

NLWJC - KAGAN

WHORM - BOX 003 - FOLDER 015

MC003 214302SS [1]

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Records Management - SUBJECT FILE
Series/Staff Member:
Subseries:

OA/ID Number: 23563
Scan ID: 214302SS [1]
Document Number: W003-015

Folder Title:
MC003

Stack:	Row:	Section:	Shelf:	Position:
S	85	4	7	2

214302 SS

THE PRESIDENT HAS SEEN
4-15-97 MCOO3

THE WHITE HOUSE
WASHINGTON

'97 APR 11 PM8:08

April 11, 1997

MEMORANDUM FOR THE PRESIDENT

FROM: Bruce Reed
Melanne Verveer
Elena Kagan

RE: White House Conference on Early Childhood Development and Learning

As you know, on April 17th, you and the First Lady will host the *White House Conference on Early Childhood Development and Learning: What New Research on the Brain Tells Us About Our Youngest Children*.

Attached as background reading are three documents that discuss recent scientific research on the brain and the implications of this research for parents, caregivers and policy-makers:

- *Starting Points*, Carnegie's seminal 1994 study on the first few years of life;
- *Rethinking the Brain*, the Family and Work Institute's 1997 report which will be released next week; and
- *Newsweek's* Special Edition, *Your Child*, which is about to hit the stands.

You will also be receiving a memorandum that provides you with a general overview of the Conference.

THE WHITE HOUSE
WASHINGTON

COS
'97 APR 11 PM8:08

April 11, 1997

MEMORANDUM FOR THE PRESIDENT

FROM: Bruce Reed
Melanne Verveer
Elena Kagan

RE: White House Conference on Early Childhood Development and Learning

As you know, on April 17th, you and the First Lady will host the *White House Conference on Early Childhood Development and Learning: What New Research on the Brain Tells Us About Our Youngest Children*.

Attached as background reading are three documents that discuss recent scientific research on the brain and the implications of this research for parents, caregivers and policy-makers.

- *Starting Points*, Carnegie's seminal 1994 study on the first few years of life;
- *Rethinking the Brain*, the Family and Work Institute's 1997 report which will be released next week; and
- *Newsweek's* Special Edition, *Your Child*, which is about to hit the stands.

You will also be receiving a memorandum that provides you with a general overview of the Conference.

SPECIAL EDITION

YOUR CHILD

Newsweek

Spring/Summer 1995



**From Birth
to Three**

What You Need
To Know

How Speech
Begins

A Baby's Brain

Genes &
Emotions

What's Normal,
What's Not

Your Child From Birth to Three

Introduction 6

I. FIRST STEPS

Hey—Look Out, World,
Here I Come 12

Why and when children sit, crawl and walk
BY PAT WINGERT AND ANNE UNDERWOOD

The Language Explosion 16
Kids are programmed for sounds and grammar
BY GEOFFREY COWLEY

How to Talk 'Parentese' to Your Child 21
Enunciate, repeat and don't stint on the pronouns

When a Child's Silence Isn't Golden 23
When a toddler does not speak, is it time for speech therapy?



II. THE BRAIN

How to Build a Baby's Brain 28

An infant's mind is primed for learning. But it takes early experience to wire neural circuits. BY SHARON BEGLEY

Breast-Feeding and IQ 32

Does mother's milk boost intelligence?

Essay: Dr. Alvin F. Poussaint & Susan Linn 33

Pots, Blocks & Socks 34

To stimulate learning, you don't need videos and flashcards

The New Preschool 36

The best nursery schools do not rush kids into academics. Instead, they help children make sense of the outside world.

A LETTER FROM THE EDITOR-IN-CHIEF

IS THERE ANYTHING MORE PRECIOUS—AND MORE vulnerable—than a newborn? Or more deserving of a family's love and a society's care? With this special bonus magazine, NEWSWEEK takes an in-depth look at the exhilarating, exhausting and absolutely critical first three years of life. In the pages that follow, we chart the explosion of scientific information about how infants learn to speak and move, the breakthroughs in brain research and the new thinking on how parents, grandparents—indeed, all of us—can help our youngest citizens get off to a strong and healthy start.

This magazine reflects NEWSWEEK'S longstanding commitment to continuing coverage of family and children's issues. Since we became the first news magazine to introduce a regular section on the family more than a decade ago, NEWSWEEK has produced countless stories and four special issues on this most beloved and sometimes beleaguered institution. These days, of course, we're delighted to have plenty of company. Politicians from the White House on down are professing new inter-

est in early-childhood development. Hollywood's Rob Reiner shared his enthusiasm about the subject with us, and almost singlehandedly mobilized the production of an ABC television special called "I Am Your Child," to air on April 28. And the corporate world has responded as well. We are very pleased, for example, by Johnson & Johnson's immediate and enthusiastic decision to become the exclusive advertiser in this issue.

Assistant Managing Editor Alexis Gelber directed this special project with help from Senior Editors Sharon Begley and Aric Press. Senior Art Director Amid Capeci designed the issue, Lisa Burroughs supervised the photography and Bonnie Scranton was in charge of the graphics. We are immensely proud of the magazine they have produced, but then, the subject deserves our very best.

RICHARD M. SMITH, Editor-in-Chief and President

III. HEALTH

- You've Come a Long Way, Baby** 40
Forget polio and rubella. The issues today are asthma, antibiotic resistance and new vaccines.
By RUSSELL WATSON AND BRAD STONE
- The Top 10 Health Worries** 42
- Giving Infants a Helping Hand** 45
'Touch therapy' can relieve illnesses
- 'Your Baby Has a Problem'** 46
Three percent of newborns have a birth defect
- Essay: Dr. C. Everett Koop** 51
- Beyond an Apple a Day** 52
When kids choose their own food, they eat well
- Preventing a Hard Day's Night** 56
Should baby sleep with you? Cry himself to sleep?



IV. EMOTIONS

- Nature or Nurture?** 60
Genes can shape personality, but DNA is not destiny when it comes to a child's temperament
By MARC PEYSER AND ANNE UNDERWOOD
- Good Kid, Bad Kid** 64
Tantrums and food fights: children test the limits
- The Loving Ties That Bond** 68
By forming attachments, a baby learns to trust
- It's a Wise Father Who Knows...** 73
The more a father helps rear his child, the stronger, smarter and more in control she'll be
- Essay: Dr. T. Berry Brazelton** 76



V. THE WORLD

- The Great Ages of Discovery** 80
It takes a family to raise a family: grandparents, siblings and caregivers play crucial roles
- Won't You Be My Buddy?** 85
Forming friendships teaches toddlers to share
- Helping Families Help Themselves** 88
In Hampton, Va., children come first
- The Magnetic Tube** 89
It's never too early to watch what your kids watch
- Raising a Moral Child** 92
Empathy and charity emerge from selfishness
- Essay: Hillary Rodham Clinton** 94
- Where You Can Turn** 96
Web sites and toll-free numbers offer answers

Published by NEWSWEEK, Inc.
The Washington Post Company
KATHARINE GRAHAM
Chairman of the Executive Committee
DONALD E. GRAHAM
Chairman of the Board and
Chief Executive Officer
ALAN G. SPOON
President and Chief Operating Officer

EDITOR-IN-CHIEF AND PRESIDENT
Richard M. Smith

EDITOR
Maynard Parker

ASSISTANT MANAGING EDITOR
Alexis Gelber

SENIOR EDITORS
Sharon Begley, Nancy Cooper, Aric Press

SENIOR ART DIRECTOR
Amid Capeci

CREATIVE PHOTOGRAPHY DIRECTOR
Lisa Burtoughs

PHOTO EDITOR
Susan Ackerman

GRAPHICS DIRECTOR
Bonnie Scranton

PROJECT MANAGER
Tessa Namuth

CONTRIBUTORS

Jerry Adler, Geoffrey Cowley, Donna Foote, Daniel Glick, David Gordon, Jeanne Gordon, Susan H. Greenberg, Lynnell Hancock, Claudia Kalb, Barbara Kantrowitz, Carla Koehl, Weston Kosova, Jennifer Lach, John Leland, John McCormick, Susan Miller, Tom Morganthau, Andrew Murr, Paul O'Donnell, Peter Plagens, Marc Peyser, Carla Power, Larry Reibstein, Robina Riccitiello, Adam Rogers, Debra Rosenberg, Jean Seligmann, Laura Shapiro, Brad Stone, Anne Underwood, Sarah Van Boven, Russell Watson, Pat Wingert, Kenneth L. Woodward

DIRECTOR OF THE CLOSING DESK
Rebecca Pratt

ART PRODUCTION MANAGER
Daniel Tai

DESIGNER
Wendy Mansfield

GRAPHICS
Christoph Blumrich

ASSISTANT PROJECT MANAGERS
Alden Cohen, Connie Wiley

PICTURES
Michelle Molloy

COPY DESK

Tita D. Gillespie, Bob Ickes,
David Olivenbaum, Candice Gianetti

OPERATIONS

Andrew Eckmann, Cathie Ruggiero, Lincoln J. Abraham, Martin Burke, Jerry Eitelberg, Richard Lauria, Raquel Prieto

RESEARCH

Arlyn Tobias Cajilan

MANUFACTURING AND DISTRIBUTION
John Nallen, Jack Widener, Gary Dzarenda

U.S. PUBLISHER AND GENERAL MANAGER
Harold Shain

ASSOCIATE PUBLISHER
Gregory J. Osberg

MARKETING

Annie Williams, Paul Kelly, Jim Oates,
Christopher Wiss

CIRCULATION

Mary Sue Rynecki, Jane Kiefer,
Thomas Smith, Steve Cooper

ADVERTISING SALES
Alan Reubel

Letters to the Editor should be sent to NEWSWEEK, 251 West 57th Street, New York, NY 10019-1894. In the U.S. send subscription inquiries to NEWSWEEK, P.O. Box 59967, Boulder, CO 80322-9967. NEWSWEEK (ISSN 0892-9604). In Canada send subscription inquiries to NEWSWEEK, Inc., P.O. Box 4012, Postal Station A, Toronto, Ontario M5W2K1. Canada Post International Publications Mail (Canadian Distribution) Sales Agreement No. 546593. Canadian GST No. 123-321-309. Unless otherwise indicated by source or currency designation, all terms and prices are applicable in the U.S. only and may not apply in Canada. NEWSWEEK is published weekly, except for 2 issues combined into one at year-end, for U.S. \$41.06 a year and Canadian \$61.88 a year, by NEWSWEEK, Inc., 251 West 57th Street, New York, NY 10019-1894. Richard M. Smith, Editor-in-Chief and President; Stephen Fuzesi Jr., Chief Counsel and Secretary. Periodicals postage paid at New York, NY, and at additional mailing offices. To order additional copies, please call 1-800-234-6183. POSTMASTERS: send address changes to NEWSWEEK, P.O. Box 59968, Boulder, CO 80322-9968. Printed in U.S.A. NEWSWEEK International (ISSN 0163-7061 Pacific; ISSN 0163-7053 Atlantic; ISSN 0163-7071 Latin America). Copyright under the International Copyright Convention; copyright reserved under the Pan American Convention. © 1997 NEWSWEEK, INC.-251 WEST 57TH STREET, NEW YORK, NY 10019-1894. ALL RIGHTS RESERVED.



Newsweek

Off to a Go

Why the first three years are so crucial



By Barbara Kantrowitz

IT IS A MOMENT YOU never forget—the first time you hold your baby in your arms. Who is this mysterious new person? Before long, you will know the difference between a cry of hunger and a cry for comfort, a genuine grin and the grimace produced by an upset stomach. But here's the amazing part: as much as you are learning (and at times it seems like more than any human could handle), your baby is learning a thousandfold more. Every lullaby, every giggle and peek-a-boo, triggers a crackling along his neural pathways, laying the groundwork for what could someday be a love of art or a talent for soccer or a gift for making and keeping friends.

Cutting-edge science is confirming what wise parents have always known instinctively: young children need lots of time and attention from the significant adults in their lives. This does *not* mean that parents have to go out and spend a small fortune on specially designed infant-stimulation toys or flashcards for babies or any of the other dubious developmental aids that prey

Good Start

to a child's development

Science confirms what wise parents have lo

on parental insecurities. What it *does* mean is that parents should take advantage of their child's natural curiosity. Babies are learning machines; everything is interesting to them. Shadows on the sidewalk, the distant barking of a dog, a voice on the telephone: these are miracles to an infant. If parents share a baby's wonder and laughter, children will grow up feeling that their observations and responses are valid and that people listen to them.

Researchers looking for new answers to old questions about the importance of heredity and environment have discovered that much of what makes a person unique is the result of experiences in the first three years of life. New technology, such as positron emission tomography (PET) imaging of the brain, has provided hard data on the importance of these years. Simple activities, like cuddling and rocking a baby, stimulate growth. The long-term effects of inadequate nurturing can be devastating. In profoundly deprived children—for example, orphans left to languish in an institutional nursery—critical areas of the brain remain undeveloped. Psychologists say that language development begins early, as well.

The building blocks are games like peek-a-boo, which teach babies about face-to-face communication, and the seemingly incomprehensible babble known as parentese, the beginning of verbal interaction. The first years also shape a child's personality. Although some characteristics, such as a tendency toward shyness, may be genetically determined, studies have

shown that babies who are hugged often and feel loved and cared for are much more likely to grow up confident and optimistic. In other words, genetics provides the raw material; life molds the spirit and the soul.

Studies have also shown that family connections are at the core of a child's social development. Despite widespread reports about the demise of the extended family, a new NEWSWEEK Poll of parents of children under 4 showed that grandparents and in-laws still play a huge

role in child rearing. The vast majority of parents surveyed said they turned to their own parents or other family members when they needed advice rather than books, videos or classes. Fifty-nine percent said that grandparents were "very" involved in their child's life. Traditional values also seem to be alive and



Even at 9 months, babies are learning machines

What Matters Most: A NEWSWEEK Poll

In our poll on this and the following pages, we asked parents of kids under 4 about their goals and worries for the future, how they discipline their kids and how they view their own families.

Which of the following is your most important goal as a parent?

- 48% Making sure he/she grows up to be a moral person
- 38% Making sure he/she is happy

9% Making sure he/she does well in school

4% Making sure he/she makes friends and gets along well with others

1% Making sure he/she is good at sports

Do you worry about the following when you think about your child's future?

54% He/she will be kidnapped or the victim of a violent crime

52% You won't be

able to afford his/her college costs

51% He/she will have a serious accident or illness

41% He/she will be a victim of sexual abuse

36% You won't have enough money to buy him/her the things he/she needs

35% You won't be able to find or

afford good health care for him/her

29% He/she won't grow up to share your values

22% He/she will develop a learning disability

22% You won't be able to find or afford good day care

14% He/she will have trouble making friends at school

Where do you turn for advice and guidance about how to raise your child?

87% Your child's father/mother

69% Your mother or mother-in-law

66% Doctors, nurses and other health professionals

52% Other family members or relatives

known: kids need lots of time and attention

healthy. Nearly half (48 percent) of the parents said that making sure that their child grew up to be a moral person was their most important goal.

New attention to the early years presents a challenge for parents, educators and policymakers. According to the landmark 1994 Carnegie Corporation study "Starting Points," only half of infants and toddlers are routinely read to by their parents. The effects are serious: teachers report that more than a third of kindergartners are not ready to learn when they arrive at school. Day care is another pressing issue. Fifty-six percent of mothers of children under 4 are in the work force, yet there are no national child-care standards. As a result, too many children spend their days in unsafe facilities under the supervision of inadequately trained caregivers. Nearly a quarter of families with children under 3 live in poverty. Most of these are families headed by single parents (usually the mother) without access to regular health care or other social services.

According to the NEWSWEEK Poll, more than half of the parents surveyed said they did not believe that the policies of government and business were

supportive of families with very young children. But can leaders and legislators break out of their old ways of thinking and be as innovative as the scientists? There are some hopeful signs. In the absence of a clear national mandate, states and municipalities have started their own initiatives. Generally, the goal is to help children by reaching out to the whole family,

including parents and often grandparents. Some states target specific groups—at-risk children or teen parents, for example—and offer such services as home visits by nurses, or parenting classes. Schools can also take advantage of the research. In the last few years, many districts have cut art and music classes even though studying these subjects can help children learn in other areas. Art and music are not just luxuries, as financially strapped school administrators sometimes claim.



Toddlers who feel loved grow up confident and optimistic

There are more than 15 million American children under the age of 4. A child born this year will graduate from high school in 2015 and college in 2019. Think of these infants and toddlers as the architects of the 21st century. They are heading toward that future now, one baby step at a time.

47% Books about parenting
41% Magazines about parenting
36% Religious leaders like priests, ministers or rabbis
34% Friends or neighbors
23% Babysitters or other child-care workers
19% Television shows or videos

Asked of parents with children 1 to 3 years old: How often do you use the following disciplinary methods when your child misbehaves?
Explaining why behavior is not appropriate:
73% often
16% sometimes
4% hardly ever
7% never

Giving a timeout—that is, making child take a break from whatever activity he/she is involved in:
35% often
36% sometimes
12% hardly ever
17% never
Taking away a toy or treat:
27% often
42% sometimes

16% hardly ever
15% never
Yelling at child:
10% often
31% sometimes
38% hardly ever
21% never
Spanking child:
7% often
24% sometimes
36% hardly ever
32% never

Compared with your own father/mother, how do you think you rate as a parent?
46% the same
27% better
21% much better
4% worse

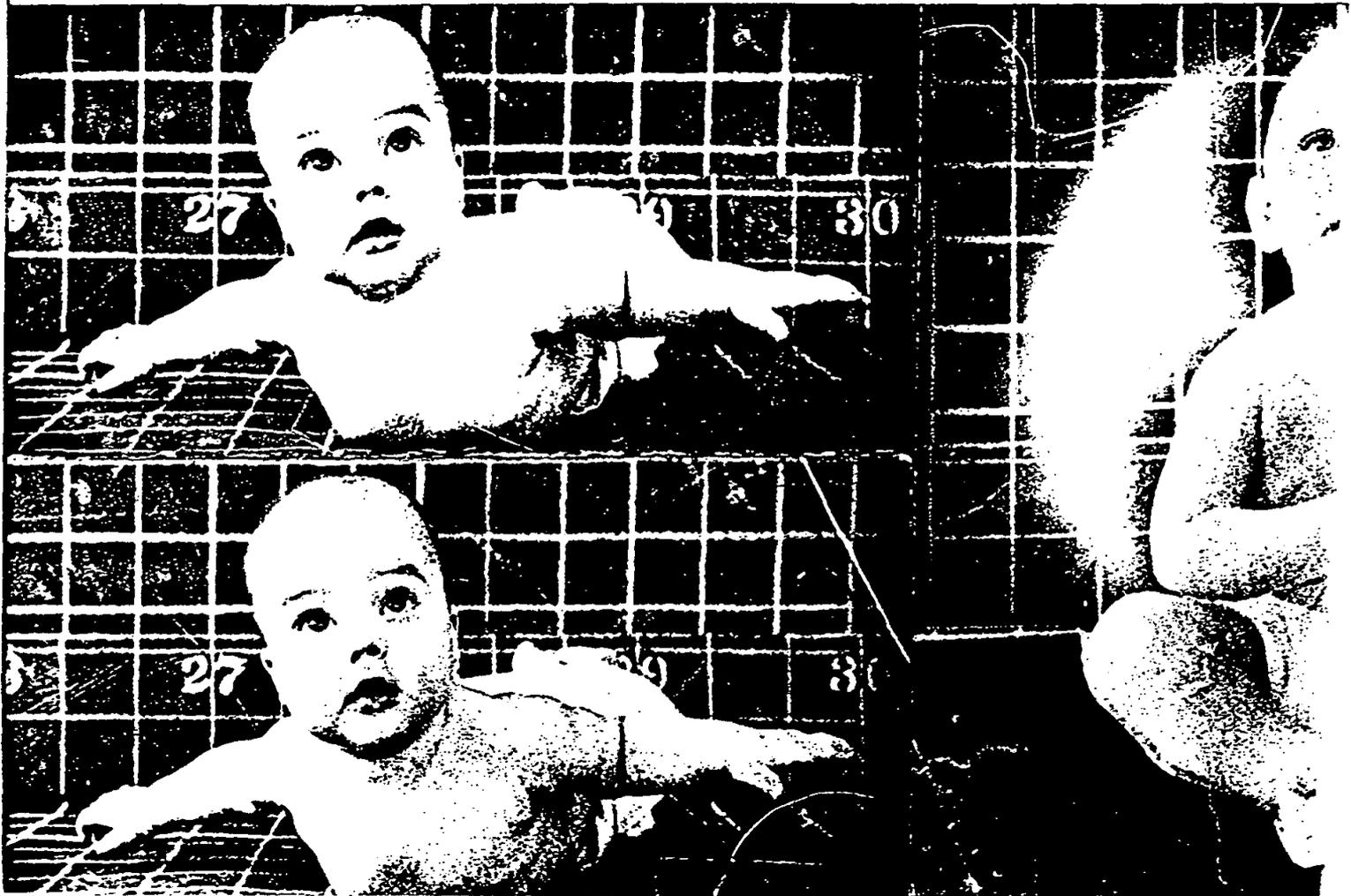
Are the policies of government and businesses generally supportive of families with very young children?
55% Not supportive
39% Supportive

FOR THIS NEWSWEEK POLL, PRINCETON SURVEY RESEARCH ASSOCIATES INTERVIEWED 500 PARENTS BETWEEN THE AGES OF 18 AND 44 WITH CHILDREN 0-3 YEARS OLD (323 MOTHERS AND 174 FATHERS) BY TELEPHONE FEB. 25-MARCH 2, 1997. THE MARGIN OF ERROR IS +/- 3 PERCENTAGE POINTS. THE NEWSWEEK POLL. © 1997 BY NEWSWEEK, INC.

FIRST STEPS

Scientists now understand in greater detail than ever before the various anatomical and neurological changes that allow children to develop motor and sensory abilities. The new research findings are calling into question the very idea of developmental milestones.

