – word phrases	Approximately 270 words; uses phrases
4 years		Approximately 1540 words; intelligible 5 – word phrases or sentences	Approximately 900 words; intelligible 4 – word phrases
6 years		Approximately 2560 words; intelligible 6 – or 7 – word sentences	Approximately 1540 words; intelligible 5 – word phrases
7 –8 years	Adult proficiency		Approximately 2560 words; intelligible 6 – or 7 – word sentences

<sup>1</sup>Data on articulation from Berry MF: *Language Disorders of Children*. Appleton – Century – Crofts, 1969; and from Bzoch K, League R: *Receptive – Expressive Emergent Language Scale*. University Park Press, 1970.

Growth charts provide an overview of the normal growth trajectory of children, thus alerting the clinician to what is atypical or disturbed.

Table 1-3 provides the theoretical perspectives of human behavior, taking into consideration the work of Freud, Erikson, and Piaget.

**Table 1 –3. Perspectives of human behavior. <sup>1</sup>**

Age	Theories of Development			Skill Areas		Psychopathology
	Freud	Erikson	Piaget	Language	Motor	
Birth to 18 months	Oral	Basic trust versus mistrust	Sensorimotor	Body actions; crying; naming; pointing	Reflex sitting, reaching, grasping, walking	Autism; anaclitic depression, colic; disorders of attachment; feeding, sleeping problems
18 months–3 years	Anal	Autonomy versus shame, doubt	Symbolic (pre-operational)	Sentences; telegraph jargon	Climbing, running	Separation issues; negativism; fearfulness; constipation; shyness, withdrawal
3 –6 years	Oedipal	Initiative versus guilt	Intuition (pre-operational)	Connective words; can be readily understood	Increased coordination; tricycle; jumping	Enuresis; encopresis; anxiety; aggressive acting out; phobias; nightmares

Age	Theories of Development			Skill Areas		Psychopathology
	Freud	Erikson	Piaget	Language	Motor	
6-11 years	Latency	Industry versus inferiority	Concrete operational	Subordinate sentences; reading and writing; language reasoning	Increased skills; sports, recreational cooperative games	School phobias; obsessive reactions; conversion reactions; depressive equivalents
12-17 years	Adolescence (genital)	Identity versus role confusion	Formal operational	Reason abstract; using language; abstract manipulation	Refinement of skills	Delinquency; promiscuity; schizophrenia; anorexia nervosa; suicide

<sup>1</sup> Adapted and reproduced, with permission, from Dixon S: Setting the stage: Theories and concepts of child development. In: *En-counters With Children*, 2nd ed. Dixon S, Stein M (editors). Year Book, 1992.

The first 5 years of life are a period of extraordinary physical growth and increasing complexity of function. The child triples his or her birth weight within the first year and achieves two thirds of his or her brain size by age 2½ to 3 years. The child progresses from a totally dependent infant at birth to a mobile, verbal person who is able to express his or her needs and desires by age 2-3 years. In the ensuing 2-3 years the child further develops the capacity to interact with peers and adults, achieves considerable verbal and physical prowess, and becomes ready to enter the academic world of learning and socialization.

It is critical for the clinician to identify disturbances in development during these early years because there may be windows of time or sensitive periods when appropriate interventions may be instituted to effectively treat developmental problems. Numerous screening tools are available to identify children with developmental disturbances; however, the clinician can use certain principles to identify problems without resorting to formal screening measures. From a motor perspective, children develop in a cephalocaudal direction. They can lift their heads with good control at 3 months, sit independently at 6 months, crawl at 9 months, walk at 1 year, and run by 18 months. The child learning to walk first has a widebased gait. Next, he or she walks with legs closer together, the arms move medially, a heel-toe gait devel-

ops, and there is a symmetrical swing of the arms by 18 to 24 months.

Clinicians often focus on gross motor development, but an appreciation of fine motor development and dexterity, particularly the grasp, can be instructive not only in monitoring normal development but also in identifying deviations in development. The grasp begins as a raking motion involving the ulnar aspect of the hand at age 3-4 months. The thumb is added to this motion at about age 5 months as the focus of the movement shifts to the radial side of the hand. The thumb opposes the fingers for picking up objects just before age 7 months, and the neat pincer grasp emerges at about age 9 months. Most young children have symmetrical movements. Asymmetries of movement noted in the first 2-3 years of life, be they facial asymmetries or gross motor asymmetries, should be investigated. This is particularly true if other developmental delays are present or if the child has a history of adverse experiences such as prematurity or intracranial hemorrhage. Finally, children usually have 5-10 comprehensible words by age 1 year; by age 2 years they are putting 2-3 words into phrases, 50% of which their caregivers can understand (see Tables 1-1 and 1-2).

One may easily memorize the developmental milestones that characterize the trajectory of the typical child; however, these milestones become more meaningful and clinically useful if

placed in empirical and theoretical contexts. The work of Piaget and others is quite instructive and provides some insight into behavioral and affective development ( see Table 1-3 ). Piaget described the first 2 years of life as the sensorimotor period, during which infants learn with increasing sophistication how to link sensory input from the environment with a motor response. Infants build on primitive reflex patterns of behavior ( termed schemata; sucking is an example ) and constantly incorporate or assimilate new experiences. The schemata evolve overtime as infants accommodate new experiences and as new levels of cognitive ability unfold in an orderly sequence. Enhancement of neural networks through dendritic branching occurs in spurts throughout the sensorimotor period. In the first year of life, the infant's perception of reality revolves around itself and what it can see or touch. The infant follows the trajectory of an object through the field of vision, but before age 6 months the object ceases to exist once it leaves the infant's field of vision. At age 9-12 months, the infant gradually develops the concept of object permanence, or the realization that objects exist even when not seen. The development of object permanence correlates with enhanced frontal activity on the electroencephalogram. The concept attaches first to the image of the mother or primary caregiver because of his or her emotional importance and is a critical part of attachment behavior. In the second year, children extend their ability to manipulate objects by using instruments, first by imitation and later by trial and error.

Freud described the first year of life as the oral stage because so many of the infant's needs are fulfilled by oral means. Nutrition is obtained through sucking on the breast or bottle, and self-soothing occurs through sucking on fingers or a pacifier. During this stage of symbiosis with the mother, the boundaries between mother and infant are blurred. The baby's needs are totally met by the mother, and the mother has been described as manifesting "narcissistic possessiveness" of the infant. This is a very positive interaction in the bidirectional attachment process called bonding. The parents learn to be aware of and interpret the infant's

cues, which reflect its needs. A more sensitive emotional interaction process develops that can be seen in the mirroring of facial expressions by the primary caregiver and infant and in their mutual engagement in cycles of attention and inattention, which further develop into social play. A parent who is depressed or cannot respond to the baby's expressions and cues can have a profoundly adverse effect on the child's future development. Erikson's terms of basic trust versus mistrust are another way of describing the reciprocal interaction that characterizes this stage.

Turn-taking games, which occur between ages 3 and 6 months, are a pleasure for both the parents and the infant and are an extension of mirroring behavior. They also represent an early form of imitative behavior, which is important in later social and cognitive development. More sophisticated games, such as peek-a-boo, occur at approximately age 9 months. The infant's thrill at the reappearance of the face that vanished momentarily demonstrates the emerging understanding of object permanence.

Age 8-9 months is also a critical time in the attachment process because this is when separation anxiety and stranger anxiety become marked. The infant at this stage is able to appreciate discrepant events that do not match previously known schemata. These new events cause uncertainty and subsequently fear and anxiety. The infant must be able to retrieve previous schemata and incorporate new information over an extended time. These abilities are developed by age 8 months and give rise to the fears that subsequently develop; stranger anxiety and separation anxiety. In stranger anxiety, the infant analyzes the face of a stranger, detects the mismatch with previous schemata, and responds with fear or anxiety, leading to crying. In separation anxiety, the child perceives the difference between the primary caregiver's presence and her absence by remembering the schema of her presence. Perceiving the inconsistency, the child first becomes uncertain and then anxious and fearful. This begins at age 8 months, reaches a peak at 15 months, and disappears by the end of 2 years in a relatively orderly progression as central nervous system ( CNS ) maturation facilitates the development

of new skills. A parent can put the child's understanding of object permanence to good use by placing a picture of the mother near the child or by leaving an object (eg, her sweater) where the child can see it during her absence. A visual substitute for the mother's presence may comfort the child.

## THE SECOND YEAR

Once the child can walk independently, it can move a way from the parent and explore the environment. Although the child uses the mother as "home base," returning to her frequently for reassurance, he or she has now taken a major step toward independence. This is the beginning of mastery over the environment and an emerging sense of self. The "terrible twos" and the frequent self-asserting use of "no" are the child's attempt to develop a better idea of what is or might be under its control. Ego development during this time should be fostered but with appropriate limits.

As children develop a sense of self, they begin to understand the feelings of others and develop empathy. They hug another child who is in perceived distress or become concerned when one is hurt. They begin to understand how another child feels when he or she is harmed, and this realization helps them to inhibit their own aggressive behavior. The failure to develop empathy is one of the cardinal deficits in autistic behavior. The development of a "theory of mind" or an understanding of other people's perspective does not occur until age 4 years and requires representational mapping in the brain. Children also begin to understand right and wrong and parental expectations. They recognize that they have done something "bad" and may signify that awareness by saying "uh-oh" or with other expressions of distress. They also take pleasure in their accomplishments and become more aware of their bodies.