Hey—Look World, Here I



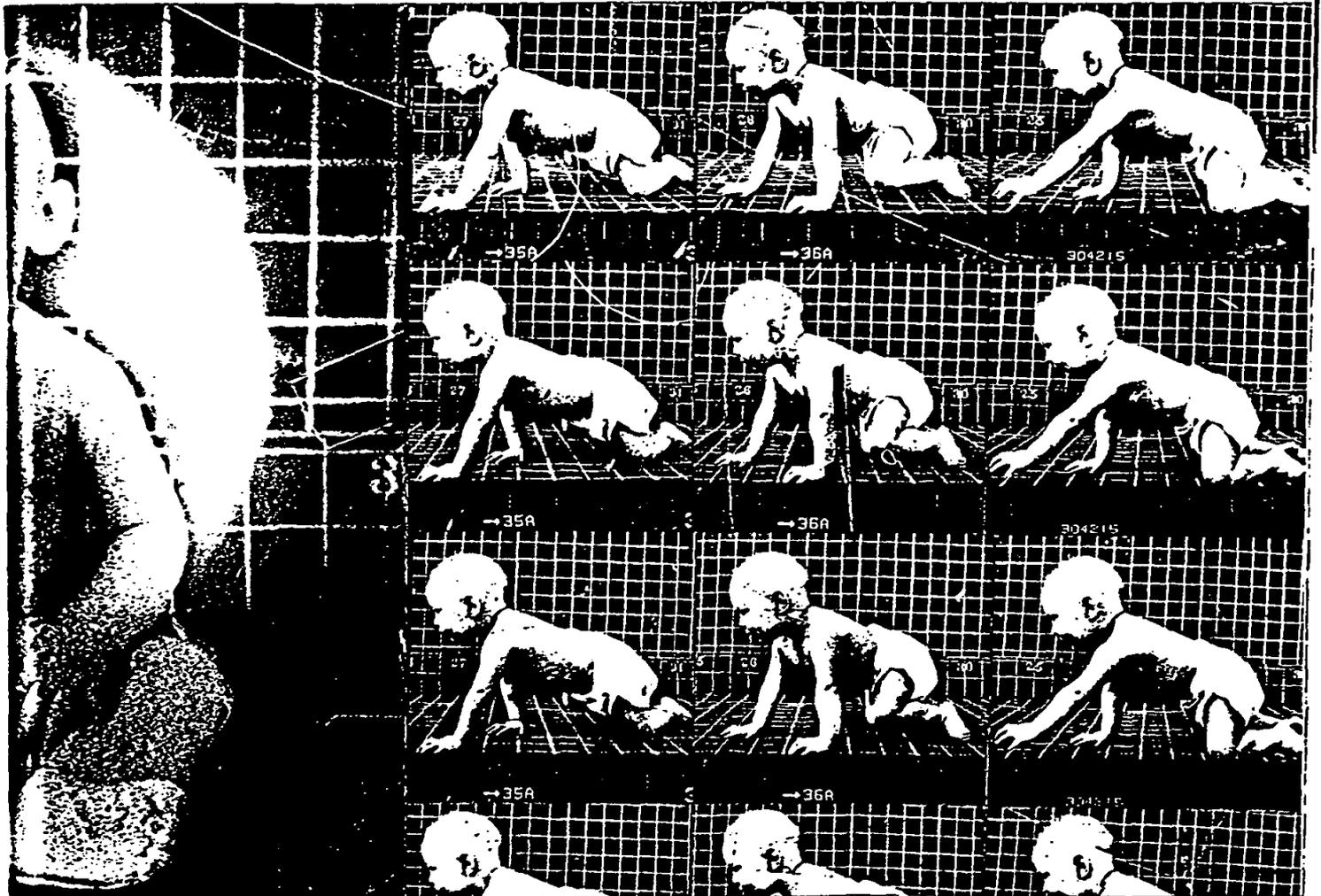
ELIANA, 14 MONTHS OLD, REFUSES TO WALK. SHE has never attempted to stand alone, much less take a step. The other four children in her play group, however, have all earned the right to be called toddler: they started staggering on two feet right around their first birthdays. Even Eliana's friend Rachel, not yet 10 months old, has taken a few precarious steps. But Eliana is seemingly

oblivious to her playmates' advanced locomotion. A demon crawler, she is still perfectly content to navigate her Washington, D.C., house on hands and knees. Her parents, of course, are certain that they have the first healthy kid in human history who will never learn to walk.

They shouldn't worry. And not only because the annals of child development are replete with stories of "late walkers" or "delayed talkers." For generations, anxious new parents have sat up nights comparing their child's accomplishments with the all-important "milestones" mapped out by pediatricians and development researchers. Babies sit up at 6 months, for instance; they blurt out "ma-ma" and "da-da" by 9 months, and start walking at a year. But scientists now understand in more detail than ever before how motor and sensory skills develop. The new findings call into question the very idea of developmental milestones and suggest that it is not meaningful to

Out, Come

By Pat Wingert & Anne Underwood



use the labels "early" and "late" when it comes to a baby's accomplishments. That isn't to say broad guidelines are useless. Parents should be concerned if, say, their 10-month-old can't sit up by himself. But the best evidence now shows that each young brain forms the neuronal and muscular connections required for sitting and crawling, walking and talking, at its own pace. There is no prize for finishing first—and, in most cases, no need to panic just because your tot isn't keeping up with the junior Joneses.

Considering how cruelly uncoordinated humans are at birth, it's a wonder babies learn to walk at all. A newborn has virtually no control over his limbs. Except for the most primitive reflexes, like sucking and grasping, he cannot will his arms or legs in any direction. These reflexes originate in the brain stem, the only part of the brain that is fully functional at birth. But between the fourth and seventh months, as the cortex of the brain develops, these reflexes become inhibited. After a while, the primitive reflexes seem to disappear altogether, allowing an increasingly sophisticated progression of motor skills to take their place.



Papa, don't push: Violin prodigy Yeou-Cheng Ma (left) 'traded my childhood'

CRADLING A NEWBORN, said playwright Sebastian Barry in "The Steward of Christendom," is like "holding a three-pound bag of loose corn": the baby has about as much motor control as the sack of kernels and is equally incapable of any intentional movement. Yet to many parents it seems like only

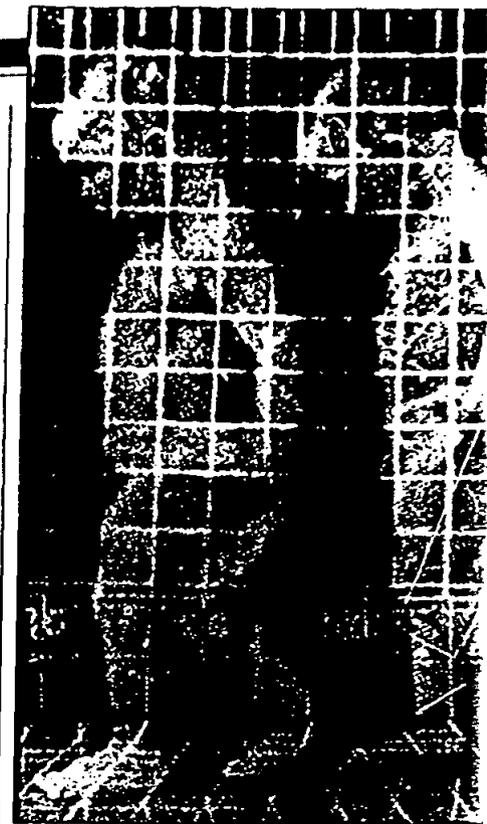
an instant between this period of almost comic uncoordination and the moment their teenage violinist masters the precise fingering required for rapid arpeggios, or their adolescent jock musters all the coordination in her quadriceps to nail the triple jump. How much do these later feats owe to early-childhood practice and precocity?

The development of fine and gross motor skills proceeds independently. Although they require the same physical founda-

Before that can happen, the brain must learn to deliver precise commands to the muscles. And for that, neurons must be myelinated. A white, fatty substance that coats nerve cells like the plastic insulation on telephone wires, myelin keeps electrical signals traveling along a neuron rather than leaking out and dissipating. Myelin also prevents "cross talk," in which the electrical signal in one neuron interferes with that of a nearby one: thanks to myelin, a nerve impulse telling the right hand to reach up and scratch the nose doesn't accidentally move the left foot instead. At the same time that nerves are being myelinated, the rapidly maturing brain is forming and pruning synapses (junctions between neurons), creating well-organized networks out of a chaotic jumble of billions of nerve cells. It will be two years before all of a child's nerves are fully myelinated.

Sensory skills at birth are just as rudimentary. Newborns can usually distinguish between faces and other objects—and they can recognize their parents' voices even in the womb. A newborn can focus on objects no farther than 13 inches away, about the distance to his mother's face when he's bottle- or breast-feeding. He can track slow-moving objects, but loses them if they are more than 18 inches away. For the first few weeks, this is all the vision he needs—and about all his brain can handle. From there, vision improves gradually. By the seventh month, he has developed binocular vision, the ability to see in three dimensions. But it will take seven to nine years before he can score 20-20 on an eye chart.

As her neuromuscular and sensory systems mature, a baby at last gains some control over her wayward body by the age of 1 or



2 months. Placed on her stomach, she'll struggle to hoist her bowling ball of a head from the floor. Not long after that she will bring her chest off the ground. It makes intuitive sense that children develop control over their heads first. Without a steady visual field, they cannot develop hand-eye coordination and balance, both of which are prerequisites for crawling and walking. At 3 or so months, the baby will prop herself up on her forearms. She'll get control of her upper arms before her lower arms, her wrists before her fingers, her legs before her feet.

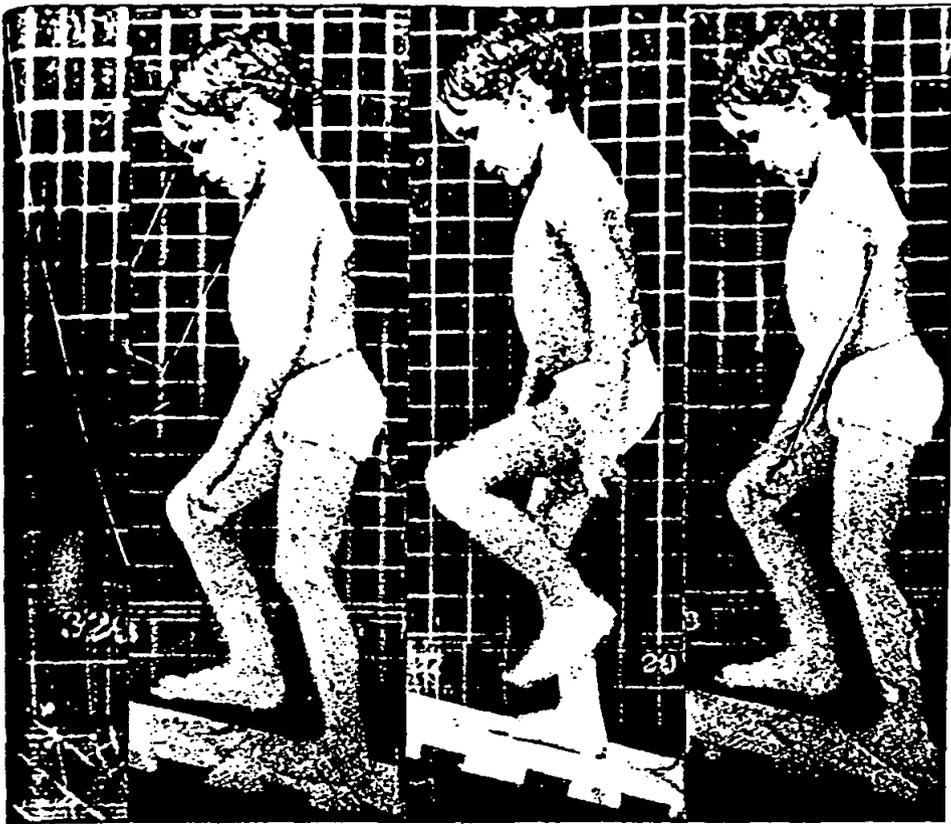
Little Artists and Athletes

Fine and gross motor skills may not forecast the future

anions—formation of brain synapses, myelination of nerves (main story)—the two skills proceed in fits and starts. If a baby is putting lots of effort into gross motor skills one week, he won't be working much on fine motor skills. And every new move has to be repeated over and over to strengthen neural circuits that wind from the brain's thinking areas into the motor cortex and out to nerves that move muscles. But how quickly a child acquires motor skills is hardly a harbinger of achievement. "How early a

baby walks has little to do with future athletic ability," says Laurie Walther Nathanson, author of "The Portable Pediatrician for Parents."

Yet stories abound of how athletic greatness was foreshadowed by childhood flair. Olympic soccer gold medalist Mia Hamm says she "began kicking a ball at the age of 2." She lived in Italy and copied the older kids in the park. And the story of how Tiger Woods swung his first golf club at 10 months has taken on the status of legend. Whether such preco-



Overriding reflexes, a baby's nerves and muscles master sophisticated moves

by 7 or 8 months, it's usually not long before they're tipping forward on all fours for a little crawling practice. Most kids start out by rocking back and forth on their arms and legs. Eventually, they learn to put enough weight on one side that they free up one arm, then the other. Some never quite master the traditional crawl. They scoot along on their bottoms or drag their bellies across the floor using only their arms. "It's all part of baby problem solving," says Esther Thelen, professor of psychology at Indiana University. The point isn't to crawl for its own sake, "but to get someplace." About 15 percent of kids skip crawling altogether and move right on to walking. "Rather than go through gross motor development in some specific sequence," says Johns Hopkins neurodevelopmental researcher Bruce Shapiro, toddlers often "reach for their functional threshold"—even if that means skipping milestones. In the case of early walkers, he says, "by the time the muscle tone comes in, they're ready to stand up."

All of this is good practice for the next big step: rolling over, which a baby usually masters at anywhere from 2 to 6 months. To get it right, she must develop the ability to rotate her spine, something she's prepared herself to do with all the kicking and flopping over she's been doing since her earliest days. Eventually she shifts her weight so far to one side that momentum takes her completely over. The first few rolls are usually accidents. But by now she has enough control to repeat actions she likes. Much to her delight—and her par-

ents'—she can soon flip at will. Using muscles repeatedly gives them the strength and elasticity known as "muscle tone," which is as important as the development of the nervous system in producing intentional movement.

With muscles and coordination working in concert, babies can start working up to more demanding skills, like sitting up and crawling. This requires much more strength and balance than the relatively simple movements they've done up until now. Once they get the hang of it, typically

THE PHYSICAL AND CONCEPTUAL leap to walking can happen anywhere from 10 to 17 months. Why such a long span? It's a feat of balance and coordination that the brains and bodies of some children simply need longer to master. "It takes everything, including the big toe," says John Hopkins pediatrician Paul Lipkin. To prepare for the big step, most kids spend a few months "cruising" from one

piece of furniture to the next, before shoving off from the coffee table and taking those first drunken steps.

What makes this elegant succession of skills all the more impressive is that otherwise helpless babies do so much of it completely on their own. "Blind children learn to walk," says Harold Klawans, a neurologist at Chicago's Rush Medical College. "They're not imitating anyone. The nervous system acquires that skill all by itself, as the body develops the anatomical and physiological sophistication to perform these tasks." Children are motivated by an irrepressible desire to reach beyond themselves. Sure, some get there a little quicker than others; but five years down the road you won't be able to tell which ones they were.

ious moments set Hamm and foods on the road to stardom (debatable, but there is no question that down the road here is a "too late." No world-champion skater or golfer took the sport after 12. And in his 1986 book "Why Michael couldn't Hit," neurologist Harold Klawans of Rush Medical College in Chicago describes how, at 31, basketball superstar Jordan couldn't retool his visual-motor synapses tough to whack a curve ball. The brain has to learn how to recognize the spin and speed and direction of the [pitched] ball," explains Klawans, "and then to swing the bat at just the right speed and in precisely the proper location." If the brain's visual and motor neurons are

not trained between the ages of 2 and 11 to do that, by adulthood the neurons are simply not "plastic" enough to be rewired for the job.

If parents want to raise a prodigy, the best they can do is make experiences available to the child. Kids who get to handle paintbrushes and Prince racquets early on figure out that art and tennis are considered cool in the household, for instance. But sometimes it is not the obvious experiences that sculpt excellence: Walter Payton, one of the NFL's greatest running backs, took ballet as a child. Still, physical skill is only one ingredient in artistic or athletic achievement; the rest is mental. Olympic swimmer Amy van Dyken says, "You can't

teach mental toughness. You can teach concentration, but the child won't be happy if that's not what the kid wants to do."

Ambitious parents might heed the case of Yeou-Cheng Ma. She started the violin at 2½ and, tutored by her father, won youth-competitions galore. Then younger brother Yo-Yo, who took up the cello at 4½, eclipsed her. Yeou-Cheng suffered a breakdown at 15 over the loss of a solo career. Now a pediatrician, she doesn't hate music—she also runs New York's Children's Orchestra. But Ma has little patience with parents who push their children. "The job of a child is to play," she says. "I traded my childhood for my left hand."

ANNE UNDERWOOD
and PETER FLAGENS

The Language

BY GEOFFREY COWLEY

BARRY IS A PIXIE-FACED 3-YEAR-OLD WHO CAN'T yet draw a circle or stack his blocks in a simple pattern. There is little chance he will ever live independently. He may never learn to tie his own shoes. Yet Barry is as chatty and engaging a person as you could ever hope to meet. He knows his preschool classmates—and their parents—by name. When he wakes his mom in the morning he strokes her cheek and tells her how beautiful she is. Then he asks her how she slept. Barry has Williams syndrome, a rare congenital disorder caused by abnormalities on chromosome 7. Children with the condition share an array of distinctive traits, including weak hearts, elfin faces and extremely low IQs. But they're unusually sociable, and often display an extraordinary feeling for language. Ask a Williams child to name an animal, says Dr. Ursula Bellugi of the Salk Institute's Laboratory for Cognitive Neuroscience, and you may get a fanciful discourse on yaks, koalas or unicorns.

If we learned language in the same way that we learn to add, subtract or play cards, children like Barry would not get much beyond hello and good-bye. Nor, for that matter, would normal toddlers.

Whether they emerge speaking English, Spanish, Czech or Hindi, children all travel the same road as they learn to speak and understand words

As anyone who has struggled through college French can attest, picking up a new language as an adult is as simple as picking up a truck. Yet virtually every kid in the world succeeds at it—and without conscious effort. Children attach meanings to sounds long before they shed their diapers. They lurch into grammatical analysis before they can tie their shoes. And by the age of 3, most produce sentences as readily as laughter or tears.

Scholars have bickered for centuries over how kids accomplish this feat, but most now agree that their brains are wired for the task. Like finches or sparrows, which learn to sing as hatchlings or not at all, we're designed to acquire certain kinds of knowledge at particular stages of development. Children surrounded by words almost always become fluent by 3, whatever their general intelligence. And people deprived of language as children rarely master it as adults, no matter how smart they are or how intensively they're trained. As MIT linguist Steven Pinker observes in his acclaimed 1994 book *The Lan-*

ge Explosion

guage Instinct," "Language is not a cultural artifact that we learn the way we learn to tell time or how the federal government works. It is a distinct piece of [our] biological makeup." Whether they emerge speaking Spanish, Czech or Hindi, kids all acquire language on the same general schedule. And as a growing body of research makes clear, they all travel the same remarkable path.

Sound

THE JOURNEY TOWARD LANGUAGE STARTS NOT IN THE nursery but in the womb, where the fetus is continually bathed in the sounds of its mother's voice. Babies just 4 days old can distinguish one language from another. French newborns suck more vigorously when they hear French spoken than when they hear Russian—and Russian babies show the opposite preference. At first, they notice only general rhythms and melodies. But newborns are also sensitive to speech sounds, and they home in quickly on the ones that matter.

Each of the world's approximately 6,000 languages uses a different assortment of phonemes, or distinctive

Kids attach meanings to sounds before they shed their diapers and analyze grammar by age 3

sounds, to build words. As adults, we have a hard time even hearing phonemes from foreign languages. The French don't notice any real difference between the *th* sounds in *thick* and *then*—and to most English speakers, the vowel in the French word *tu* (*ee* through rounded lips) is just another *oo*. Researchers have found that month-old infants register both of those distinctions and countless others from the world's languages. But at 6 and 10 months, they start to narrow their range. They grow oblivious to foreign phonemes while staying attuned to whatever sounds the speakers around them are using.

Acquiring a set of phonemes is a first step toward language, but just a baby step. To start decoding speech, you have to recognize words. And as anyone listening to a foreign conversation quickly discovers, people don't talk one ... word ... at ... a ... time. Real-life language—even the melodious "parentese" that parents use with infants—consists mainly of nonstop streams of sound. So how do babies suss out the boundaries? Long before they recognize words, says Peter Jusczyk, a cognitive scientist at Johns Hopkins University, they get a feel for how their language uses phonemes to launch syllables. By the time they're 7 months old, American babies are well accustomed to hearing *t* joined with *r* (as in *tram*) and *c* with *l* (as in *clam*), but they've been spared combinations like *db*, *gd*, *kt*, *ts* and *ng*, all of which oc-



YOUR CHILD'S FIRST STEPS

cur in other languages. And once they have an ear for syllables, word boundaries become less mysterious. *Ten / groaning / deadbeats / are / cleaning / a / train on / blacktop* makes acoustic sense in English, even if you don't know the words. *Te / ngroanin / gdea / dbea / tsare / cleani / nga / traino / nbla / cktop* isn't an option.

As children start to recognize and play with syllables, they also pick up on the metrical patterns among them. French words tend to end with a stressed syllable. The majority of English words—and virtually all of the *mommy-daddy-baby-doggie* diminutives that parents heap on children—have the accented syllable up front. Until they're 6 months old, American babies are no more responsive to words like *bigger* than they are to words like *guitar*. But Jusczyk has found that 6- to 10-month-olds develop a

clear bias for words with first-syllable accents. They suck more vigorously when they hear such words, regardless of whether they're read from lists or tucked into streams of normal speech. The implication is that children less than a year old hear speech not as a blur of sound but as a series of distinct but meaningless words.

Meaning

BY THEIR FIRST BIRTHDAY, MOST KIDS start linking words to meanings. Amid their streams of sweet, melodic gibberish, they start to name things—ball, cup, bottle, doggie. And even those who don't speak for a while often gesture to show off their mastery of the nose, eyes, ears and toes. These may seem small steps; after all, most 1-year-olds are surrounded by people who insist on

pointing and naming every object in sight. But as Pinker observes, making the right connections is a complicated business. How complicated? Imagine yourself surrounded by people speaking a strange language. A rabbit runs

by, and someone shouts, "*Gavagai!*" What does the word mean? "Rabbit" may seem the obvious inference, but it's just one of countless logical alternatives. *Gavagai* could refer to that particular creature, or it could have a range of broader meanings, from "four-legged plant eater" to "furry thing in motion." How do kids get to the right level of generalization? Why don't they spend their lives trying to figure out what words like "rabbit" mean?

Because, says Stanford psychologist Ellen Markman, they come to the game with innate mental biases. Markman has shown that instead of testing endless hypotheses about each word's meaning, kids start from three basic assumptions. First, they figure that labels refer to whole objects, not parts or qualities. Second, they expect labels to denote classes of things (cups, balls, rabbits) rather than individual items. Third, they assume that anything with a name can have only one. These assumptions don't always lead directly to the right inference ("I'm not a noying," Dennis the Menace once told Mr. Wilson, "I'm a cowboy"). But they vastly simplify word learning. In keeping with the "whole object" assumption, a child won't consider a label for "handle" until she has one for "cup." And thanks to the "one label per ob-



Using innate linguistic software, kids assume that labels refer to wholes rather than parts, and to classes (cups, balls), not individual items

ject" assumption, a child who has mastered the word *cup* never assumes that *handle* is just another way of saying the same thing. "In that situation," says Markman, "the child accepts the possibility that the new word applies to some feature of the object."

Words accrue slowly at first. But around the age of 18 months, children's abilities explode. Most start acquiring new words at the phenomenal rate of one every two hours—and for the first time, they start combining them. Children don't all reach these milestones on exactly the same schedule; their development rates can vary by a year or more, and there's no evidence that late talkers end up less fluent than early talkers. But by their second birthdays, most kids have socked away 1,000 to 2,000 words and started tossing around two-word strings such as "no nap," "all wet" or "bottle juice."

How to Talk 'Parentese' to Your Child



Enunciate, repeat new words and don't forget your pronouns

PEOPLE THE WORLD over alter their way of speaking when they address infants and toddlers. The effects of "parentese" (originally called "motherese") continue to be hotly debated, but "a number of [its] features are likely to facilitate language learning," says linguist Naomi Baron of The American University. Among them:

Higher **pitch** captures a child's attention. Speaking more slowly, and with careful enunciation, makes it easier for the baby to distinguish individual words; emphasizing or repeating one word ("Isn't that a *huuuuuge* huge doggie?") also helps.

Short utterances help the child grasp grammar more readily than Faulknerian monologues. Don't abandon complex sentences entirely, though: toddlers whose parents use many dependent clauses ("because..." and "which...") learn to do so earlier than the children of parents who do not.

Repeating a child's utterances ("That's right! It's a birdie") assures her she's been understood. Recasting

what the child says ("Want cookie?" "Would you like a cookie?") expands her repertoire. The only aspect of parentese that may impede language development: substituting proper nouns for pronouns ("Does Billy want to swing?"). These are tricky to master (your "you" is my "I"), and toddlers should be exposed to them.

Red Flags

Even normal children whose ears are filled with parentese may refuse to speak. Some delays can be harmless, but those after the age of 3 may affect how well a child will read, write and even think.

■ **0-3 months** Does not turn when you speak or repeat sounds like coos.

■ **4-6 months** Does not respond to "no" or changes in tone of voice, look around for sources of sound like a doorbell, or babble in speechlike

sounds such as p, b and m.

■ **7-12 months** Does not recognize words for common items, turn when you call her name, imitate speech sounds or use sounds other than crying to get your attention.

■ **1-2 years** Cannot point to pictures in a book that you name or understand simple questions ("Where is your Teddy?").

■ **2-3 years** Can't understand differences in meaning ("up" vs. "down"), follow two requests ("please pick up the bottle and give it to me"), string together two or three words or name common objects.

■ **3-4 years** Does not answer simple "who," "what" and "where" questions. Cannot be understood by people outside the family, use four-word sentences or pronounce most phonemes correctly. If delays persist until kindergarten, most pediatricians recommend speech therapy.

reporting who did what to whom. When a chimp with a signboard signals "Me banana you banana you," chances are he wants you to give him one, but the utterance could mean almost anything. Three-year-olds don't talk that way. The reason, most linguists agree, is that natural selection has outfitted the human brain with software for grammatical analysis. As MIT linguist Noam Chomsky realized more than 30 years ago, the world's languages all build sentences from noun phrases ("The big dog") and verb phrases ("ate my homework"). And toddlers who have never heard of grammar identify them effortlessly.

To confirm that point, psycholinguists Stephen Crain and Mineharu Nakayama once invited 3-, 4- and 5-year-olds to interview a talking "Star Wars" doll (Jabba the Hutt). With a child at his side, one researcher would pull out a picture and suggest asking Jabba about it. For example: "Ask Jabba if the boy who is unhappy is watching Mickey Mouse." You can't compose the right sentence—"Is the boy who is unhappy watching Mickey Mouse?"—unless you recognize *the-boy-who-is-unhappy* as a single noun phrase. As Chomsky would have predicted, the kids got it right every time.

If children's minds were open to all the possible relationships among words, they would never get very far. No one could memorize 140 million sentences, but a kid who masters 25 common recipes for a noun phrase can produce

more than that number from scratch. Too much mental flexibility would confine children, Pinker observes; "innate constraints set them free." Not everyone is blessed with those constraints. Kids with a hereditary condition known as Specific Language Impairment, or SLI, never develop certain aspects of grammar, despite their normal IQs. But those are rare exceptions. Most kids are so primed for grammatical rules that they'll invent them if necessary.

Consider hearing adults who take up American Sign Language so they can share it with their deaf children. They tend to fracture phrases and leave verbs unconjugated. Yet their kids still become fluent,

Grammar

ONCE KIDS CAN PASTE TWO WORDS TOGETHER, it's not long before they're generating sentences. Between 24 and 30 months, "no nap" may become "I don't want nap," and "bottle juice" may blossom into "I want juice." When kids hit that stage, their repertoires start expanding exponentially. Between 30 and 36 months, most acquire rules for expressing tense (*walk* versus *walked*) and number (*house* versus *houses*), often overextending them to produce statements like "I brought home three mouses." They also start using "function words"—the *somes*, *woulds*, *whos*, *hows* and *afters* that enable us to ask

either "Do you like milk?" or "Would you like some milk?"

More fundamentally, they discover that words can have radically different meanings depending on how they're strung together. Even before children start combining words on their own, most know the difference between "Big Bird is tickling Cookie Monster" and "Cookie Monster is tickling Big Bird." That awareness marks the zenith of language development. A chimp can learn to label things, and a high-powered computer can process more information in a minute than any person could handle in a lifetime. But neither a chimp nor a mainframe is any match for a runny-nosed 3-year-old when it comes to

grammatical signers. "Children don't need good teachers to master language," says Elissa Newport, a cognitive scientist at the University of Rochester. "They pick up whatever rules they can find, and sharpen and extend them." That, according to University of Hawaii linguist Derek Bickerton, is why the crude pidgins that crop up in mixed-language communities quickly evolve into fully grammatical creoles.

When language lacks a coherent grammar, children create one.

That's not to say language requires no nurture. Children raised in complete silence grow deaf to grammar. "Chelsea," whose correctable hearing problem went untreated until she was 31, eventually learned enough words to hold a job in a vet's office. Yet her expressive powers have never surpassed those of a chimp

with a signboard. She says things like "The woman is bus the going" or "I Wanda be drive come." Fortunately, Chelsea is a rare exception. Given even a few words to play with, most kids quickly take flight. "You don't need to have left the Stone Age," Pinker says. "You don't need to be middle class." All you need to be is young.

With DONNA FOOTE in Los Angeles

Advise and Consent

There are baby books galore. A guide to the best of the lot.



JOE KIMMONT

Eisenberg (left) and Murkoff tell parents 'what to expect'

BY WESTON KOVOVA

THE SHELVES OF many homes groan under the weight of parenting books. Some are truly awful—ponderously written and clumsily organized. Others offer little more than what most parents would have figured out without much effort. But the best among them are more than mere owner's manuals. Their authors have wisdom and humor about the inner lives of children, and a near-telepathic ability to anticipate and clearly answer even the most arcane questions. Each gets

there by a slightly different way, and none covers everything. But any of the books below will unravel the mystery behind most blooming rashes, teething bouts and crying jags.



Clear-eyed

In the beginning, there was Dr. Benjamin Spock. Fifty years and five editions later, his *Baby and Child Care* (Pocket Books, \$18) is still one of the most thorough and clear-eyed of the guides. In briskly titled chunks ("Reasons for weaning from the bottle at one year," "Joint and growing pains"), he says what he thinks and why, then moves on. He is against walk-

ers, in favor of two or three hours of fresh air each day and prefers pacifiers over thumb-sucking. Skeptical of professional advice givers, he tells new parents, "Don't be overawed by what the experts say. Don't be afraid to trust your own common sense." Ironically, though, he is particularly good on illnesses and other questions where common sense alone won't cut it.

Just as good are the "What to Expect" books, by Arlene Eisenberg, Heidi E. Murkoff and Sandee E. Hathaway (*Workman-Publishing*, \$12.95). *What to Expect the First Year* and *What to Expect the Toddler Years* are organized chronologically by month—helpfully letting you in on what the devious little tyke has in store next. There are excellent sections on topics ranging from breast-feeding to special-needs children, and a handy chart detailing common child illnesses (see if yours can get them all!). What makes these books stand out are the long question-and-answer sections. "My baby suddenly turned two colors—reddish blue on the bottom and pale on the top. What's wrong with her?" At one time or another every parent is convinced his kid is breaking new ground in weirdness. It's reassuring to learn that plenty of others have been there before.



Good Q&A

Penelope Leach's classic, *Your Baby & Child* (Knopf, \$19.95), is by far the most pleasurable to read. Unlike the others, Leach explains things from the baby's point of view. This leads her to reject some of the advice in other books. Take getting the kid to sleep. Spock advises letting him cry it out. Leach finds that ridiculous. Sending a baby the message that "it's no good crying because I'm not going to come back no matter how sad you are," she writes, "can only make him more sure that it is



Kid-centric

dangerous to let you go at all." Leach is particularly good on fussy children, and coaxing hunger-strikers to eat.

T. Berry Brazelton's best seller, *Touchpoints* (Addison Wesley, \$14.95), is becoming a night-stand staple. Don't turn to this "map of behavioral and emotional development" when your kid has the mumps. It isn't a medical guide. But if you're going nuts because she won't stop saying "no" or refuses to speak to anyone but her imaginary cat, Brazelton can help. Drawing on his own pediatric practice and research, he elegantly explains how children learn to interact with the people and things around them—and how to tell a potential problem from behavior that may seem odd, but is actually normal.



A staple

When a Child's Silence Isn't Golden

Some toddlers don't say a word. Should their parents simply be patient—or send them to 'speech-language' therapy?

BY CLAUDIA KALB
AND TESSA NAMUTH

MALINDA Boyd is increasingly worried about her 18-month-old son, Ryan. At 15 months, Ryan said absolutely nothing. Now he has a handful of words—"mama," "dada," "duck," "ball"—but far fewer than the norm for his age. Ryan's pediatrician has suggested that he be tested for a speech delay, but Boyd has resisted, concerned that her son will be labeled developmentally impaired simply because he's not talking as much as his playmates. "I think he'll talk when he's ready," she says. "You've got to give kids a little room to grow and be themselves."

Not long ago, giving children like Ryan a little room would have been routine. Parents of 2-year-olds who were barely saying single words, let alone simple two-word sentences, were reassured that the child would "outgrow it." Speech therapy was reserved for severely disabled children, such as those with autism or cerebral palsy. But today toddlers who have what developmental specialists call "expressive language delay" are at the center of a heated debate over whether they need speech therapy. Research has shown that early speech and language disorders can lead to later difficulties learning to read, write and spell. As a result, some pediatricians and preschools have abandoned the wait-and-see attitudes and are recommending intervention for children whose language development raises red flags (page 21). "Now if we see a child faltering at all," says Jean Mandelbaum, director of All Souls, a Manhattan nursery school, "we recommend an evaluation." But others see speech-language ther-



Speech work: Joe Riccardo, 3; New York therapist Sima Gerber

apy as unwarranted treatment for a problem that will likely clear up on its own. "It can get them talking a lot faster," says Grover Whitehurst, a specialist in language delays, "but after a couple of years you can't tell the difference between kids who had early intervention and kids who did not."

No one knows why children like Ryan (the majority of late talkers are boys) don't speak. "It's often a big mystery," says Patricia Walsh Kaye, a Manhattan speech-language pathologist. Hearing is an obvious suspect: even mild loss from ear infections can slow comprehension and thus the ability to speak. High-risk pregnancies involving

drugs or alcohol interfere with normal brain development. Environment may play a role, too: some children do not speak because nobody speaks to them.

For parents, the mystery is less what caused the problem than how to know when it's serious. There can be huge variability in speech and language development. By 18 months most children have a vocabulary of about 20 words. By 2 they're forming two-word sentences ("Mommy juice"). What if the child is nowhere close to passing these milestones? If she shows good comprehension and uses gestures to communicate, she is probably still on target for language development, lack of words notwithstanding. Talking will almost certainly come soon. Doctors' real concern centers on toddlers who do not understand simple questions or instructions.

Proponents of early intervention worry that kids who appear to be just delayed speakers may end up having more severe speech and language problems later. They're also concerned that toddlers who are frustrated at not being able to express themselves could develop behavior problems. Denying treatment, they say, is not the answer. "I'd rather err on the side of putting a kid in therapy who might outgrow it," says Pamela Rollins of the Callier Center for Communication Disorders in Dallas, Texas.

Not all would agree. It is difficult to tell, argue researchers, whether in the long run speech therapy actively helps or simply goes along for the developmental ride. One speech and language specialist, Rhea Paul at Portland State University in Oregon, found that of children under 2 who were not talking, about two thirds showed continued delays at 3. At 4, half did. But by kindergarten 75 percent of the children had caught up with their peers, scoring within the normal range—albeit at the low end—for language expression. "They are making slow progress all along," says Paul. "It's likely they will be able to function more or less OK by the time they get to kindergarten—even without intervention."

The debate is far from over. In the meantime, Malinda Boyd is hoping Ryan will outgrow his problem—and that soon enough he'll be talking her ear off. ■

👶 A Workout for Little Ones

In between feeding and sleeping, babies need a daily dose of exercise to strengthen their muscles and improve coordination. Workout time should be playful and relaxed; stop immediately if baby seems distressed:

Birth-1 year	1-2 years old	2-3 years old
<ul style="list-style-type: none"> Put baby on back, rotate legs as if he were pedaling. Place child on stomach to encourage him to lift his head. Lay baby on a blanket on the floor so he can move body and reach for toys. Hold baby upright, supporting his weight. 	<ul style="list-style-type: none"> Practice kicking with balls. Make simple obstacle courses to improve coordination. Play follow the leader together. Help child move along monkey bars, climb up slides. Let child push stroller. Climb stairs by holding hands. 	<ul style="list-style-type: none"> Teach child how to pedal and maneuver tricycle. Throw balls into large basket to improve aim. Practice balance by walking on tiptoe and standing on one leg. Play simple game of Simon says.

3-16 months old

9 months old

Fine motor Puts objects in containers then takes them out. May finger holes on a pegboard and enjoy toys with moving parts like wheels or levers.

Gross motor Near the end of the first year, baby may begin to pull up on furniture and stand. Learns how to bend knees and sit down after standing.

10 months old

Fine motor May hold crayon and try to scribble. Intrigued by tiny things.

Gross motor May walk while holding on to furniture. May let go momentarily and stand without support. Sits confidently.

11 months old

Fine motor Likes to turn pages, often not one by one. Fascinated by hinges and may swing door back and forth.

12 months old

Gross motor Children walk about their first birthday, although some start earlier or later. First steps will be shaky; stumbles, and an occasional bump, are very likely.

13 months old

Fine motor Points with index finger. Accurately picks up small objects with thumb and index finger.

Gross motor May walk with feet wide apart, toes pointing out. Uses arms for balance when walking.

14 months old

Fine motor Holds two or three objects in one hand. Turns containers over to dump contents.

Gross motor May stoop to pick up toy and carry it across the room.

15 months old

Fine motor Builds small towers of blocks and then knocks them down.

Gross motor Climbs stairs on hands and knees; descends by crawling and sliding. Pushes or pulls a toy while walking.

16 months old

Fine motor Puts round peg into correct hole. Tries to fit things inside each other.

Gross motor May try to kick ball but steps on it instead. Walks sideways and backwards. Quickens pace when excited or being chased.

🗣️ Learning Motor Lingo

Open a parenting book and you may feel you need a translator to understand what you're reading. A few key motor terms, deciphered:

Combat crawling: Uses only arms to push forward on stomach.

Creeping: Moves on stomach by pushing with feet and steering with outstretched arms.

Cruising: Walks while holding on to furniture.

Pincer grasp: Picks up objects with thumb and index finger.

Raking: Reaches out and grabs many objects.

17-24 months old

17 months old

Fine motor May roll ball to others and pick up objects in motion. Throws balls. Drinks regularly from cup.

Gross motor Has more control over stopping and turning when she walks. Likes to push carriage, rather than sit in it.

18 months old

Fine motor Sorts many shapes and drops them in matching holes. Takes toy apart and puts it back together. Unzips zippers.

Gross motor Keeps feet closer together when walking; gait becomes much smoother. May walk up stairs with parents.

19 months old

Fine motor May stack three or four blocks. Loves to inspect new objects and places. Tries to climb out of bed. May take off socks and shoes.

Gross motor Active and adventuresome throughout the day. Walks, climbs, trots and runs whenever possible.

20 months old

Fine motor Throws ball overhand instead of tossing it.

Gross motor May kick ball without falling or tripping. Likes to hang from bars by her hands. May climb onto an adult-size chair, pivot around and sit down. Running may look stiff; child may have trouble stopping and maneuvering corners while running. Tries to jump with both feet, but may not get off the ground.

21 months old

Fine motor May turn pages one at a time. Enjoys finger painting and scribbling with big crayons. Loves to inspect tiny objects, especially bugs. Shows hand preference.

Gross motor Looks down to dodge obstacles while walking. May walk up stairs, holding on to rail, both feet on one step.

22 months old

Fine motor May put on shoes but often on the wrong foot. Tries to buckle car seat belt.

Gross motor Alternates easily between walking and running, sitting and standing. Likes to be pushed on a swing and enjoys other playground activities.

23 months old

Fine motor Likes to play with clay. May draw a crude circle if shown how.

Gross motor Shows greater coordination in movement. Often runs rather than walks. Can seat self at table and climb into car seat on own. May throw ball into a basket.

24 months old

Gross motor Moves with greater efficiency by end of second year. Child is sturdier on feet and less likely to fall. Some toddlers may walk up and down stairs by themselves; others may feel more comfortable crawling on steps. May enjoy dancing to music and learns how to move according to tempo.

2-3 years old

25-29 months old

Fine motor Child learns to coordinate movements of his wrist, fingers and palm. May unscrew lids, turn knobs, unwrap paper.

Gross motor Constantly on the move. Loves to be chased. Enjoys going down slides, swinging and running around playgrounds. May pedal small tricycle. Learns to walk on tiptoe and may be able to stand on one foot. May count stairs and jump off the final step. Jumping in place still takes great effort and coordination.

30-36 months old

Fine motor Learns how to hold a pencil in writing position. Loves to draw with chalk and crayons. Imitates vertical and horizontal strokes, but may have difficulty making a cross with two lines. May use small scissors with parent supervision. Rotates jigsaw pieces and completes a simple puzzle. By the age of 3, child will have enough muscle coordination to play a simple musical instrument.

Gross motor Walking becomes more adultlike with a heel-to-toe gait. Likes to try out new types of movement like galloping and trotting. May alternate feet when going up stairs. Capable of multiple actions when moving. May throw a ball while running or eat ice cream while walking. Bends over easily without falling. Kicks ball in an intended direction. May hit a baseball if it's placed on a stand. Pedals and steers a tricycle well.

BY JENNIFER LACH

SOURCES: "THE EARLY CHILDHOOD YEARS: THE 1 TO 5 YEAR OLD," "THE SECOND TWELVE MONTHS OF LIFE" AND "THE FIRST TWELVE MONTHS OF LIFE" BY THERESA AND FRANK CAPLAN; "CAREING FOR YOUR BABY AND YOUNG CHILD" BY STEVEN F. SHELON, M.D.; "YOUR BABY & CHILD" BY FENELUPE LEACH; PARENTS AS TEACHERS NATIONAL CENTER, INC.; GROWING CHILD: INFANT REFLEX ILLUSTRATIONS BASED ON DRAWINGS BY WENDY WRAT

THE BRAIN

A baby is born with a head on her shoulders and a mind primed for learning. But it takes years of experience—looking, listening, playing, interacting with parents—to wire the billions of complex neural circuits that govern language, math, music, logic and emotions.

How to Build a Baby's Brain

By Sharon Begley

YOU CANNOT SEE WHAT IS GOING ON INSIDE YOUR newborn's brain. You cannot see the electrical activity as her eyes lock onto yours and, almost instantaneously, a neuron in her retina makes a connection to one in her brain's visual cortex that will last all her life. The image of your face has become an enduring memory in her mind. And you cannot see the explosive release of a neurotransmitter—brain chemical—as a neuron from your baby's ear, carrying the electrically encoded sound of "ma," connects to a neuron in her auditory cortex. "Ma" has now commandeered a cluster of cells in the infant's brain that will, as long

as the child lives, respond to no other sound.

You cannot see any of this. But Dr. Harry Chugani can come close. With positron-emission tomography (PET), Chugani, a pediatric neurobiologist at Wayne State University in Detroit, watches the regions of a baby's brain turn on, one after another, like city neighborhoods having their electricity restored after a blackout. He can measure activity in the primitive brain stem and sensory cortex from the moment the baby is born. He can observe the visual cortex burn with activity in the second and third months of life. He can see the frontal cortex light up at 6 to 8 months. He can see,

53% of all parents say that they read to their child every day; 55% of parents say they sing to or play music for their child every day



NCE UP

Put the bunny.