Brain maturation sets the stage for toilet training. After age 18 months, toddlers have the sensory capacity for awareness of a full rectum or bladder and are physically able to control bowel and urinary tract sphincters. They also take great pleasure in their accomplishments, particularly in appropriate elimination, if it is

reinforced positively. Children must be given some control over when elimination occurs. If parents impose severe restrictions, the achievement of this developmental milestone can become a battle between parent and child, and long-term struggles of control predisposing to encopresis may develop later. Freud termed this period the anal stage because the developmental issue of bowel control is the major task requiring mastery. It encompasses a more generalized theme of socialized behavior and overall body cleanliness, which is usually taught or imposed on the child at this age. The child is encouraged to control impulsive and aggressive behavior by acting in socially appropriate ways. Although Freud described the byproducts of anal regularity on personality development, including punctuality, reliability, cleanliness, and conscientiousness, these themes simply represent abilities emerging at the time toilet training is also being mastered.

## LANGUAGE DEVELOPMENT: AGES 1-4 YEARS

Communication is important from birth (see Table 1-2), particularly the nonverbal, reciprocal interactions between infant and caregiver. By age 2 months, these interactions begin to include vocalizations such as cooing and reciprocal vocal play between parent and child. Babbling begins by age 6-10 months, and the repetition of sounds such as "da-da-da-da" is facilitated by the child's increasing oral muscular control. Babbling reaches a peak at age 12 months. The child then moves into a stage of having needs met by using individual words to represent objects or actions. It is common at this age for children to express wants and needs by pointing to objects and eliciting attention from the parents. The number of words acquired by age 18 months varies significantly, with an average of 20-50 words. The failure of parents or siblings to encourage vocalization and the overuse of nonverbal communication, such as pointing, slows the development of expressive vocabulary. Recurrent otitis media, or any other condition associated with hearing loss, has a negative effect on the achievement of early language milestones.



Receptive language usually develops more rapidly than expressive language. Word comprehension increases at age 9 months, and by age 13 months the child's receptive vocabulary may be as large as 20-100 words. After age 18 months, expressive and receptive vocabularies increase dramatically, and by the end of the second year a quantum leap in language development permits a major change in cognitive development. The child begins to put together words and phrases and begins to use language to represent a new world, the symbolic world. Although the infant begins to use single words to represent objects or people in the latter part of the first year, it is not until the end of the second year that the child's language ability begins to blossom. At this time, children begin to put verbs into their phrases and focus much of their language on describing their new abilities, for example, "I go out." They incorporate prepositions into speech and ask "why?" and "what?" questions more frequently. They also begin to appreciate time factors and to understand and use this concept in their speech (see Table 1-1).

The Early Language Milestone (ELM) Scale is a simple tool for assessing early language development in the pediatric office setting. It is scored in the same way as the Denver II but tests receptive and expressive language areas in greater depth.

Piaget characterized the 2-to 6-year-old stage as preoperational. This stage begins when language has facilitated the creation of mental images in the symbolic sense. The child begins to manipulate the symbolic world; sorts out reality from fantasy imperfectly; and may be terrified of dreams, wishes, and foolish threats. Most of the child's perception of the world is egocentric or interpreted in reference to wants, needs, or influence. Cause-effect relationships are confused with temporal ones or interpreted egocentrically. For example, children may focus their understanding of divorce on themselves ("My father left because I was bad", or "My mother left because she didn't love me"). Illness and the need for medical care are also commonly misinterpreted at this age. The child may make a mental connection between a sibling's illness and a recent argument, a negative comment, or

a wish for the sibling to be ill. The child may experience significant guilt unless the parents are aware of these misperceptions and take time to deal with them.

At this age, children also endow inanimate objects with human feelings. They also assume that humans cause or create all natural events. For instance, when asked why the sun sets, they may say, "The sun goes to his house" or "It is pushed down by someone else." Magical thinking blossoms between ages 3 and 5 years as symbolic thinking incorporates more elaborate fantasy. Fantasy facilitates development of role playing, sexual identity, and emotional growth. Children test new experiences in fantasy, both in their imagination and in play. In their play, children often create magical stories and novel situations that reflect issues with which they are dealing, such as aggression, relationships, fears, and control. Children often invent imaginary friends at this time, and nightmares or fears of monsters are common. At this stage, other children become important in facilitating play, such as in a preschool group. Play gradually becomes more cooperative; shared fantasy leads to game playing. Freud described the oedipal phase between ages 3 and 6 years, when there is strong attachment to the parent of the opposite sex. The child's fantasies may focus on play-acting the adult role with that parent, although by age 6 years oedipal issues are usually resolved and attachment is redirected to the parent of the same sex.

## **EARLY SCHOOL YEARS: AGES 5-7 YEARS**

Attendance at kindergarten at age 5 years marks an acceleration in the separation-individuation theme initiated in the preschool years. The child is ready to relate to peers in a more interactive manner than through parallel play. The brain has reached 90% of its adult weight. Sensorimotor coordination abilities are maturing and facilitating pencil-and-paper tasks and sports, both part of the school experience. Cognitive abilities are still at the preoperational stage, and children focus on one variable in a problem at a time. However, most children have mastered conservation of length by age