BY DOROTHY LEHNHARDT

b c



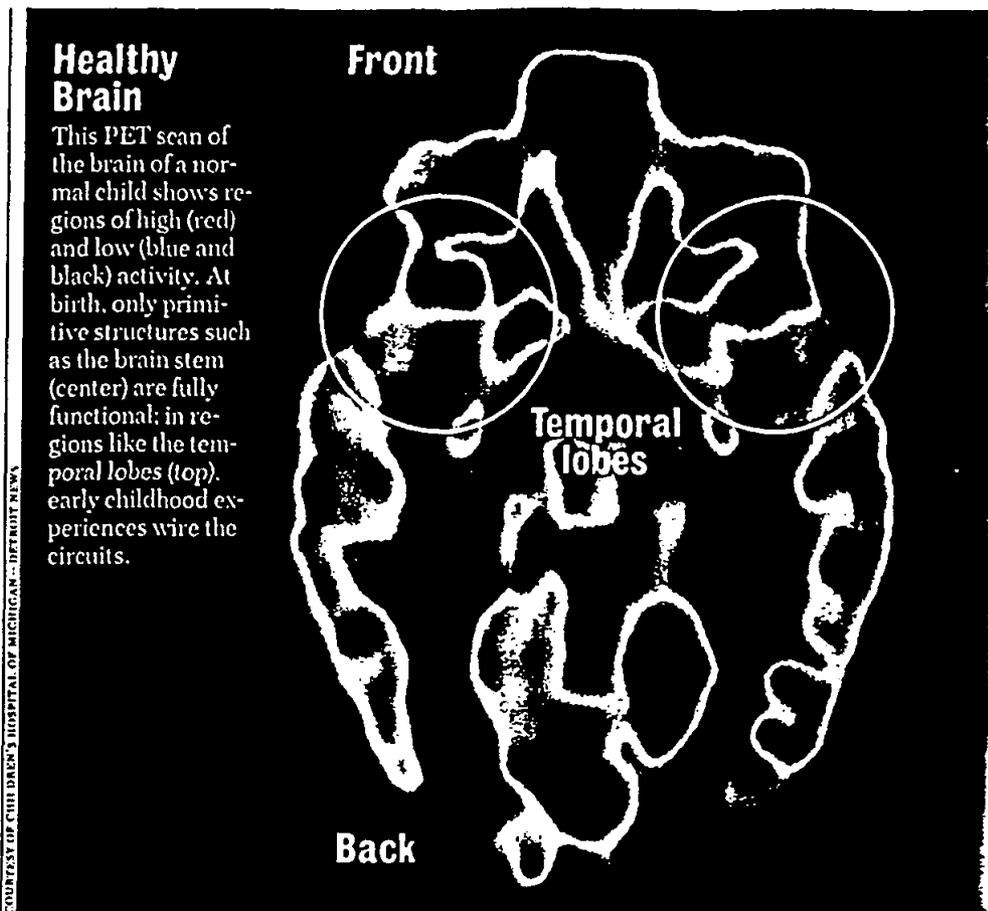
The native languages a baby hears will cre

in other words, that the brain of a baby is still forming long after the child has left the womb—not merely growing bigger, as toes and livers and arms do, but forming the microscopic connections responsible for feeling, learning and remembering. For doing, in short, everything that a brain is born to do but that it is born without knowing how to do.

Scientists are just now realizing how experiences after birth, rather than something innate, determine the actual wiring of the human brain. "Only 15 years ago," reports the Families and Work Institute in the just-released study "Rethinking the Brain," "neuroscientists assumed that by the time babies are born, the structure of their brains [had been] genetically determined." But by last year researchers knew that was wrong. Instead, early-childhood experiences exert a dramatic and precise impact, physically determining how the intricate neural circuits of the brain are wired (NEWSWEEK, Feb. 19, 1996). Since then they have been learning how those experiences shape the brain's circuits.

At birth, the brain's 100 billion or so neurons form more than 50 trillion connections (synapses). The genes the baby carries—from the egg and sperm that made him—have already determined his brain's basic wiring. They have formed the connections in the brain stem that will make the heart beat and the lungs respire. But that's all. Of a human's 80,000 different genes, fully half are believed to be involved in forming and running the central nervous system. Yet even that doesn't come close to what the brain needs. In the first months of life, the number of synapses will increase 20-fold—to more than 1,000 trillion. There simply are not enough genes in the human species to specify so many connections.

That leaves experience—all the signals that a baby receives from the world. Experience seems to exert its effects by strengthening synapses. Just as a memory will fade if it is not accessed from time to time, so synapses that are not used will also wither away in a process called pruning. The way to reinforce these wispy connections has come to be known as stimulation. Contrary to the claims of entrepreneurs preying on the anxieties of new parents, stimulation does not mean subjecting a toddler to flashcards (page 34). Rather, it is something much simpler—sorting socks by color or listening to the soothing cadences of a fairy tale. In the most extensive



study yet of what makes a difference, Craig Ramey of the University of Alabama found that it was blocks, beads, peekaboo and other old-fashioned measures that enhance cognitive, motor and language development—and, absent traumas, enhance them permanently.

29% of all parents of kids 2 to 3 years old say their child plays with a computer or computer game three or more times in a week

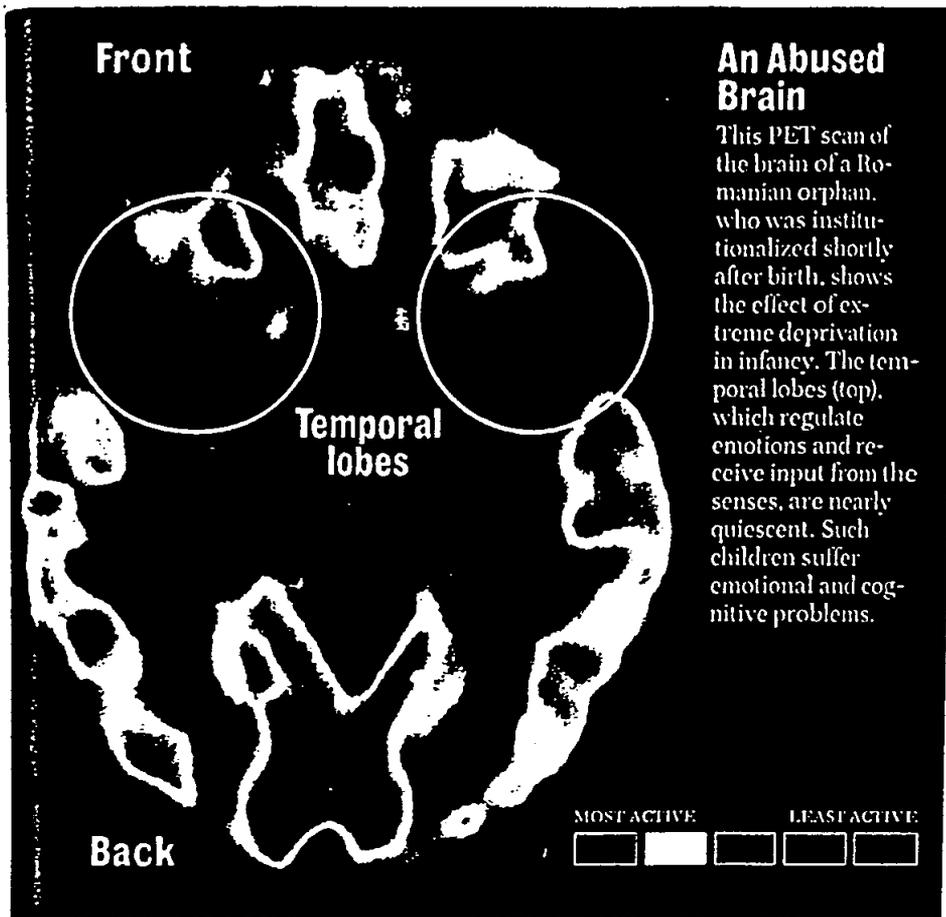
The formation of synapses (synaptogenesis) and their pruning occurs at different times in different parts of the brain. The sequence seems to coincide with the emergence of various skills. Synaptogenesis begins in the motor cortex at about 2 months. Around then, infants lose their "startle" and "rooting" reflexes and begin to master purposeful movements. At 3 months, synapse formation in the visual cortex peaks; the brain is fine-tuning connections

allowing the eyes to focus on an object. At 8 or 9 months the hippocampus, which indexes and files memories, becomes fully functional; only now can babies form explicit memories of, say, how to move a mobile. In

the second half of the first year, finds Chugani, the prefrontal cortex, the seat of forethought and logic, forms synapses at such a rate that it consumes twice as much energy as an adult brain. That furious pace continues for the child's first decade of life.

Research on language has shown how "neuroplastic" an infant's brain is, and how that plasticity lessens with age. Patricia Kuhl of the University of Washington studies the "auditory maps" that infants' brains construct out of phonemes (the smallest units of sound in a language, such as "ee" or "I"). At first, neurons in the auditory cortex are like laborers to whom jobs have not yet been assigned. But as a newborn hears, say, the patter of English, a different cluster of neurons in the auditory cortex is recruited to respond to each phoneme. Each cluster then fires only when a nerve from the ear carries that particular sound, such as "pa" or "ma." If one sound is clearly distinct from another, as "ra" and "la" are in English, then the neurons whose job it is to hear one will lie far from those whose job it is to hear the other. (Kuhl makes noninvasive electrical measurements, through the ba-

te a permanent auditory map in his brain



An Abused Brain

This PET scan of the brain of a Romanian orphan, who was institutionalized shortly after birth, shows the effect of extreme deprivation in infancy. The temporal lobes (top), which regulate emotions and receive input from the senses, are nearly quiescent. Such children suffer emotional and cognitive problems.

ies, and "later" if it is attached to a frustrating wait for a trip to the playground, than if the word is presented in isolation from things the baby cares about. There is nothing mysterious about this: adults form a memory much more readily if it has emotional content (how did you hear that the space shuttle had exploded?) than if it doesn't (what's the difference between a sine and a cosine?). Causality, a key component of logic, is also best learned through emotion: if I smile, Mommy smiles back. A sense that one thing causes another forms synapses that will eventually support more abstruse concepts of causality. Feelings, concepts and language begin to be linked in this way in the months from 7 through 12.

Another route to brain wiring seems to be tapping into its natural harmonies. In the last year, new studies have nailed down how music affects spatial-temporal reasoning—the ability to see a disassembled picture of, say, a rabbit and mentally piece it back together. Such reasoning underlies math, engineering and chess. In a study published in February in the journal *Neurological Research*, scientists report how spatial-temporal reasoning in 3- and 4-year-olds was affected by weekly piano lessons. After six months, the budding Horowitzes—all of whom scored at the national average on tests of spatial recognition—scored 34 percent above average on this reasoning skill. None of the other children (who had received computer keyboard and mouse lessons, singing lessons or nothing at all) had improved. What explains the effect? Physicist Gordon Shaw of the University of California, Irvine, suspects that in playing the piano, "you are seeing how patterns work in space and time." When sequential finger and key patterns make melodies, neural circuits that connect positions (keys) to sounds in space and time (the melody) are strengthened. "Music training produces long-term modifications in neural circuitry," says Shaw. What scientists do not know is whether the effects of early music training endure—whether the preschoolers will be math wizards in high school.

The downside of the brain's great plasticity is that it is acutely vulnerable to trauma. "Experience may alter the behavior of an adult," says Dr. Bruce Perry of Baylor College of Medicine, but it "literally provides the organizing framework" for the brain of a child. If the brain's organization reflects its experience, and the experience of the traumatized child is fear and stress, then the neurochemical responses to fear and stress become the most powerful architects of the brain. "If you have experiences that are overwhelming, and have them again

bies' scalps, to identify which neurons fire in response to a particular sound.) But if the sounds are nearly identical, as "ra" and "la" are in Japanese, then the two sets of neurons are so close that the baby will have trouble distinguishing the two phonemes. By 12 months, an infant's auditory map is formed. He will be unable to pick out phonemes he has not heard thousands of times for the simple reason that no cluster of neurons has been assigned the job of responding to that sound. And the older he gets, the more he will struggle to learn a new language: fewer unassigned neurons are available for the job of hearing new phonemes.

Experience counts in building vocabulary, too, and at a very young age. The size of a toddler's vocabulary is strongly correlated with how much a mother talks to the child, reports Janellen Huttenlocher of the University of Chicago. At 20 months, children of chatty mothers averaged 131 more words than children of less talkative mothers; at 2 years, the gap had more than doubled, to 295 words. "The critical factor is the number of times the child hears differ-

ent words," says Huttenlocher. The effect holds for the complexity of sentence structure, too, she finds. Mothers who used complex sentences (those with dependent clauses, such as "when ..." or "because ...") 40 percent of the time had toddlers who did so 35 percent of the time; mothers who used such sentences in only 10 percent of their utterances had children who did so only 5 percent of the time.

ONLY "LIVE" LANGUAGE, not television, produced these vocabulary- and syntax-boosting effects. Why doesn't all the gabbing on TV stimulate language development? Huttenlocher suspects that "language has to be used in relation to ongoing events, or it's just noise." That may hold for other sorts of cognition, too. Information embedded in an emotional context seems to stimulate neural circuitry more powerfully than information alone. A child will more readily learn the concept of "more" if it refers to the happy prospect of more cook-

and again, it changes the structure of the brain," says Dr. Linda Mayes of the Yale Child Study Center. Here's how:

■ Trauma elevates stress hormones, such as cortisol, that wash over the tender brain like acid. As a result, regions in the cortex and in the limbic system (responsible for emotions, including attachment) are 20 to 30 percent smaller in abused children than in normal kids, finds Perry; these regions also have fewer synapses.

■ In adults who were abused as children, the memory-making hippocampus is smaller than in nonabused adults. This effect, too, is believed to be the result of the toxic effects of cortisol.

■ High cortisol levels during the vulnerable years of zero to 3 increase activity in the

brain structure involved in vigilance and arousal. (It's called the locus ceruleus.) As a result the brain is wired to be on hair-trigger alert, explains Perry: regions that were activated by the original trauma are immediately reactivated whenever the child dreams of, thinks about or is reminded of the trauma (as by the mere presence of the abusive person). The slightest stress, the most inchoate fear, unleashes a new surge of stress hormones. This causes hyperactivity, anxiety and impulsive behavior. "The kids with the higher cortisol levels score lowest on inhibitory control," says neuroscientist Megan Gunnar of the University of Minnesota. "Kids from high-stress environments [have] problems in attention regulation and self-control."

Trauma also scrambles neurotransmitter signals, ratcheting up some and depressing others. Since neurotransmitters play key roles in telling growing neurons where to go and what to connect to, children exposed to chronic and unpredictable stress—a mother's boyfriend who lashes out in fury, an alcoholic uncle who is kind one day and abusive the next—will suffer deficits in their ability to learn. "Some percentage of capacity is lost," says Perry. "A piece of the child is lost forever."

That is tragedy enough, of course, but it is made even greater by the loss of what could have been. Babies are born into this world with their brain primed to learn. But they cannot do it alone.

With ANDREW MURN in Los Angeles

Rooting for Intelligence

Breast-feeding is good for health and bonding. And mother's milk may have another payoff: boosting a child's IQ scores.

BY DANIEL GLICK

BREAST MILK MAY be Mother Nature's ultimate food. It's potent enough to keep babies alive for the first 16 weeks of life. It contains antibodies to ward off illness; breast-fed babies suffer fewer ear infections, respiratory infections, rashes and allergies than bottle-fed babies. For mothers, nursing lowers the chance of getting breast cancer later in life, accelerates weight loss after pregnancy and may act as a natural (though imperfect) contraceptive.

But can breast-feeding also make a baby smarter?

The answer is still uncertain. But a series of studies shows everything from "small but still detectable" increases in cognitive development to an eight-point IQ difference between breast- and bottle-fed babies. Various measurements, including standard infant testing and even report cards from grade-school children, all give a statistically significant nod to babies who nursed. In one widely publicized 1992 study by Alan Lucas of the Dunn Nutrition Unit



Nature has its own formula for success

in Cambridge, Mass., preterm infants who were tube-fed breast milk scored much higher on developmental tests than babies who were tube-fed formula. "It's hard to come out and say, 'Your baby is going to be stupider or sicker if you don't breast-feed,'" says Dr. Lawrence Gartner, chair of the American Academy of Pediatrics' working group on breast-feeding. "But that's what the literature says." (The academy recommends that infants be fed breast milk for the

first 6 to 12 months of life, with appropriate solid foods added between the ages of 4 and 6 months.)

No one can explain exactly why breast milk may be such good brain food. The precise mix of enzymes, long-chain fatty acids and proteins that make up breast milk is so complex that no human engineer could ever duplicate it. And each ingredient has a purpose. Specific fatty acids found in breast

milk have been shown to be critical for neurological development. Certain amino acids are a central component for the development of the retina, which could account for breast-fed babies' increased visual acuity—another way of measuring advanced brain development.

Critics say that trying to quantify the developmental advantages of breast-feeding is an epidemiologist's nightmare. Confounding factors include race, age, socioeconomic

status and parental intelligence. But even formula makers acknowledge that their product will always be a pale imitation. Cow's-milk-based formula, even fortified with iron or fatty acids, simply can't match the complexity of nature's own. "Breast milk gives you things we don't even know about," says Dr. William Goldman, medical director of Wyeth Nutritionals International. The U.S. Food and Drug Administration is currently assessing a fierce debate over adding to formula a polyunsaturated fat that has been shown in some studies to stimulate eye and brain development—and in others to stunt growth.

Food for thought: The controversy will likely get louder, as breast-feeding advocates seize on the latest studies to bolster their case. Some researchers, on the other hand, suggest that different factors, like a loving home environment, may ultimately prove to be more important than what a child is fed. In a 1996 commentary in the British journal *Lancet*, William and Mark Feldman of the Hospital for Sick Children in Toronto wrote: "The best evidence is that intelligent, loving and caring mothers are more likely to have intelligent children, irrespective of how they feed their babies." But wouldn't it be something if mother's milk turns out to be, ahem, the mother's milk of intelligence?

DR. ALVIN F. POUSSAINT & SUSAN LINN

FRAGILE: HANDLE WITH CARE

Shaken-baby syndrome can cause blindness, developmental delays and permanent brain damage

EACH YEAR, THOUSANDS OF YOUNG CHILDREN suffer brain injury or die from being violently shaken. Children as old as 5 are vulnerable to shaken-baby syndrome (SBS), but infants between 2 and 4 months are especially at risk. Although inflicting SBS is a crime punishable by imprisonment, rates continue to rise. Since 1980 annual reported incidents of child abuse and neglect have risen threefold, to more than 3 million.

Children under 1 account for one third of reported physical-abuse cases, with head trauma the most frequent cause of disability or death. Clearly, the threat of criminal prosecution is not enough: any plan to prevent this kind of abuse must include public-education and intervention programs.

SBS, first described as a syndrome in 1974, can be lethal: approximately one shaken baby in four dies from the injuries. Those who survive may suffer blindness caused by bleeding around the brain and eyes, or disabling brain damage, including mental retardation, paralysis, seizure disorders, and speech and learning disabilities. SBS is especially tragic because it often stems from ignorance. According to a nationwide study by Dr. Jacy Showers of the SBS Prevention Plus Program, 37 percent of parents and other caregivers are unaware that shaking babies is dangerous.

Many people who injure babies in this fashion are not chronic abusers but adults overwhelmed by the demands of child care.

It is no easy task to care for an infant. Newborns cry an average of one to four hours a day. Not surprisingly, the vast majority of SBS incidents occur when an infant is crying: people who violently shake babies cannot tolerate their inability to control the infant's cries, and may even believe that the baby is purposely crying to be annoying or to get attention. Others interpret sustained crying as a sign that the baby is "spoiled," and think that he needs to be physically disciplined. A vicious cycle begins when a caregiver becomes ever more exasperated and angry and

shakes the baby in a misguided effort to stop the crying. Anyone can experience transient anger toward a crying baby. But if the impulse to shake or hit is strong and recurrent, call an agency such as CHILDHELP (800-4-ACHILD) or the National Child Abuse Hotline (800-422-4453).

Helping parents and caregivers better understand infant behavior and manage their frustrations could significantly reduce the occurrence of SBS and other abuse. Since a major precursor to SBS is loss of control, caregivers who believe they are "losing it" should avoid touching the child. Instead, after making sure the baby is safe, step back or leave the room

briefly to cool down. Consider possible causes for the crying. Is she ill, hungry, soiled, teething, injured or frightened? Try proven soothing techniques, such as patting, holding, talking or singing. Parents who know which calming techniques work for their baby should share the information with others caring for the infant. When a baby's crying sounds unusual or seems excessive, contact the pediatrician.

Of those charged with shaken-baby abuse, 60 percent are either the baby's father or the mother's boyfriend and are mostly young, in their 20s. Clearly, prevention efforts must reach out to men—through prenatal classes, clinics and schools and with information provided in workplace and recreational sites. Home visiting programs by social agencies show an impressive success rate for families at risk for child abuse and neglect. Hawaii's Healthy Start program has reduced abuse to 1 percent in high-

risk families, compared with 20 percent in such families nationwide. Shaken Baby Syndrome Prevention Plus (800-858-5222) can provide information about starting local prevention programs. The small start-up cost pales beside the cost of a single case of SBS: up to \$1 million in medical care, special-education programs and other public services over the first few years of a child's life. Protecting our most helpless children is the least we can do for them.



Nearly one in four shaken babies dies from injuries, say Linn and Poussaint

POUSSAINT is director of the media center of the Judge Baker Children's Center and clinical professor of psychiatry at Harvard. LINN is associate director of the center.

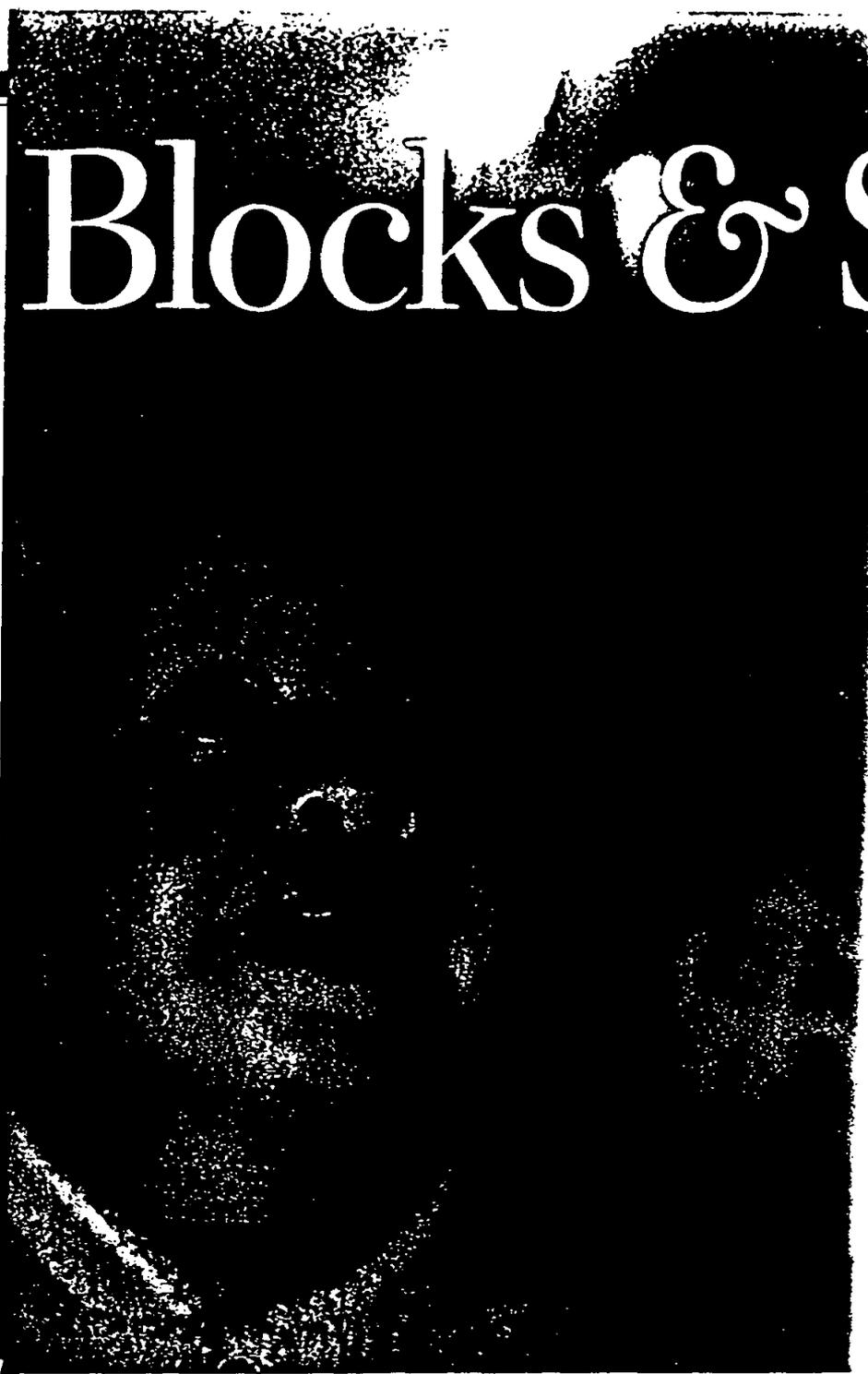
Pots, Blocks & S

BY DEBRA ROSENBERG
AND LARRY REIBSTEIN

THE BABY IS DUE SOON, SO you're out buying the normal stuff—diapers, receiving blankets, towels, powder, creams. Think you're done? Only if you're immune from guilt. Nowadays you'd be hard pressed to call yourself a conscientious parent unless you've also laid on black-and-white toys, flashcards, "scientifically designed" playthings and at least a dozen Mozart CDs—thereby supposedly guaranteeing a life full of ivy-covered diplomas and other accouterments of success.

Does any of this really make a difference? Can you stimulate your child into becoming another Einstein? Not likely. All of this obsessive parenting is based on the notion that a baby properly stimulated will develop faster, learn languages or music better and all in all be a smarter kid. The key phrase here is "properly stimulated," which is not the same as expensively stimulated or the worse fate, overstimulated.

Most experts advise parents to calm down. Sure, a baby requires certain stimulation to learn basic tasks, whether to speak or to use motor skills to build Lego bridges. But short of being raised in isolation, a baby will encounter enough stimulation in most households to do the trick—anything from banging pots and pans together to speaking to a sibling. There's no evidence that specific kinds of toys or environments will somehow speed up skills or groom a child for the Olympics. "You could stimulate until the

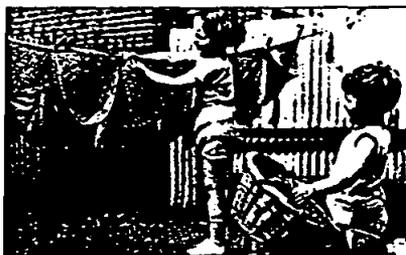


A Century of Bringing Up Baby

PARENTING, EVEN WITH THE BEST ADVICE, has never been easy. The child-raising experts of one generation are often denounced by the children of the next. Here's a look at how much has changed since the beginning of the century.



1920s: Education pioneer Maria Montessori lets a child's own interests set the pace at her new schools; Swiss psychologist Jean Piaget rethinks how children learn.



1930s: The Depression forces kids to grow up fast. Behaviorist John Watson says stoicism builds character; never hug or kiss the child.

1940s: The war ends and a baby boom begins. Dr. Benjamin Spock's best-selling book on child raising advises a new generation of parents to replace schedules and scoldings with humor and hugs.



1950s: Nuclear families colonize the suburbs. Parents seek cues from science and monitor Johnny's progress

ocks

When experts in child development talk about 'stimulation,' they're not suggesting flashcards. Instead, most of them recommend reaching inside your cupboard for educational toys.

cow comes home and it's not going to make any difference," says David Henry Feldman, a developmental psychologist at Tufts University. "Evolution has made sure that the baby's brain is going to develop certain neural pathways."

Researchers also caution parents against expecting that they can make their kids smarter. "The fact is, it's very, very hard to raise anybody's IQ," says Edward Zigler, a Yale psychologist and a founder of Head Start. And even if a child learns to read early, there's no evidence that that accomplishment translates into higher grades, intelligence or later success, according to John Bruer, president of the James S. McDonnell Foundation, which studies cognitive science. Besides, he says, trying to determine a child's right age, or "critical period," to learn a skill is futile—no one agrees on when or even whether such windows occur in the brain.

If any stimulation is effective, it's plain old talking. Language development results from a child's talking to a mother or other caretaker—not from flashcards, says Zigler. Mothers worldwide naturally pick up a way of speaking that Zigler calls "motherese." They pause between words so that babies can concentrate on language sounds. Their voices rise in pitch and their cadence fluctuates almost melodically. There's nothing fancy about this.

To be fair, there are some experts who say kids can be specially stimulated into success. One of the more controversial is Glenn Doman, head of the Institutes for the Achievement of Human Potential, also known as the Better Baby Institute, near Philadelphia. His theory—strongly disputed by most experts—is that babies can learn anything and it's easiest to start at birth. "Every child has the potential to be the next Leonardo," he says. His technique,

A 6-month-old getting her daily dose of stimulation. Is more really necessary?

embodied in the book "How to Teach Your Baby to Read," first published in 1963, exposes babies to flashcards of words and phrases. Doman concedes he's gained little scientific recognition but says he has 20,000 supporting anecdotes. One of them is from Jo Ann Loeliger, a 43-year-old Philadelphian who began teaching her three children to read at the ages of 3 years, 9 months and at birth. She says her older kids were reading difficult books early, and her youngest could read single-word flashcards at 9 months. The older kids also started learning violin at the ages of 4 and 3. "It comes so easily to them," says Loeliger.

Some researchers also think that particular toys are more effective than others in stimulating children. Dr. Richard Chase, founder of Child Development Corp., says his company's age-appropriate toys, like the Rattle Cat, which contains high-contrast colors with a simple face for babies, can heighten kids' development. "We can make most children smarter and more interesting than we make them now," says Chase, an adjunct professor of psychiatry at Johns Hopkins University.

But most experts say that more important than a particular toy is that parents be attuned to the kind of stimulation that interests their child. Sue Cima, who lives in Orlando,

Fla., found that when her daughter Niki was 3 months, she was fascinated by black-and-white cardboard flashcards. "She just loved them. She was mesmerized," Cima recalls. Pots and pans? Niki hardly looked. Beth Crim, a librarian in Manassas, Va., noticed that as a newborn her son David seemed intrigued by patterns of light. She would place him on his back where he could watch the sunlight making shadows through the trees. "That's about as low-tech as you can get," says Crim. So one kid will grow up to be a great blackjack dealer in Las Vegas and the other the next Claude Monet. But which one? ■

22% of all parents of children 2 to 3 years old say their kids went to a show, a library or a story reading three or more times during one week



Against the development charts of Arnold Gesell, founder of Yale's Child Development Clinic.

1960s: The anti-establishment generation attempts to revolutionize nearly everything, including family relations.



1970s: Divorce divides a record number of families and the women's movement questions traditional parenting roles for both men and women.



1980s: More moms enter the work force than ever before, pushing some companies to provide day care. Feminists like Carol Gilligan ask why researchers largely ignore girls' development.

1990s: Researchers examining cognitive development tap new technologies to see the exciting world inside a child's brain.



Teaching nursery school is not about formal lessons. It's about listening and guiding, helping little children to make sense of the big world they're entering.

The New Preschool

BY LYNNELL HANCOCK
AND PAT WINGERT

LISTEN TO THE SNAP, crackle, pop of baby neurons. Teacher Martha Rodriguez crouches near the 2-year-old sand diggers at Manhattan's Bank Street Family Center, gently negotiating the rights to a suddenly special yellow rake. As Rodriguez bargains, the toddlers spin new connections to the brain area that controls "gimme now" impulses, connections that could very well later be used to ratchet up their SAT scores or their job-interviewing skills. Head teacher Lisa Farrell explains that the doll in Cammy's hot grip is really Caroline's from home, hence her classmate's avalanche of tears. Cammy's brain is wiring up to read other people's feelings, a skill she'll need to navigate through future relationships. A third teacher leads the diaper-dependent kids, one by one, to the changing table, exchanging coo for coo, babble for babble. Each child's neural circuits are carving highways in the brain where future vocabulary words will later travel with ease.

In the "superbaby" '80s, the preschool debate centered on how soon was too soon for children to be coached in the ABCs or one-two-threes. Now the discussion has become more about nurturing neurons, less about drilling for facts. Brain research underscores what educators have long argued: early social and emotional experiences are the seeds of human intelligence. Time spent flipping flashcards—at the age of 1 or 3—is precious time wasted. Instead, teachers need

to tune in to each child's daily experiences and needs, helping them feel safe and loved while encouraging them to explore and experiment. "Children are born hard-wired," says Sue Bredekamp of the National Association for the Education of Young Children. "Experience provides the software."

Is this nation's haphazard collection of nurseries and day-care centers—which accommodate nearly half the 15 million infants and toddlers whose parents are working—up to such a task? According to a 1995 national study conducted by the University of Colorado Economics Department, the answer is clearly no. Many programs are unlicensed. Most are staffed with untrained, poorly paid adults. Ninety-one percent don't have basic toys, books, hygiene or enough adults to respond to each child. A full 40 percent are downright hazardous, both to a child's health and safety as well as to her social and intellectual development.

The formula for preschool success mirrors a child's upbringing in a good home. Whether in pricey private preschools or Head Start-like programs, American educators agree on the simple elements that add up to quality: one trained, well-paid teacher as-

33% of all parents say that they plan to start sending their child to school by the age of 3; an additional **30%** say their child will start by age 4

signed to every three to four infants or half-dozen toddlers; safe, stimulating surroundings and strong ties between staff and families, so children know there is loving continuity in their lives. This is neuroscience, not rocket science. The well-regarded Bank Street Family Center, for children 6 months to 4 years, has been perfecting this family-friendly formula for nearly three decades. There is no Mozart



training, no foreign-language tapes, no work sheets to ponder. Instead, its unassuming rooms are filled with big, lumpy armchairs for reading, a kitchen for cooking, tables for drawing, blocks for building forts, stairs for building muscles. Children (about 12 per class) are free to visit other classrooms, as they would go from bedroom to den at home.

Education at this age is not about imparting facts and imposing strict schedules. It's about listening, guiding, helping individual children to make sense of the real world. The "curriculum" is learning to say goodbye to Mom, forming relationships to others, feeling competent exploring their world. With these emotional skills rein-



dren under 3 only has 22,000 slots for 2.9 million eligible children. With federal welfare reform pushing more mothers of young children into the work force, demand is expected to reach record levels. More parents will have to patch together a makeshift sitter system. "There is too much freelancing with these kids already," says Ron Lally, director of the Center for Child and Family Studies in San Francisco.

Although some child-development experts believe the best solution would be for more parents to stay home with young kids, that clearly isn't a reality for many families, especially since many women bring home half the family income. Unlike families in Germany or Sweden, American parents do not receive government subsidies to replace one parent's paycheck. Instead, we rely on the kindness of strangers. "We require licenses for beauticians and caterers," says Sharon Lynn Kagan, author of "Reinventing Early Care and Education." "It's ludicrous that we don't require licenses for child-care workers."

Licenses will not rescue Washington, D.C.'s Model Early Learning Center, home away from home to 20 children and their pudgy cat, Coco. The richly outfitted preschool, modeled after the pioneering Reggio Emilia nurseries in northern Italy, has served some of the capital's poorest children for the past four years. But last year local public funding shriveled, and the school may close in June.

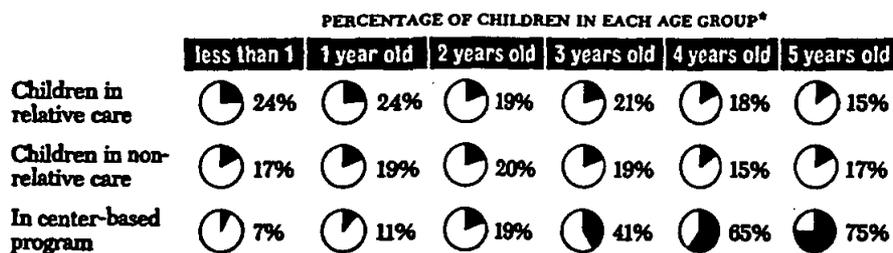
Still, the Model Center children go about their projects, oblivious to the school's fate. A small group recently hatched a plan for a "flying machine" for the peripatetic Coco. The cat's contraption would have a magic button to convert it into a submarine, and wings made of dried leaves and feathers. Whether or not this ambitious plan is ever completed, it already has produced enough brainstorming to electrify the minds of its young designers. These tots are wired for ideas, the ultimate head start. ■

forced, says director Margot Hammond, reading, writing and physics will come more easily when kids are ready. And, since children's brains are so malleable at this age, supportive care can even repair neurological damage created by depressed, distracted or abusive parents. Heavy doses of love, attention and proper signaling between caregiver and toddler forge new connections.

Parents are known to scramble for a spot on Bank Street's lengthy waiting list while their children are still in utero. They start saving then, too: tuition is \$16,000 a year for an all-day program. The vast majority of families can't afford such sticker prices. The new Early Head Start for chil-

Who's Watching the Kids?

Parents rely on relatives or paid sitters to help mind even their smallest children. With 1-year-olds, 50 percent of families use some nonparental arrangement. By the time they are 5, just 16 percent of children are watched only by their parents.



*COLUMNS DO NOT ADD UP TO 100 BECAUSE SOME CHILDREN PARTICIPATED IN MORE THAN ONE TYPE OF DAY CARE. SOURCES: U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS

Cultivating the Mind

Children come preprogrammed to learn. How can parents help? Be patient, keep talking and soon you will hear those magic words: Dada, can I borrow the car?

The Baby's Brain ...

When a baby is born, primitive structures in the brain—those controlling respiration, reflexes and heartbeat—are already wired. But in higher regions of the cortex, neural circuits are rudimentary at best; the vast majority of the 1,000 trillion connections (synapses) that the newborn's billions of neurons will eventually make are therefore determined by early experience.

Connections that are reinforced by a baby's exposure to language, images, sounds, facial expressions and even lessons in cause and effect (Baby smiles, Mommy smiles back) become permanent. Tentative connections that are not reinforced by early experience are eliminated. To maintain such a large number of connections requires so much metabolic energy that a child's brain consumes twice the energy of an adult's. And because no two babies have the same experiences, no two brains are wired the same.

The Windows of Opportunity

Circuits in different regions of the brain mature at different times. As a result, different circuits are most sensitive to life's experiences at different ages. What a child is best able to learn when:

	AGE IN YEARS					
	pre	0	1	2	3	4
Motor development	●	●	●	●	●	●
Emotional control			●	●	●	●
Vision		●	●	●	●	●
Social attachment			●	●	●	●
Vocabulary				●	●	●
Second language				●	●	●
Math/logic					●	●
Music					●	●

0-2 months old

1 month old

Language Small throaty sounds may turn into cooing by end of first month. Responds to voices.
Memory Some babies may start to expect feedings at regular intervals.
Tips Use simple, lively phrases and address baby by name.

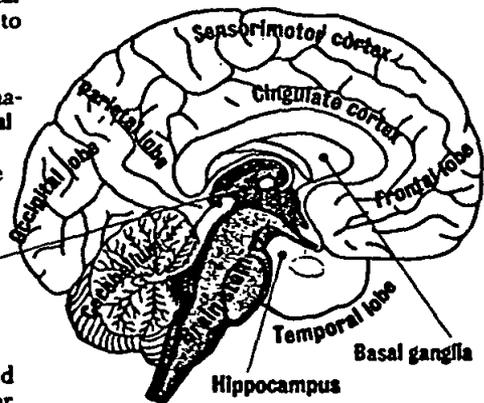
2 months old

Awareness Begins to make simple associations—if he cries, he gets picked up. Awareness of outside stimuli increases.
Language Communicates mainly by crying. Grunting noises sound more vowel-like, such as "oooh-oooh" and "ahh-ahh."

... Is Greater Than the Sum of Its Parts

Active from the second or third month, the **parietal lobe** allows child to recognize objects and have better eye-hand coordination. The **temporal lobe** assists with hearing, language and smell.

Divided into four lobes, the **cerebrum** represents 70 percent of the central nervous system. A person's ability to remember, feel and think depends on this region.



The **cerebellum** controls a newborn's balance and muscle tone. Later this large region of the brain coordinates motor, sensory and other functions.

The **brain stem** controls the necessary functions of the body, such as breathing, circulation, heartbeat and reflexes. It is one of four regions of the brain already completely wired at birth.

Along with the **sensorimotor cortex**, the **thalamus** regulates a newborn's basic movement and is already wired at birth. The **cingulate cortex**, **hippocampus** and **basal ganglia** are also just about fully formed and control basic functions.

The **frontal lobe** develops gradually at the end of the first year. It coincides with the arrival of higher cognitive abilities such as reasoning and speech.

3-8 months old

3 months old

Awareness May respond to mirror image by smiling. Stops sucking to listen to parent's voice.
Language Whimpers, squeals, chuckles, gurgles at back of throat. Stimulated to make sounds by hearing others talk.

5 months old

Awareness May drop object just to watch parent pick it up. Looks at where object falls from and where it lands on the floor.
Language Watches mouths intently and tries to imitate inflections. May start to utter consonant sounds like "m" and "b."
Memory May anticipate a whole object after seeing only part of it.

7 months old

Awareness May sort toys like blocks by size.
Language May make several sounds in one breath. Recognizes different tones and inflections.
Memory Improves memory by playing hiding games and by observing the comings and goings of others. Remembers that a jack-in-the-box pops up at the end of a song.

4 months old

Awareness May sense strange places or people.
Language May babble routinely to himself or to others. May raise voice as if asking a question.
Memory Distinguishes who's who in his life. May recognize mother in a group of people.
Tips Engage child in face-to-face talk. Mimic his sounds to show interest.

6 months old

Awareness May perceive cause and effect: wave the rattle and it makes a noise.
Language Learns to make new sounds by changing shape of mouth.
Tips Try to phase out baby talk and use more adult language around child.

8 months old

Language Starts to imitate a broader range of sounds: Responds to familiar noises by turning head and torso.
Tips Remembers how to respond to specific phrases: raises his arms when he hears "so big."

One Word at a Time

Babies understand more than they can say at first, so don't be discouraged if your child's first words take time. Speak to your child constantly. During the second year, a toddler discovers that everything has a name, and vocabulary explodes:

Age	Average number of words
12 months	3
18 months	22
2 years	272
3 years	896

Age	Sounds mastered
4-7 months	First language-like sounds: "eee-eee," "ooo-ooo"
7-9 months	First well-formed syllables: "ma-ma," "da-da"
9-12 months	Melodic babbling
Around 12 months	First words
18-20 months	First word combinations
Around 2 years	First sentences

9-16 months old

9 months old
Language May respond to his name and other words, like "no." Listens intently to conversations. May say "ma-ma" and "da-da." Likes to imitate coughs.
Memory Notices when someone leaves room and anticipates their return.

10 months old
Awareness May be able to determine heights and edges of objects.
Language Adds gestures to words: waves when saying "bye-bye" or shakes his head while saying "no."

11 months old
Language Imitates word sounds as well as actions. Learns the meaning of words by hearing them used in different situations.
Tips Games like peekaboo and pat-a-cake stimulate baby's memory skills.

12 months old
Language May babble short sentences that only he understands. Shows more control over intonation and inflection. May say two to eight words like "wow" or "hi."

13 months old
Awareness By imitating adult actions, she learns that objects have functions. Uses toy telephone like a real phone.
Language May not say full words yet but gestures to complete idea. Says "ba" and points to ball.

14 months old
Awareness Understands that she can make things happen by her actions.
Language Enjoys rhymes and jingles. Expresses needs mainly through gestures: brings books to parent to read.

15 months old
Language May follow simple commands like "come here." Points to familiar objects when requested. Recognizes names of major body parts.
Tips Develop associations by giving word labels to everyday objects and activities.

16 months old
Language May say six or seven words clearly. Enjoys word games and singing songs like "Pop Goes the Weasel."

Stimulating Solutions

Holding a child's interest for more than two minutes can be a challenge, but there's no need to dash to the toy store for a cure. Some of the best learning tools are right in your house:

Socks: Teach colors by sorting socks with child.
Fabrics/materials: Stimulate baby's touch with materials like fur, tissue, felt and sandpaper.

Old magazines: Test memory by asking baby to point out familiar objects like animals and food.
Stairs: Practice counting when climbing with child.

17-24 months old

17 months old
Language May start to use words to express needs: says "up" to be held. Enjoys pointing at pictures in books. May understand more words than can say.
Tips Speak slowly and give child time to respond.

18 months old
Awareness May grasp the idea of "now."
Language Vocabulary explodes. Child starts learning as many as 12 words a day. "No" is chief word. Points to own body parts or to pieces of clothing when asked. May refer to self by name.
Tips Asking child simple questions stimulates decision-making process.

19 months old
Awareness May be aware of cause and effect but not of potential dangers. Realizes doors open and shut, but may not know to keep hands from getting caught.
Language Focuses on words and objects that are central to her life.

20 months old
Language Near end of second year, she learns that everything has a name and constantly asks, "What's that?" May combine two words like "all gone."
Memory May be able to recall a familiar object or person without seeing or touching it.
Tips Do not pressure a child to speak. Acknowledge her body language but let child hear the words that complement the gesture.

21 months old
Awareness Improving memory skills may allow child to make right associations. Matches shoes with the correct family member.
Tips Explain safety in simple terms. Feeling the heat from a stove teaches the meaning and danger of "hot" objects.

22 months old
Awareness Recognizes when a picture book is upside down. Learns to turn pages one at a time.
Language Enjoys listening to simple stories. May take the lead in conversations and use words to express feelings or ideas.

23 months old
Language May use words to express frustration or anger. At times, still relies on facial expressions or an occasional scream to communicate feelings.
Memory May follow simple directions, but attention span is fleeting.
Tips Have genuine two-way conversations with child. Try not to respond with "uh-huh." A child will recognize when you are not listening.

24 months old
Language By end of second year, some children may have a vocabulary of more than 200 words. Mimics adult inflections and actions.
Memory May grasp meaning of "soon" and "after dinner..." but has limited knowledge of days and time.

2-3 years old

25-29 months old
Awareness Starts to solve problems in his head. May understand number concepts like ordination (one dog, two dogs) and the process of classification (a cat is an animal).
Language Vocabulary grows rapidly and child starts combining nouns with verbs to form three- to four-word sentences. Begins to use pronouns, such as "I" and "me," and other parts of speech. May begin to ask "why" questions. Pays attention to what others say, whether to him or to someone else.
Tips To keep his attention, choose books that encourage touching and pointing to objects.

30-36 months old
Awareness Understands relationship between objects. May sort out toys by shapes and colors. By the age of 3, has very one-sided reasoning and still cannot see an issue from two angles.
Language May grasp two- or three-part command. Can follow story line and remembers many ideas presented in books. May correctly name colors.
Memory Becomes more focused on activities like reading and drawing. May tell people his age but has no sense of the length of a year.
Tips Do not expect child to use perfect diction. If he stutters, set an example by talking calmly and correctly. Slow down speech and try not to draw attention to his difficulties. Help child use words to describe emotions.

BY JENNIFER LACH

SOURCES: "THE EARLY CHILDHOOD YEARS: THE 3 TO 6 YEAR OLD," "THE SECOND TWELVE MONTHS OF LIFE" AND "THE FIRST TWELVE MONTHS OF LIFE" BY THERESA AND FRANK CAPLAN; "CAREGIVING FOR YOUR BABY AND YOUNG CHILD" BY STEVEN P. SHELLOV, M.D.; "YOUR BABY & CHILD" BY FENELOPE LEACH; "THE BABY BOOK" BY WILLIAM SEARS, M.D., AND MARTHA SEARS, R.N.; PARENTS AS TEACHERS NATIONAL CENTER, INC.; MARY T. CHUGANT, M.D., WAYNE STATE UNIVERSITY'S CHILDREN'S HOSPITAL; DORLING KINDERSLEY'S "ULTIMATE VISUAL DICTIONARY"



HEALTH

Few areas of medicine have changed as dramatically as pediatrics. Just a couple of generations ago, parents of young children worried about polio, measles, rubella and whooping cough. Today's concerns are different: asthma, antibiotics and new vaccines.

You've Come a Long Way, Baby

By Russell Watson and Brad Stone

VICKI AND ARTHUR WOHLFEILER OF BEACHWOOD, Ohio, had two children, the younger one 11, when their daughter Carly was born in the spring of 1994. Carly turns 3 this June, and already she has given the Wohlfeilers a broader perspective on child rearing; they have now done it in the 1970s, '80s and '90s. A lot has changed. There are new medicines—the Wohlfeilers are particularly grateful for over-the-counter ibuprofen—and toys are generally safer. It's much easier

now to raise a healthy baby, they say. Some changes have made the job more difficult; health insurance, for one, is maddeningly more complicated. "It's a trade-off," says Vicki, 46. "But it's generally easier, especially since, this time, we know what to expect."

Everyone goes into child rearing with a medicine chest full of folk wisdom: Feed a cold, starve a fever. Don't give your baby a bath when she has a cold. Teething can cause a high fever; aspirin is a

The ideal pediatric practice is a medical ho

good way to bring it down. Today pediatricians would quarrel with those bromides—and even with some of the advice they themselves may have dispensed a decade ago, for few areas of medicine have changed as drastically as pediatrics. Here is a look at some of the new thinking that affects the health of every child.

The immunization push: The most important thing parents can do is make sure their children are properly vaccinated. But getting the right shots, in the right sequence, at the right time isn't always easy, because the immunization cookbook keeps changing. Currently, the American Academy of Pediatrics (AAP) recommends that, in the first 18 months of life, children receive 10 vaccines, some in multiple doses, some in combination with others. Many are familiar: measles, mumps, rubella, polio, diphtheria, tetanus and hepatitis. Among the newer vaccines is *Haemophilus influenzae* b, known as "Hib," which immunizes against bacteria that can cause several dangerous ailments, including meningitis; it was approved for infants under 1 year of age only in 1990. And just last year, the Food and Drug Administration approved a new toxoid against per-

tussis (whooping cough) that has fewer side effects than the previous one.

One of the more controversial immunizations is the two-year-old vaccine for chickenpox. Some parents argue that because the disease is a normal and relatively harmless affliction of childhood, their kids should be spared this particular needle. But the AAP recommends the vaccine for all children between 12 and 18 months who have not already had chickenpox. The disease is more severe if it occurs after puberty, often turning into pneumonia. And at any age a poxy child is trouble for parents. "It's more of an economic issue," says Dr. Harry R. Lubell, a pediatrician in Sleepy Hollow, N.Y. "With two parents working, they're going to lose a week of work for each child who gets chickenpox."

Overall, American children are better protected by vaccines than ever. According to the federal Centers for Disease Control and Prevention (CDC), 75 percent of children between 19 and 35 months are up to date on their shots, compared with only 55 percent five years ago. And new vaccines are on the way. "I fully expect we'll have vaccines for all common



JOHN GRIFFIN - REPUTATION

51% of all parents worry that their child will have a serious accident or illness; 35% worry about finding good health care for their kids

ailments in 10 years' time," says Lubell.

The age of asthma: But for now, kids still get sick. The leading chronic illness among American children is asthma. It affects about 4.8 million youngsters under the age of 18, and the number of cases has risen nearly 80 percent in the last 15 years, calculates the American Lung Association. The reason isn't entirely clear. The cause may be envi-

The Top 10 Health Worries

Babies don't break, but some symptoms are cause for real alarm

YOU'VE JUST BEEN HANDED your seven-pound bundle of joy and your first reaction is: Help! How do I keep from breaking it? Take heart. Babies may not bounce, but neither do they get a fatal infection if they suck a dirty thumb. Here are the top 10 conditions that parents of 0-to-3s should look out for:

1. It isn't called the common cold for nothing. In their first two years, most children will have eight to 10 colds, complete with runny nose, sneezing, decreased appetite, cough and sore throat. Most toddler colds aren't serious. But in infants under 6 months, colds can develop into bronchiolitis (see worry No. 2),

croup (a distinctive barking cough) or pneumonia. If the baby is irritable, feverish, coughing, breathing rapidly or uninterested in eating, her cold could be developing into some-



JOHN GRIFFIN - REPUTATION

A little boy shows the telltale spots of itchy chickenpox

thing worse. Parents should call the pediatrician.

2. "All that wheezes is not asthma," says Dr. Joseph Zanga of the American Academy of Pediatrics. In infants, wheezing, accompanied by rapid breathing, is more often a symptom of bronchiolitis, a viral infection of the lungs' small breathing passages. Treatment includes saline drops in the nose and a nasal aspirator. Parents should keep the home free of cigarette smoke and use clean humidifiers (dry air aggravates nasal passages and sore throats). Severe cases, where babies turn blue around the lips and fingertips from lack of oxygen, may require hospitalization.

3. Two thirds of all children will have at least one ear infection ("acute otitis media") by their second birthday. Most pediatricians prescribe antibiotics; left untreated, infections can lead to scarring and hearing loss. But recently, questions have been raised about whether antibiotics fight ear infections any better than the body's natural immune system does (page 44).

4. High temperatures make kids miserable and parents nervous. But fevers are the body's natural defense against infection, so some pediatricians let them run their course. Others prescribe acetaminophen. (Aspirin is out because of its link to Reye's syndrome—a rare but serious illness that can damage the brain and liver.) Because newborns' immature immune systems make them more suscep-

...that offers parents round-the-clock help



Vaccines work wonders, but they don't stop ear infections

ronmental—air pollution, tobacco smoke, allergens in poorly ventilated homes, even cockroach droppings—or it may be that more kids are in day care, where they are exposed to other kids' germs.

Asthma restricts breathing by clogging the airways; an attack can be treated with inhalers

first six months of life. The cause of SIDS isn't known. Some kids have a slightly higher risk than others. They include premature babies and those with breathing problems arising from the way their brains regulate respiration. Researchers also think some crib deaths may be caused by placing babies

that dilate the bronchial passages. Asthma cannot be prevented entirely, but its effects can be diminished in several ways. Cleaning up children's surroundings—rugs vacuumed, bedding laundered—and the air they breathe (no tobacco smoke) is an obvious step. As long as they manage the disease properly, parents don't have to treat asthmatic children like babies all their lives. "People should realize that asthma is common, and children don't have to live sedentary lives because of it," says Dr. Richard Evans of Children's Memorial Hospital in Chicago.

Fighting crib death: Sudden infant death syndrome (SIDS), the dreaded "crib death," kills about 3,000 babies a year, 95 percent in the

face down on blankets or other soft bedding. Several methods have been suggested for reducing the risk of SIDS. The most promising is to lay babies on their sides or backs. The AAP began to recommend that five years ago, and between 1993 and 1995 the number of crib deaths dropped 30 percent. Researchers also recommend breast-feeding, which helps fight respiratory ailments and allergies. Parents also should keep their babies away from tobacco smoke, which can clog breathing passages.

Other precautions are more controversial. Electronic monitors can warn of changes in breathing and heart rate, but they also produce frequent false alarms. Some researchers suggest that mothers should sleep with their babies, arguing that the mother will be more alert to any crisis, while her presence alone may help to rouse a child who has stopped breathing. Other researchers oppose the practice, citing the danger of rolling over on the baby.

Heading off trouble: Doctors are more aware than ever of the need for preventive measures. That's partly because of the move to cost-conscious managed care. But in addition to saving money, prevention produces healthier babies. Parents still



MINA BERMAN—SIPA PRESS

A cold aggravates a 3-year-old's asthma

to unusual infections, their fevers should be monitored closely: temperatures above 103 need immediate medical attention. "We hop on it very quickly," says Dr. Alan Woolf of Children's Hospital in Boston. Toddlers, fevers that reach 103 or linger for more than a day or two also concern docs.

5 The most common cause of vomiting in young children is a stomach or intestinal infection. But vomiting can also be a symptom of a more serious illness like pneumonia, meningitis or appendicitis. Danger signs include severe abdominal pain, repeated vomiting that lasts more than 24 hours and blood or bile. Most vomiting will cease on its own, but doctors recommend extra fluids to prevent dehydration.

6 Symptoms of dehydration include a parched, dry mouth, less urina-

tion, irritability and listlessness. Children should be given small amounts of "rehydrating" liquids—electrolyte solutions that contain a balance of salt, sugar and minerals. Liquids should be administered slowly—first teaspoons, gradually tablespoons. Dehydration is dangerous because it can lead to kidney failure, shock and even death: severe cases may require hospitalization for intravenous rehydration.

7 Diarrhea generally goes away by itself within a few days. "Except for a somewhat sore bottom, the infant will be fine," says the AAP's Zanga. Sweet liquids like juices and Jell-O should be avoided: sugar aggravates diarrhea. Give small amounts of liquid to prevent dehydration.

8 Diaper rash, usually caused by wet diapers that stay on too long, is

easy to identify because of where it appears. Impetigo, a skin infection characterized by pimply, crusty, itchy sores, is common in 2- and 3-year-olds. Rashes and skin irritations are seldom dangerous unless accompanied by other symptoms, especially a high fever. "That's a child I want to see immediately," says Woolf, because it can indicate a more serious bacterial infection.

9 When a baby or toddler falls from a height much greater than a bed, watch for repeated vomiting, clumsiness or dizziness. Any could indicate a brain injury and require immediate medical attention.

10 Parents often worry that their child is growing too fast or too slow or taking too long to walk or talk. But many delays simply reflect a child's unique developmental schedule.

"There isn't a single age that a child has to develop a particular trait," says Dr. Ron Kleinman of Massachusetts General Hospital. "There's a range for all of us."

CLAUDIA KALB in Boston

have a lot to learn. Though most know good hygiene is essential, few wash hands—their own or their children's—as often as they should. Many germs spread more readily by hand than through the air.

The best thing parents can do to ensure preventive care is to maintain a strong relationship with a pediatrician—which isn't easy in underserved poor areas or when health-insurance or managed-care arrangements mandate a change of doctors. The AAP calls the ideal pediatric practice a

"medical home," a 24-hour-a-day service to which parents can comfortably turn, by telephone if not in person, whenever they need help. "The closer the relationship parents have with a pediatrician, the more potential there is for children to stay healthy," says the AAP's Dr. Thomas Tonniges.

Early diagnosis is one benefit. "If hearing loss is detected in a child between the ages of 4 and 6 months, the outcome is significantly improved," says Tonniges. "A dislocated hip can be identified in a newborn and treat-

ed conservatively with a sling. But wait until the child is walking, and he may need surgery." Without a primary physician, parents of sick kids all too often end up in hospital emergency rooms, where they generally encounter long waits, high costs—and a doctor who has never seen their child before. With all the recent advances in medical science and those still to come, today's toddlers have unequaled prospects for long-term health. But their parents have to know how to make the system work for them. ■

To Dose or Not to Dose?

New studies suggest that antibiotics may be no more effective than the body's immune system in battling ear infections

THE INTRODUCTION of antibiotics during World War II represented perhaps the greatest medical advance since the discovery that drinking water should not be taken from a dirty well. So what better to sic these miracle drugs on than middle-ear infections, that scourge of childhood? Otitis media accounts for more visits to pediatricians than any other illness (24.4 million in 1990, up almost 150 percent since 1975). Sure enough, the usual treatment for otitis media these days is a 10-day course of the antibiotic amoxicillin. Yet it remains such a confusing illness that doctors continue to argue about how to treat it, and even about whether antibiotics make any difference.

Otitis media may be a consequence of children's anatomy (diagram). Most of the time, the eustachian tube allows air to flow into the middle ear. In infants and toddlers the tube's geometry allows it to be blocked by, say, a cold. Bacteria in the nose can then ride a river of mucus upward to infect the middle ear. The outward symptoms of pain and fever mark this as acute otitis media (AOM).

In 1994 a group of re-

searchers at George Washington University and the University of Minnesota looked into just how good antibiotics are at curing AOM. Using a statistical technique called meta-analysis, they combined the results of 33 earlier studies evaluating the efficacy of various antibiotics. It turned out that the drugs have only about a 14 percent advantage over the body's own immune

system. In other words, for every child who needs antibiotics to clear the infection, six can recover without them.

How can this be? Cells lining the middle ear produce proteins called immunoglobulins that interfere with the bacteria's ability to infect; enzymes and killer cells destroy bacteria outright. "You're overtreating six patients to capture the seventh who's

going to get in trouble," says Dr. Charles Bluestone, the director of pediatric otolaryngology at Children's Hospital in Pittsburgh. "The problem is, we don't know which is which."

So doctors treat them all. That avoids complications like meningitis, an infection of the lining of the brain, and mastoiditis, an infection of the bony space next to the middle ear. Both virtually vanished with the use of antimicrobials. Today all the common AOM bugs are becoming more and more resistant, but few doctors—and fewer parents—will leave a child's ear infection up to her immune system.

The confusion extends to otitis media with effusion (OME), a painless condition in which the eustachian tubes are blocked and the middle ear fills up with fluid. It almost inevitably follows AOM, and can result in mild hearing loss. In 90 percent of cases hearing is back to normal in three months or less—antibiotics neither help nor hinder. Whether that loss affects a child's language development is hotly debated, as are possible complications of surgery to implant drainage tubes.

At least OME has government guidelines for treatment, like waiting three months before surgery. No such guidance exists for AOM. "We're still at a point where the risks of not treating outweigh the risks of treating," says Jack Paradise, a pediatrician at the University of Pittsburgh. "That's a delicate balance that could change." Meanwhile, parents watch and wait.

Listening to the Middle Ear

The shape and position of their eustachian tubes make infants vulnerable to ear infections. Adult tubes are narrower and at a steeper angle, so they drain better.

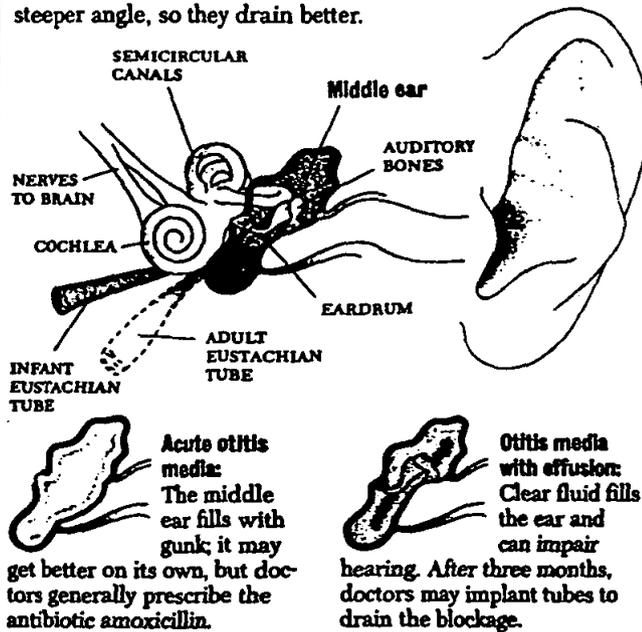


DIAGRAM BY CHRISTOPH BLUMRICH—NEWSWEEK

ADAM ROGERS

Giving Infants a Helping Hand

Of course kids need hugs. But physical contact may also help preemies gain weight faster and healthy babies digest food better.

BY SARAH VAN BOVEN

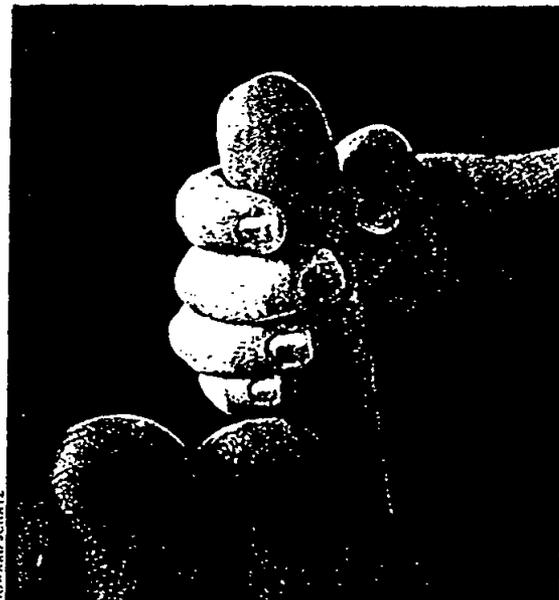
IN BETWEEN CRUSADES AND IDEOLOGICAL battles with the pope, the Holy Roman Emperor Frederick II had time to conduct a little 13th-century-style child-development research. He removed a group of babies from their families and handed them over to nurses who attended only to their most basic needs—feeding but not holding them, bathing but not hugging them. Frederick wanted to learn what language the infants would speak if they never heard adults talk or sing a lullaby. He learned something else instead: the children all died. As one 13th-century historian explained, Frederick “laboured in vain ... For they could not live without the petting.”

Fortunately, scientists now do more compassionate research. But their work with fragile neonates and classrooms full of romping preschoolers points toward much the same conclusion: touch is vitally important to the development of healthy, happy children. Whether bolstering the immune system or simply increasing communication between parents and children, an extra dose of cuddling and massage appears to have many positive effects.

At the University of Miami's Touch Research Institute, director Tiffany Field can rattle off study after study on the effects of touch. Premature babies given daily massage gain 47 percent more weight and are discharged from hospitals six days earlier—at a savings of \$10,000 each in medical costs. Cocaine-addicted and HIV-infected newborns show lower levels of stress as well as better weight gain and motor skills with touch therapy. From colic to sleep disorders to hyperactivity, therapeutic touch seems beneficial. Says Field, “Most of us think touch only has psychological benefits, but it's actually an important stimulus to the central nervous system.”

This stimulus works in

91% of all parents say that they hug and cuddle their young child every day; **88%** say that they play with their child every day



Howard Sclatz
Feel the power: In case parents need another excuse to cuddle a baby, science shows it's therapeutic, too

several ways. Biological psychologist Saul Schanberg of Duke University found that newborn rat pups failed to grow when taken away from their mothers. Without regular maternal licking, pups showed decreased levels of important growth hormones. But when a lab assistant imitated the tongue strokes with a wet paintbrush, hormone levels rose and the pups resumed growing. Similarly, studies have shown that touch therapy can also lead to weight gain in human babies. “The pressure stimulates a branch of a cranial nerve called the vegetative vagus,” says Field. “It activates the gastrointestinal tract, releasing hormones like insulin.” The higher insulin levels make food absorption more efficient—and babies can grow faster. According to Field, touch also decreases stress. Infants who receive massage show lower levels of the stress hormone cortisol in their urine—a hormone that

kills important immune cells at high levels.

Little 3-month-old Alexandra Reynolds doesn't know anything about cortisol levels. She just knows that she likes the strokes her mother, Tracy Reynolds, is practicing on her chubby arms and torso during an infant-massage class at New York City's 92nd Street Y. “At home I massage her after her bath, or when she's a little crabby, and she calms right down,” says Reynolds as Alexandra coos and waves her fists, never taking her eyes off her mother. An estimated 10,000 parents learned baby massage last year, says Mindy Zlotnick of the International Association of Infant Massage. The association considers massage a way for parents to get to know their babies' nonverbal cues, and for both to relax together. “I'm glad brain research is documenting the power of touch,” says Zlotnick. “But for parents who take my classes, the baby's reaction is all the proof they need.”

While Alexandra and her mother easily grasp the power of touch, the medical establishment isn't always quite as enthusiastic. Many doctors who heartily endorse the idea of extra hugs and back rubs stop short of prescribing regular massage for the purpose of helping babies to grow or re-

ducing their stress. After all, touch research is still a relatively new field. Cautions Dr. Neena Modi, a pediatrician at London's Hammersmith Hospital, “It is very correct for the medical establishment to be skeptical. We're only at the beginning stage of addressing basic research questions.” Still, more and more neonatal ICUs like those at Presbyterian Hospital in Dallas and the University of New Mexico Hospital in Albuquerque are beginning to utilize touch therapy, and the popularity of parental infant massage continues to grow. And if it doesn't accomplish anything else, touch research certainly gives parents a good justification for extra hugs and kisses.

Schanberg still laughs when he recalls his elderly grandmother's reaction to his discovery of a link between touch and growth. “She said, ‘You went to Yale to get a Ph.D. and to get an M.D., and that's what you've learned? To touch a baby is good?’ I told her, ‘Grandma, sometimes science is slow.’” But after seven centuries, at least science is catching up with Frederick II. ■

'Your Baby Has a Problem'

Three out of 100 newborns suffer birth defects. But more and more of them can now hope to lead normal lives.

BY ROBINA RICCIETELLO
AND JERRY ADLER

THERE IS A PROBLEM," THE doctors say. But even before the words are out you've seen it in their eyes, sensed it in the way they peered at the baby as it struggled into life, bearing the mark of a moment when, in the twinning dance of chromosomes that we call conception, something microscopic stuck or came undone. A problem. Two soft folds of tissue, groping toward one another in the darkness of the womb, failed to meet, somewhere in the three-dimensional complexities of the embryonic heart. Or the skein of nerves, spreading intricately from the bulb of the brain, left an unaccountable gap where no sensations flow, no muscles feel the impulse to move. And of all the things you might have wished for your child—wisdom or beauty or simple happiness—you are left forever after with one simple desire, a word that now embodies all your hope and longing: normal.

But these problems are a part of the human condition, exactly as prevalent now as they were when the United States began keeping detailed statistics in the 1960s, or for that matter in studies that go back to the 1890s: out of 100 babies, on average three are born with anomalies that will seriously affect their health. In one sense, this should be reassuring for expectant mothers who get nervous driving under electrical-power lines: while there is no doubt that drugs, ra-



Benjamin Ford Krifka (above and right), a Down syndrome child, attends preschool with normal kids

diation or industrial chemicals are capable of causing birth defects, these events are so rare as to be statistically negligible. (To the degree that birth defects are caused by environmental toxins, says Dr. Godfrey Oakley, head of the division of birth defects and developmental disabilities at the federal Centers for Disease Control, danger is more likely to be found in molds, vegetables or something else that has been with humanity for much longer than Alar or saccharin.) On the other hand, the great advances of the last 25 years in genetic science and embryology haven't done much to



bring the rate of birth defects down, either. Surprisingly little research has been done on birth defects specifically, as distinct from human genetics; it was just last year that the CDC committed a modest \$3 million to set up five centers to study the estimated 75 percent of birth defects whose causes remain a mystery.

Some problems are very well understood and can be prevented, although the prevention in some cases takes the form of an abortion. Abolishing fetal alco-

hol syndrome, which afflicts one baby in 1,000 with developmental problems, is as easy, and as difficult, as getting pregnant women to control their drinking. Four hundred micrograms daily of folic acid, taken before and during pregnancy, cuts by two thirds the risk of having a baby with neural-tube defects such as spina bifida, a crippling failure of the spinal cord to close. Yet "the best evidence we have is that only one out of four women is actually following that advice," Oakley says. One problem: the vitamin must be taken in the very first weeks after conception; starting only after a preg-



NINA BERMAN—SIPA

in 20 years, to approximately two in 1,000 births. This is because doctors are now keeping alive many more very premature and low-weight babies, who are prone to brain damage from lack of oxygen at birth. Yet a recent study showed a virtual elimination of cerebral palsy in at-risk babies whose mothers received the drug magnesium sulfate, which appears to protect the brain against the toxic effects of oxygen deprivation. Thus the partial conquest of this crippling condition may yet be at hand, allowing for the fact that it can also be caused by lead poisoning, head injuries, encephalitis and probably several other things that we don't even know about yet.

But cerebral palsy is far from the worst problem a baby can be born with. The very worst things that can go wrong with an embryo are never encountered, because they are lethal long before birth, in some cases before the woman even knows she has conceived. By definition, a fetus born alive is a survivor, although sometimes the parents have no choice but to start mourning there and then. Babies born without brains (anencephaly) or with extra copies of chromosomes (trisomy) rarely live for more than a few days or weeks, except in some special cases, of which the best known is Down syndrome.

These conditions are rare, however. The most common lethal defects, although still accounting for only a fraction of 1 percent of all births, are malformations of the heart. Fortunately, these are problems that surgeons have learned to treat (chart). Few conditions are more devastating than hypoplastic left-heart syndrome, in which the main pumping chamber fails to develop, and as recently as 15 years ago it was invariably fatal. But a three-stage operation developed by Dr. William I. Norwood, in which the right ventricle is made to do the job of its undeveloped partner, now keeps some of these children alive, at least until they can receive a transplant. Transposition of the aorta and pulmonary artery, which results in the heart's recirculating unoxygenated blood out to the body, used to be fatal about 90 percent of the time, but now has a 90 percent survival rate after surgery. Advances such as these, plus better neonatal intensive care generally, have contributed to what Dr. Richard B. Johnston, medical

⊕ When Things Go Wrong: Birth Defects

Birth defects can arise from inherited genetic abnormalities as is the case with sickle cell anemia, from viruses such as those responsible for rubella, from poor prenatal care—or from reasons so mysterious they can only be labeled fate:

Most common birth defects*	Occurrence	Other birth defects	Occurrence
Congenital heart defects	1/110	Spina bifida	1/2,000
Narrow stomach/intestine junction	1/250	Cystic fibrosis	1/2,000**
Congenital hip dislocation	1/400	Fragile X syndrome	1/2,000††
Sickle cell anemia	1/400†	Congenital HIV infection	1/2,400
Cerebral palsy	1/500	Missing/underdeveloped limbs	1/2,500
Cleft lip/cleft palate	1/730	Duchenne muscular dystrophy	1/3,500***
Clubfoot	1/735	Anencephaly	1/8,000†††
Down syndrome	1/900	Congenital rubella syndrome	1/100,000
Fetal alcohol syndrome	1/1,000		
Hearing impairment	1/1,000		

*LIVE BIRTHS, IN THE U.S. †BLACK BABIES. **WHITE BABIES. ††MOSTLY BOYS. ***BOYS. †††OCCURS IN 1/1,000 TOTAL PREGNANCIES, BUT BABIES ARE OFTEN STILLBORN OR ABORTED. SOURCES: THE MARCH OF DIMES, CENTERS FOR DISEASE CONTROL

nancy is confirmed may be too late. In the last four years, Oakley adds, there were more preventable birth defects resulting from folic-acid deficiency in the United States than in the infamous epidemic of thalidomide poisoning in Europe 40 years ago, when a drug prescribed to ease morning sickness turned out to cause babies to be born with flippers for arms and legs.

A more complicated case is that of cerebral palsy, a nerve disorder that can affect voluntary movements including walking, writing and speech. Many cases result from maternal infections during pregnancy, and when doctors began controlling these a generation ago they expected cerebral palsy to eventually disappear. Instead, the rate has increased by 20 percent

director of the March of Dimes, says is a 50 percent drop in deaths from birth defects since the 1960s.

Down syndrome in theory is completely preventable, in the sense that there is a reliable test for the extra chromosome known to be its cause, after which the pregnancy can be terminated. Of course, that's not a solution to everyone's taste, and around 10 percent of women who know their babies will be born with Down syndrome go on to have them anyway, says Dr. Barbara K. Burton, director of the genetics center at Columbia Michael Reese Hospital in Chicago. But even though the other 90 percent do have abortions, the number of Down syndrome babies born each year is not declining, because more women are becoming pregnant later in life, when the chance of having a Down syndrome child rises dramatically. Burton estimates that only 6 to 8 percent of pregnant mothers get the tests—

amniocentesis or chorionic villus sampling—that can detect the extra chromosome. Some of them may be put off by the slight risk of miscarriage, but a new test that may be available as early as next year promises to end that danger, according to Dr. Allen Horwitz of the University of Illinois College of Medicine. The procedure involves locating the infinitesimal quantity of fetal cells that cross the placenta into the mother's bloodstream, so only a sample of her blood would be required. "It's a way of finding samples of genes or chromosomes of the fetus without invading the uterus," says Horwitz.

And what of the mothers who have their babies anyway? A generation ago they would have been told that their child might never learn to speak, was certainly ineducable and probably should be sent to an institution—where, says David Patterson, president of the Eleanor Roosevelt

Institute (which promotes genetic research), life expectancy was around 9 years. Unnumbered thousands of children perished in neglect that way, before an astounding paradigm shift that began in the 1970s, with parents who insisted on taking their Down syndrome babies home with them. With adequate care, it turned out. Down syndrome children didn't have to die before the age of 10; life expectancy now is 58 and rising, according to Patterson. With someone willing to teach them, most could learn to read, and some, says Lori Atkins of the National Down Syndrome Society, even have driver's licenses. It is possible, in short, for a Down syndrome child to hold a job and live at least a version of the sort of life that every parent dreams of from the moment he or she hears the fateful news that a child has "a problem."

A normal life. ■

Finding a Web of Support

Online sites offer information and a sense of community

BY CARLA KOEHL

PARK BENCHES will always be great places to pick up parenting tips. So will back fences, doctors' offices and boardrooms. But for families of children with disabilities, all the chats in the world can't begin to provide the depth of information—and, often, the level of understanding and sympathy—that's available online. Which is why, for every major disorder and disease, it seems there's a Web site or online support group. It's also why some of the best Internet resources are created and maintained by the very parents who need them most.

Case in point: Portia Iversen. When her son, Dov, was diagnosed with autism at 21 months, Iversen feverishly hunted for information about the disease. "I would just spend all night going

on different neuroscience Web sites," she says. A relief? Sort of. Like so many mothers before her, she found it wasn't enough, especially for narrowing down the best research studies and finding the most plugged-in parents. So in November 1995, when Dov was 3½, the Los Angeles sitcom writer put her career on

hold to cofound **Cure Autism Now** with her husband, movie producer Jonathan Shestack. From CAN's Web site (<http://www.canfoundation.org/>), users can now get updates on research studies and grant proposals, and hyperlink to autism newsgroups.

Dozens of other top parent-created sites on everything from **Down syndrome** (<http://www.epix.net/~mccross/down-syn.html>), **Sturge-Weber syndrome** (<http://www.centex.net/~huntjul/index.html>) and **infantile Refsum's disease** (<http://www.pacificer.com/~mstephe/>) are connecting families to one another, going far beyond the fare offered in health sections of online services or even online parenting magazines. Along with **Parents Helping Parents** (<http://www.php.com/>) and the **Usenet's** hundreds of special-interest bulletin boards, they're creating a sense of community among families who—either because they live in remote areas or because they're coping with such rare diseases—would otherwise feel nothing but isolated.

Also keep in mind: some of the best sites are those whose sole purpose is to link users to as many different childhood-disability and disease pages as possible. **Internet Resources for Special Children** (<http://www.irsc.org/>) was created by Julio G. Ciamarra, whose son was born with cerebral palsy, epilepsy and moderate retardation. **Rare Genetic Diseases in Children** (<http://mccr4.med.nyu.edu/~murphp01/homenew/htm>) is maintained by staffers at the New York University Medical Center. **WellnessWeb** (<http://wellweb.com/index.htm>) pays such close attention to issues like treatment options, drug dosages and physician selection that it won a 1996 Best Site of the Year award from Net Magazine. Its **sickle cell anemia link** (<http://wellweb.com/index/qsickle.htm>) goes a lot further than other sickle cell sites to focus on the disease in African-American children. Another excellent site is the **National Institutes of Health home page** (<http://www.nih.gov>), where just typing "childhood" into the search engine field pulls up dozens of links to highly specialized research studies, including papers on acute lymphocytic leukemia. Try finding those on a park bench.

With JEANNE GORDON in Los Angeles



Double strand of hope: 'A Child's DNA Helix' marks a home page

DR. C. EVERETT KOOP

THE TINIEST PATIENTS

Fetal and pediatric surgery can save babies who once didn't have a chance

WHEN I BEGAN MY SURGICAL CAREER 55 years ago, there was no such thing as "pediatric surgery." Back in the 1940s there were only a handful of us who were devoted to what was then called child surgery, and we had to fight the medical establishment for many years before pediatric surgery was recognized as a surgical specialty. Now pediatric surgery is

not only a vital specialty but it has also given birth to a host of subspecialties including pediatric orthopedics, pediatric cardiovascular surgery, pediatric urology and pediatric plastic surgery—a list that indicates the range of conditions that can now be treated before a child is 3.

In the beginning we learned, from innovative surgeons like Robert Gross and William Ladd, the basic principles: that pediatric tissues are extremely delicate and easily traumatized, that children are not small adults and that you cannot control their physiology and pharmacology by just using fractions of adult measures. One of the most important lessons was on pediatric anesthesiology. Back in the beginning doctors knew they could put children to sleep, but they were not sure they could wake them up. Once we mastered that, a new world of possibilities opened up.

The first major accomplishment of pediatric surgery was convincing pediatricians and parents that some of the most deadly congenital problems could be corrected. When I entered the field the mortality rate for many of these birth defects was 95 to 100 percent. When I left pediatric surgery 35 years later, the former mortality rate of 95 percent had become the survival rate. Once, a pregnant woman sought my advice about the child she was carrying. She had already lost three children to a form of congenital bowel obstruction. We brought her to live with our family toward the end of her pregnancy and operated on the baby a few hours after birth, with great success. I can't think of anything in medicine that brings more joy than intervening surgically in the life of an otherwise doomed newborn, and changing a congenital death sentence into the prospect of more than 70 years of life.



C. Everett Koop: Witness to miraculous advances and everyday triumphs

Our ability to do this for youngsters under 3 has grown dramatically in the 1990s. Perhaps the most striking recent innovation is fetal surgery, operating on babies even before they are born. Fetal surgical repair of diaphragmatic hernias and lung cysts makes it possible for mothers to deliver healthy babies who otherwise would have been born in acute and possibly fatal respiratory distress. Recently Dr. Scott Adzick of Children's Hospital in Philadelphia removed a diseased lobe of the lung of a 22-week-old fetus, making it possible for the baby to be born at 35 weeks without heart failure and what would

have been fatal lung problems. And pediatric-transplant surgeons, who only a few years ago were frustrated by the shortage of pediatric donor livers, have learned how to transplant only a portion of an adult liver into a baby and get it to grow along with the child, restoring full organ function.

As in all medicine, technology offers new possibilities, such as laparoscopic surgery: using a flexible scope and other instruments inserted through an infant's navel, rather than traditional scalpel surgery. Advances in ventilation and oxygenation make it possible to turn blue babies pink in minutes. Lasers can remove birthmarks that traditional surgery never could. And advances in pain management have been extended to newborn surgery. Years ago, people never paid much heed to the effect of pain on newborns; some doctors believed that newborns did not even feel pain. Now aggressive pain manage-

ment in babies, including epidural and local anesthesia in addition to general anesthesia, lessens their pain and thereby quickens their postoperative recovery.

Just in my lifetime pediatric surgery has witnessed almost miraculous advances. And while the press often pays attention to the high-drama surgery of newborns, there are thousands of daily triumphs of pediatric surgery. We can repair simple hernias, correct deformed limbs and treat hydrocephalus. We can close spina bifida and repair cleft lips and palates. The women and men of pediatric surgery have made life not only longer but better for children and their families.

KOOP was surgeon general from 1981 to 1989 and is now senior scholar at the C. Everett Koop Institute at Dartmouth College.

Don't fret if your toddler throws broccoli. When children choose their own menus, they do surprisingly well.

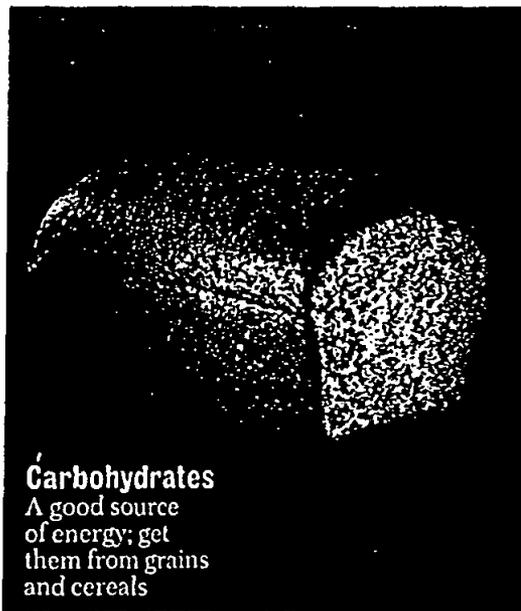
Beyond an Apple a Day

BY LAURA SHAPIRO

ELLYN SATTER, A dietitian and family therapist in Madison, Wis., likes to remember the small boy whose mother brought him into Satter's office because he was overweight. He sat miserably scrunched in a chair while Satter and his mother discussed his eating habits. Finally his mother groaned and said, "I've got another one at home who's too skinny. How am I supposed to get her to eat more, and him to eat less?" Satter's answer was blunt. "That's not your job," she said. "Deciding what they want to eat, and how much, is *their* job." At that, the little boy sat up straight in his chair for the first time and gave a huge smile.

The notion that children can and should take charge of their own hunger still makes parents uneasy. After all, who else is going to keep a toddler from eating nothing but Marshmallow Fluff sandwiches all day? But many experts now believe that we've badly underestimated kids' capacities for regulating wisely what and how much they eat. Satter, author of the influential guide "How to Get Your Kid to Eat ... But Not Too Much," advises parents to be gatekeepers, not food police. "Parents are responsible for choosing what foods to have in the house, and what to put on the table," she says. "Kids are responsible for what they eat."

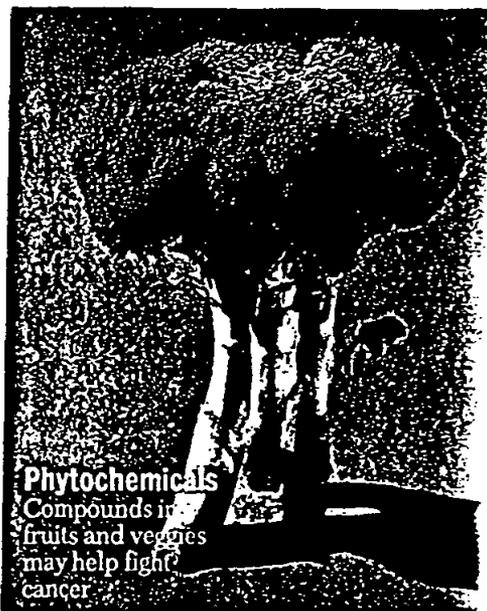
Excruciating though it may be to sit calmly through dinner while your toddler ignores the chicken and carrots in favor of two bread sticks and a cookie, research bears out Satter's dictum. "We've done studies over 10 years that show most little kids are pretty good at being responsive to



Carbohydrates
A good source of energy; get them from grains and cereals

the energy content of the diet," says Leann Birch, professor of family studies and nutrition at Pennsylvania State University. In one study, children selected their own lunch, but it was preceded by either a low-calorie or a high-calorie yogurt. Sure enough, over a period of days they tended to balance the two courses so that they got roughly the same number of calories every time. "If parents impose too much control over what kids eat, it impedes this ability to self-regulate," says Birch.

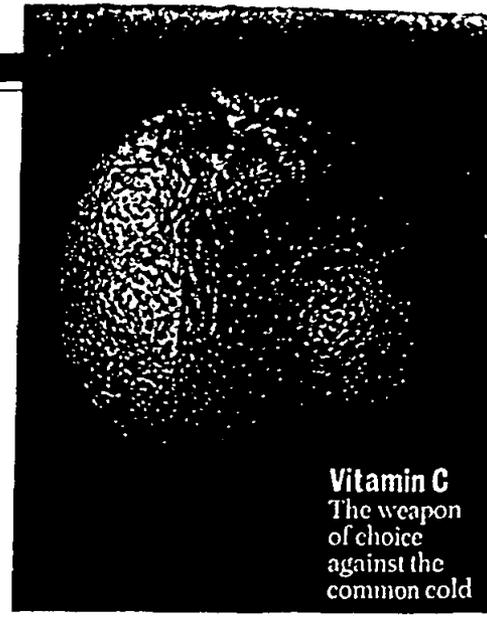
Unfortunately, children's marvelous regulatory mechanism does not appear to recognize the importance of cauliflower or leafy greens. On the contrary, under-3s have a finely honed "yuck" response that is readily activated by a single bite of any new food, particularly bitter-tasting ones. "We're omnivores, so we're programmed to eat lots of different things but to be very suspicious of anything new," says Linda Bartoshuk of the Yale University School of



Phytochemicals
Compounds in fruits and veggies may help fight cancer



Fiber
It can prevent later disease; kids don't get nearly enough



Vitamin C
The weapon of choice against the common cold

Medicine. That suspicion, which probably saved many a prehistoric tot from poisoning, now serves merely to drive parents crazy. Nutritionists agree that offering a new food up to a dozen times will usually wear down a child's resistance. There's also evidence that breast-fed babies may be a bit more open-minded than formula-fed babies, since the flavor of formula never changes. "We know from animal research that the more varied the mother's diet during nursing, the more likely a young animal would accept novel foods during weaning," says Julie Mennella of the Monell Chemical Senses Center in Philadelphia. A strongly flavored diet, of course, is just what many experts tell nursing mothers to avoid, for fear the babies won't like the milk. But Mennella found

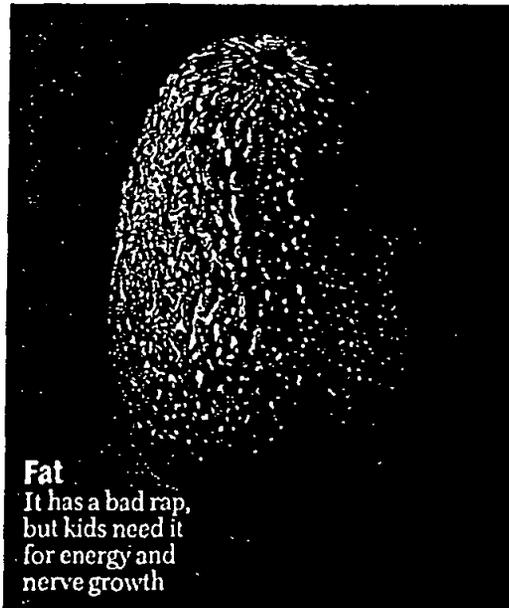
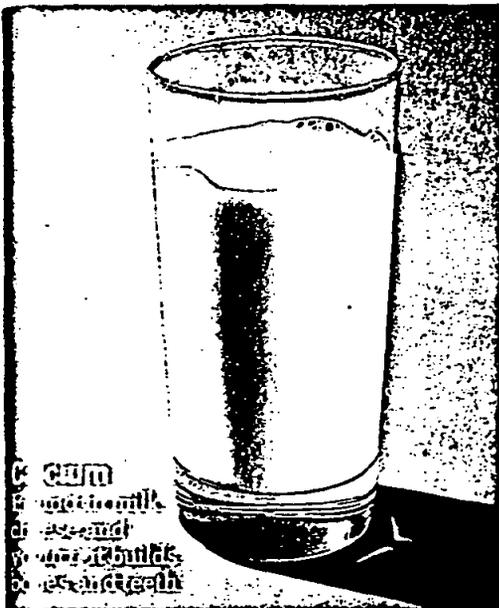
that when mothers consumed garlic, for example, their babies liked the novelty and stayed longer on the breast. "When a new food is introduced in mother's milk, you don't see aversions develop," says Mennella. "Mother's milk is a flavor bridge to the foods of the culture."

The most important reason to help kids learn to enjoy new tastes is that a varied diet of foods eaten for pleasure is likely to be a healthful diet. "Children love sweet tastes, and they like salty tastes. That's all hard-wired," says Yale's Bartoshuk. So kids need no encouragement to make fast food and junk food their favorites. Our national addiction to those foods contributes heavily to our rates of chronic disease. "Cancers form over 20 to 30 years, and heart disease builds up over time, too," says Tara Liskov,

a registered dietitian at Yale-New Haven Hospital. "That's the reason you want to start early with good habits."

Pediatricians have argued for years about whether to recommend low-fat diets for small children. It's clear that infants and toddlers grow so fast they need every calorie they can pack in. But a recent Finnish study showed that babies as young as 13 months did fine on a diet slightly restricted in fat. (In their first year, children need fat for neuronal and brain development, so dietary fat intake in the form of breast milk, formula or, later, cow's milk should not be restricted.) In addition, we know that heart disease can get started at an early age. Researchers at the Bogalusa Heart Study in Louisiana, where more than 17,000 young people have been examined in the past 23

years, conduct autopsies on children killed in accidents. They have found aortic fatty streaks—early precursors of atherosclerosis—in children as young as 3. "And there's new data that children with high levels of bad cholesterol in their blood have stiffer carotid [neck] arteries," says Christine Williams of the American Health Foundation in Valhalla, N.Y., where a three-year project is underway to reduce cardiovascular risk among children at nine Head Start centers. Cutting the saturated fat in their diets is a key goal. For children under 2, the American Academy of Pediatrics still recommends no restrictions. After that the AAP encourages a gradual reduction in fat over the next



Fat
It has a bad rap, but kids need it for energy and nerve growth

Eating Well for Two

PAYING ATTENTION TO the nutrients a baby receives should begin well before conception. Smart prenatal care now means "pre-conceptual care": because embryonic organ development begins about 17 days after sperm and egg unite—before many women realize they're pregnant—it is vital to eat the right things and avoid the bad things even before conceiving.

Women should get into shape before becoming pregnant, losing weight if necessary and developing a moderate ex-

ercise routine. They need a well-balanced diet with sufficient protein and calcium, and should replace any prescription drugs that could harm a fetus with safer ones. High on the danger list is Accutane (for acne and wrinkles), plus certain medications for high blood pressure, diabetes, epilepsy and manic depression.

The B vitamin folic acid is essential for the developing spinal column. A maternal deficiency can dramatically increase the risk of devastating "neural tube" defects such

as spina bifida (the failure of the spinal column to close completely, with resulting paralysis or even death) and anencephaly (a fatal absence of brain growth). There's also evidence that folic acid and other vitamins may help reduce the risk of heart defects and cleft lip and palate. Very few women get enough folic acid in their normal diet to prevent such problems. The U.S. Public Health Service therefore recommends that women take an extra 400 micrograms of folic acid daily, either as a supplement or in fortified cereal, starting a month before attempted conception and continuing

through the first trimester. (The FDA has approved adding folic acid to baking flour as of 1998, but women will not get enough of the vitamin through bread alone.)

There is no evidence that low intake of alcohol harms a fetus, though heavy drinking is associated with severe problems of growth and brain development. Obstetricians don't know what a "safe" level of alcohol is, so the easy fallback is to say don't drink at all. Smoking cigarettes during pregnancy unquestionably increases the risk of prematurity and low birth weight. And it's never too early to kick the habit.

few years, until the child is getting about 30 percent of calories from fat—the level recommended for adults. “With younger children, often all you have to do is change to 1 percent milk and lighter cheeses,” says Williams.

Scientists have long believed that a diet high in fruits and vegetables can help prevent many cancers, and both adults and kids are supposed to be eating at least five servings a day. It's not hard to do. A serving is only half a cup of cooked anything, or a whole fruit. But according to a recent study by Susan Krebs-Smith of the National Cancer Institute, most kids from 2 to 18 are falling short. Only one in five children under 5 gets the recommended five servings, and nearly half eat less than a single serving of fruit a day. “And we counted *everything*,” says Krebs-Smith. “We counted the raisins in the raisin bread.” More than a third of children eat less than a single serving of vegetables a day, and that includes french fries, which account for nearly a quarter of the total vegetables consumed by kids. These paltry levels of consumption also indicate that children are not getting enough fiber. “We have a new formula—the child's age, plus five grams, per day,” says Williams. “That's about double what most kids are taking in.” A 3-year-old could get eight grams of fiber by eating an apple, a slice of whole-wheat bread, a serving of broccoli and a carrot.

Fruit juice, which many kids seem to swig all day, is a poor substitute for whole fruit, water or milk. “Juice is really no different in calories from soda, and some kids don't have much more nutrition than soda,” says Liskov. “Apple juice has very few nutrients. I wouldn't give a child juice until 12 or 18 months, and little kids don't need more than about four ounces a day.”

But let's face it, the federal guideline that could persuade a resistant toddler to give the time of day to a lima bean hasn't been written. Can little kids thrive if they never eat anything green? “I think they can—mine did,” says William Tamborlane, chief of pediatric endocrinology at Yale-New Haven's Children's Hospital and editor of “The Yale Guide to Children's Nutrition.” “Look what's in vegetables: they're good sources of fiber, vitamins and minerals. But kids can get all that in a balanced diet from other foods. The main thing is not to make it an issue. Don't force-feed.”

So, yes, it's important for little kids to eat right. But it's even more important for them to like food, enjoy being at the table, know when they're hungry and quit when they're full. Parents may not be able to exert much control over the consumption of squash, but they have lots of influence over kids' emotional and psychological associations with food. That's where healthy patterns starting in childhood will last a lifetime. ■

Preventing :

Should babies be left to cry themselves to sleep? Should they sleep with you? Not even experts agree on the best bedtime formula.

BY DAVID GORDON

EVER WISH YOUR INFANT or toddler would learn to sleep like a baby? You're not the only one. Sheryl and Steve Hersch, of Wilton, Conn., tried a little of everything to help their daughter Melissa, now almost 2, settle into a good sleep schedule. They tried having her sleep in their bed. Wrong move: “Melissa's a noisy sleeper. She laughs and cries in her sleep. It's cute, but it also kept us up all night,” says Sheryl. They tried Dr. Richard Ferber's best-selling techniques, in which parents let the child cry and wait for ever longer intervals before comforting her. “It was hard to wait before going in,” says Sheryl. “Then when we did, she'd cry even more. After three days we gave up on it.” In the end, the couple inadvertently ended up where most parents of the last 50 years have begun: with Dr. Spock. “We found it was better to just let her cry it out. One night she just started sleeping well, and we haven't had a problem since.” So Spock's the answer? Not so fast. “I think every child is different,” says Sheryl. “You can't really learn it in a book. There's no magic formula.”

How to get a child to go to sleep—and sleep through the night—can be an exasperating riddle. It's certainly one of the most important to solve. Good sleep is crucial to good health: most growth occurs during sleep. Children who don't get enough sleep are less alert during the day and therefore more prone to accidents. And a sleep-deprived child is going to be crabby and impatient. Half of all children under 6 have, at one time or another, some kind of sleep difficulty, according to the nonprofit National Sleep Foundation, an informational clearinghouse. Small wonder that parents scarf up books, gadgets, videos—*anything*—to help get their children to sleep. They'll find, unfortunately, that even the “experts” can't agree on the best strategy.



For years, Dr. Benjamin Spock's classic “Baby and Child Care” supplied the conventional wisdom on all aspects of child rearing, including putting fussy children to bed. If they won't sleep, Spock suggested, let them cry it out. Fifty years later, Spock's advice hasn't changed much. Even the 1992 revised edition recommends putting a fussy baby to bed, leaving the room and letting him “cry furiously” until he falls asleep. In three nights, Spock promises, Baby will have learned his lesson. Make exceptions, and you're asking for a hard day's night.

Tough Love

NOW FERBER, HEAD OF THE CENTER FOR Pediatric Sleep Disorders at Children's Hospital in Boston, has taken over as top guru on children's sleep issues. His 1985 book, “Solve Your Child's Sleep Problems,” has, over time, become the strategy manual for bleary-eyed parents flummoxed by bedtime battles. In a sense, Ferber preaches a gentler version of Spock's tough love. Infants and toddlers learn by association, he says: teach a child he can fall asleep only while being held, rocked or fed, and he'll insist that those conditions be met night after night. Teach him he can sleep on his own, and he'll do that. If an otherwise healthy child fusses in the crib instead of going to sleep, Ferber advises parents to give the child a reassuring pat (not a comforting cuddle) and leave the room. If the crankiness continues, they should return and calmly reassure the child. Ferber suggests doing this at increasing intervals—5 minutes at first, then 10, then 15 and so forth. Within a week,

Hard Day's Night

the child should be trained ("Ferberized," as fans call it) to fall asleep on his own. "Bedtime should be a happy time," says Ferber. "Not just for babies, but for parents, too."

Not everyone is sold on Ferber's methods. Some doctors, like pediatrician and child-care author William Sears, criticize the seeming insensitivity of letting a child cry himself to sleep. Sears, coauthor of "The Baby Book," argues that babies should be "parented to sleep, not just put to sleep." Parents who resort to a strict bedtime program, he warns, fail to address the reasons for a baby's restlessness, which can include insecurity or physical discomfort. In



doing so, they risk losing an infant's trust.

Some specialists say the big sleep conundrum is a question not of how but where. For most of human history, having babies, and even toddlers, sleep in the family bed was the norm in most cultures—and still is outside Western societies, says James McKenna, an anthropologist at Pomona College in California. "Co-sleeping," he says, is naturally convenient for babies who are breast-feeding. Newborns also rely on proximity to their mothers to help regulate body heat, breathing and cardiac rhythms. In fact, McKenna's research suggests that co-sleeping may, in theory, reduce the chance of sudden infant death syndrome: a mother's tossing and turning will keep a baby from having long pauses in breathing, a suspected cause of SIDS. "Babies' bodies are designed to sleep next to their mothers," says McKenna.

Most experts frown on co-sleeping for a variety of reasons. For one thing, children are restless sleepers. They kick, clutch, grab

and poke. That may make it tough for parents to get the sleep they need. Then there's the potential loss of intimacy. "Co-sleeping can disrupt your entire life," says Deborah Tolchin, a New York pediatrician. "Your life shouldn't be totally dependent on your baby's sleep habits." Once co-sleeping begins, it may be hard to get a child to sleep on his own. "The older a child gets, the harder the habit will be to break," says Fairleigh Dickinson psychologist Charles Schaefer, coauthor of "Winning Bedtime Battles." "There are better ways of solving sleep problems."

Dream On

A LITTLE UNDERSTANDING OF THE SCIENCE of sleep can help make a baby's restlessness easier to deal with, too. Although every child is different, newborns usually sleep 16 hours a day or more. But infants have shorter sleep cycles with more periods of light, dreaming (REM) sleep. In fact, 50 percent of newborns' sleep is in the REM state, twice as much as adults'. They rarely sleep more than a few hours at a time and take a longer time to fall into deep, non-

46% of those who are in two-parent families say they and the other parent share equally in getting up at night when their child cries

dreaming sleep. Eventually, babies develop adultlike sleep patterns—and weary parents can expect more rest. By the 6-month mark, infants will have learned to sleep for longer stretches, especially after giving up night feedings in the fourth or fifth month. Toddlers, too, experience much more active sleep: one third is typically in the REM state, which can account for more night wakings.

So what is the best way to turn bedtime into happy time?

Groups like the American Academy of Pediatrics suggest, for infants, warm baths and soothing massages to lull them to sleep; the white noise produced by running water, a fan or a metronome might do the same. Soft music works, too. (Studies show babies like classical best.) For toddlers, establish a regular bedtime routine that might include a quiet activity, such as reading a bedtime story or playing with a toy to help the child unwind. As sleep specialist Dr. Mary Carskadon of Brown University says: "Families need to find a plan that works for them, one that gives the children, and their parents, adequate sleep." No fuss from us about that. ■



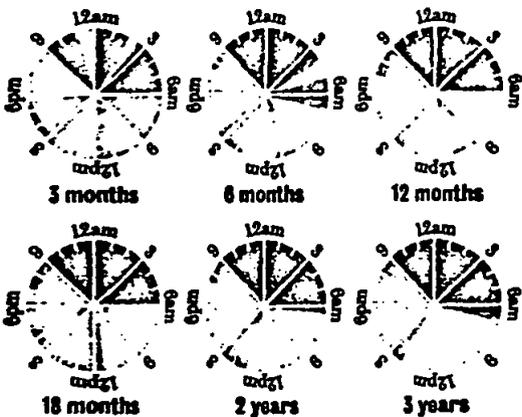
Building Healthy Habits

Babies follow their own clocks when it comes to sleeping, eating and learning daily routines. A guide to an average child's physical growth and development:

Sweet Dreams, Finally

Babies may have erratic sleeping patterns at first, but eventually they—and their exhausted parents—settle into a peaceful night's rest:

NIGHTTIME SLEEP DAYTIME SLEEP AWAKE



Allergy Awareness

New foods often bring out allergic reactions in young children. Avoid these highly allergenic foods until your baby's digestive system is ready:

RECOMMENDED MONTH OF INTRODUCTION

	6	9	12
Citrus fruits and juices	●	●	●
Wheat (in quantity)	●	●	●
Regular or skim cow's milk	●	●	●
Eggs (yolks)	●	●	●
Eggs (whites)	●	●	●
Chocolate	●	●	●
Fish	●	●	●

0-2 months old

1 month old

Checkups Visits doctor every month for the first six months.
Feeding Most babies drink three to four ounces of milk per feeding.
Senses Prefers sweet smells, soft fabrics.
Calmed by high-pitched voices and soft music.

2 months old

Health Dress baby in multiple layers because internal-temperature control is not fully mature yet.
Senses Eyes sharpen and track moving objects.
Loves to stare at faces.
Sleeping Colic may set in but will usually disappear by the third month.

Taking a Few Shots of Prevention

Immunization of children in the United States is at a record high, protecting them from major diseases. Most shots are given during the first 18 months of life; check with your pediatrician regarding special care. A recommended schedule:

	MONTHS						YEARS				
	0	1	2	4	6	12	15	18	4-6	11-12	14-16
Hepatitis B HEP B, B-1, B-2, B-3	●	●	●								
Diphtheria, tetanus, pertussis DTP, TD		●	●	●							
H. influenzae type b, Hib		●	●	●							
Polio		●	●	●	●						
Measles, mumps, rubella, MMR						●	●	●			
Varicella (chickenpox), VAR										●	●

HEP B vaccine immunizes against a virus that can lead to chronic liver disease. Delivered in three doses, it should not cause any serious side effects.

A child may run a fever after the first shot of the DTP vaccine. If other less-common reactions occur, like limpness or constant crying, notify your doctor.

Hib vaccine guards against bacteria that cause dangerous ailments like meningitis. Sabin vaccine, given orally, is the most common immunization against polio.

MMR vaccine may cause a mild rash or fever a week after the injection.

The varicella vaccine should be given to babies who have not had chicken pox.

SOURCES: APPROVED BY THE ADVISORY COMMITTEE ON IMMUNIZATION PRACTICES (ACIP), THE AMERICAN ACADEMY OF PEDIATRICS (AAP) AND THE AMERICAN ACADEMY OF FAMILY PHYSICIANS (AAFP)

3-8 months old

3 months old

Feeding Anticipates feeding by smacking lips.
Senses Coo and smiles when talked to. Lack of response may indicate a hearing problem. Eyes should be aligned and able to focus on one object instead of two.

4 months old

Feeding Some babies may begin eating puréed solids like cereals. Balance between solids and milk will vary, depending on child's preferences.
Health May catch a cold because of low immunity. See doctor if symptoms persist.
Senses Sees in color, adjusts to different distances and perceives depth.

5 months old

Feeding Hand-feeds himself zwiebacks, raw carrot chunks. Iron-rich baby foods like meat and green vegetables support proper growth. Easily distracted during breast feeding. Some babies may be ready for weaning.
Sleeping May rest throughout the night, with two naps during the day.

6 months old

Feeding May be down to three meals a day, plus nutritious snacks.
Teething Cuts lower-central incisor around the sixth or seventh month. May have gum swelling. Teething rings should be made of firm rubber and should not be frozen.

7 months old

Feeding Watch for allergic reactions to new foods (chart). Weight gain slackens as a result of increased mobility.
Senses Sees as well as a teenager and locates sounds accurately.
Sleeping Usually sound, but may be disturbed by pain or hunger.

8 months old

Feeding Spills less when drinking from a cup. To prevent choking, give baby foods that are mashed or soft enough to swallow without chewing (see chart for other safety tips).
Sleeping Learns how to stay awake. Overstimulation may make settling down difficult.

Safety Comes First

Where babies roam, accidents often follow, but many can be avoided with a few precautions:

Seats Child should always ride in a properly stalled car seat and only in the back seat. Do not substitute an infant seat for a car seat. The seat should face the rear until the child can sit up without help.

Medicine Store all medicines and household cleaning products out of reach. Use safety latches on lower drawers and cupboards.

Swimming A child can drown in only a few inches of water. Never leave children alone in a bath or near containers like pools and toilets.

Falls Use stairway gates and window guards. Do not leave a baby unattended on surfaces above the floor, including changing tables and beds.

Fire prevention Install smoke detectors and check batteries often. Dress baby in flame-retardant clothes.

Toys Inspect toys carefully for small parts that can fit in a child's mouth. Also look for sharp or rough edges.

Strollers Do not hang bags from stroller handles. Always use seat belt and harness to keep baby secure.

16 months old

16 months old
Checkup Visits doctor for examination and immunization shots (chart).
Feeding Anxiety over separating from parents may cause trouble at bedtime. Relaxes by sucking thumb, cuddling soft toys or rocking.

17 months old
Feeding Most babies this age need between 750 and 1000 calories a day, more than half from breast milk or formula.
Grooming May pull off hat and enjoy using soap.

18 months old
Feeding Able to hand feed himself an entire meal by end of year. Prefers soft or starchy foods.
Grooming May help in undressing, especially pulling off socks.

19 months old
Checkup Has one-year doctor examination to check weight gain, motor skills.
Feeding Insists on feeding himself, however messily.
Play pick up spoon but misses mouth often.
Sleeping May resist napping and going to bed.

18 months old
Feeding Expresses definite likes/dislikes of foods.
Health Feet may turn outward. During the second year, hip ligaments tighten and straighten feet.
Teething By now, some babies have cut two upper front and two lower front teeth. Arrival of first molar can cause pain.

19 months old
Feeding Needs about 1,000 calories a day to sustain proper growth. May drink less milk, but solid foods cover nutritional needs.
Grooming May cooperate by lifting arms and legs when undressing, or even comb hair.

20 months old
Checkup Visits doctor for mid year exam of vision, hearing, reflexes.
Sleeping Morning nap becomes shorter but may still need afternoon rest. Crib bumpers can protect baby's head if she moves around at night.

21 months old
Grooming May outgrow shoes every three months during the second year.

Baby Weight Percentiles

AGE IN MOS.	GIRLS (IN POUNDS)					BOYS (IN POUNDS)				
	95	75	50	25	10%	95	75	50	25	10%
3	15	13	12	11	10	16	14	13	12	10
6	19	17	16	15	13	21	19	17	16	15
9	23	20	19	18	16	24	22	20	19	18
12	25	23	21	19	18	27	24	23	21	20
18	28	25	24	22	20	30	27	25	24	22
24	31	28	26	25	23	33	30	30	28	24
36	38	34	31	29	27	40	35	32	30	28

17-24 months old

17 months old
Feeding Dawdles during meals; prefers bland to sharp flavors.
Sleeping Often gets overtired and may have trouble falling asleep. More than half of children 1 to 2 years old fuss when it's time for bed.

18 months old
Checkup Visits doctor for midyear examination.
Feeding Spoon may reach her mouth more often by midyear. Steer child away from sugary foods that can cause early cavities.
Grooming May indicate when pants are wet. Enjoys taking off shoes and socks, unzipping zippers.
Sleeping May bring stuffed toy or pillow to show she is ready for bed.

19 months old
Feeding Blows on food when it's hot. Should be drinking 16 to 32 ounces of milk a day, which provides most of the calcium needed for bone growth.
Grooming May brush teeth; washes and dries hands with help. Check water temperature before putting child in bathtub.
Sleeping Sleeps fairly well but may have a bad night now and then. May try to climb out of bed.

20 months old
Feeding Learns food talk like "more" and "all gone."
Grooming Encourage child to undress completely on her own. Can't buckle or lace shoes yet.
Sleeping Nightmares may disrupt sleep occasionally.

21 months old
Grooming May be able to put on clothes with Velcro fastenings, snaps and easy-to-manage openings.
Sleeping Afternoon naps turn into rests; total sleeping time drops near the end of the second year. May try to delay bedtime with extra kisses.
Tasks Some children put away clothes and toys.

22 months old
Feeding May give cup to parent when thirsty.
Grooming May put on shoes, but often on the wrong foot.
Tasks Tries buckling car-seat belt with parent's help.

23 months old
Grooming May put on simple garments but not differentiate between front and back.
Tasks By the end of second year, may open doors, unwrap packages, help parents with chores.

24 months old
Checkup Visits doctor for two-year examination; may include blood test to check for lead poisoning and a skin test for tuberculosis. Meets the dentist for the first time.
Feeding Can eat all kinds of table foods. Encourage use of utensils.
Grooming Some babies may be ready to start potty training, while others will need more time until their motor skills and bladder control improves.
Health Watch for ear infections in toddlers. Signs include ear pain and fever.

2-3 years old

25-29 months old
Feeding Should be served whatever the family is eating, but a balanced diet may be hard to maintain. Candy should not be used as a bribe to finish dinner.
Grooming Has become a creature of habit. May ask to go to the toilet, but accidents are very possible. Insists on picking out own attire. May dress himself in easy, pull-on clothes. Loves to cover boo-boos with Band-Aids.
Health Baby fat slowly disappears in the third year. Posture improves as muscles strengthen.
Sleeping May switch from crib to bed, which can create some difficulty in settling down at night. Maintain a regular time for bed, including nightly rituals like last kisses and storybook readings. Side bedrails will prevent tumbles to the floor.

30-36 months old
Checkup Sees doctor for annual exam. Visits dentist every six months from 24 years old. May receive fluoride treatment.
Feeding Appetite still fluctuates; may skip a meal occasionally. Do not offer to make a special meal. Encourage proper table manners, such as using utensils and sitting through entire meal. By third birthday, may use a fork efficiently but often forgets to chew food well.
Grooming Child may express more consistently when he needs to use the bathroom.
Tasks A true mother's helper. Makes bed, cleans up messes. Needs supervision in the kitchen.

By JENNIFER LACH

SOURCES: "THE EARLY CHILDHOOD YEARS: THE 3 TO 6 YEAR OLD," "THE SECOND TWELVE MONTHS OF LIFE" AND "THE FIRST TWELVE MONTHS OF LIFE" BY THERESA AND FRANK CAPLAN; "YOUR BABY & CHILD" BY PELOUE LEACH; "THE WELL BABY BOOK" BY MIKE SAMUELS, M.D., AND NANCY SAMUELS; "CARING FOR YOUR BABY AND YOUNG CHILD" BY STEVEN P. SHELTON, M.D.; "THE GOOD HOUSEKEEPING ILLUSTRATED BOOK OF PREGNANCY & BABY CARE."

EMOTIONS

The wizards of genetics keep closing in on the biological roots of personality. It's not your imagination that one baby seems born cheerful and another morose. But that's not the complete picture. DNA is not destiny; experience plays a powerful role, too.

Shyness, Sadness, Curiosity, Joy. Is It Nature or

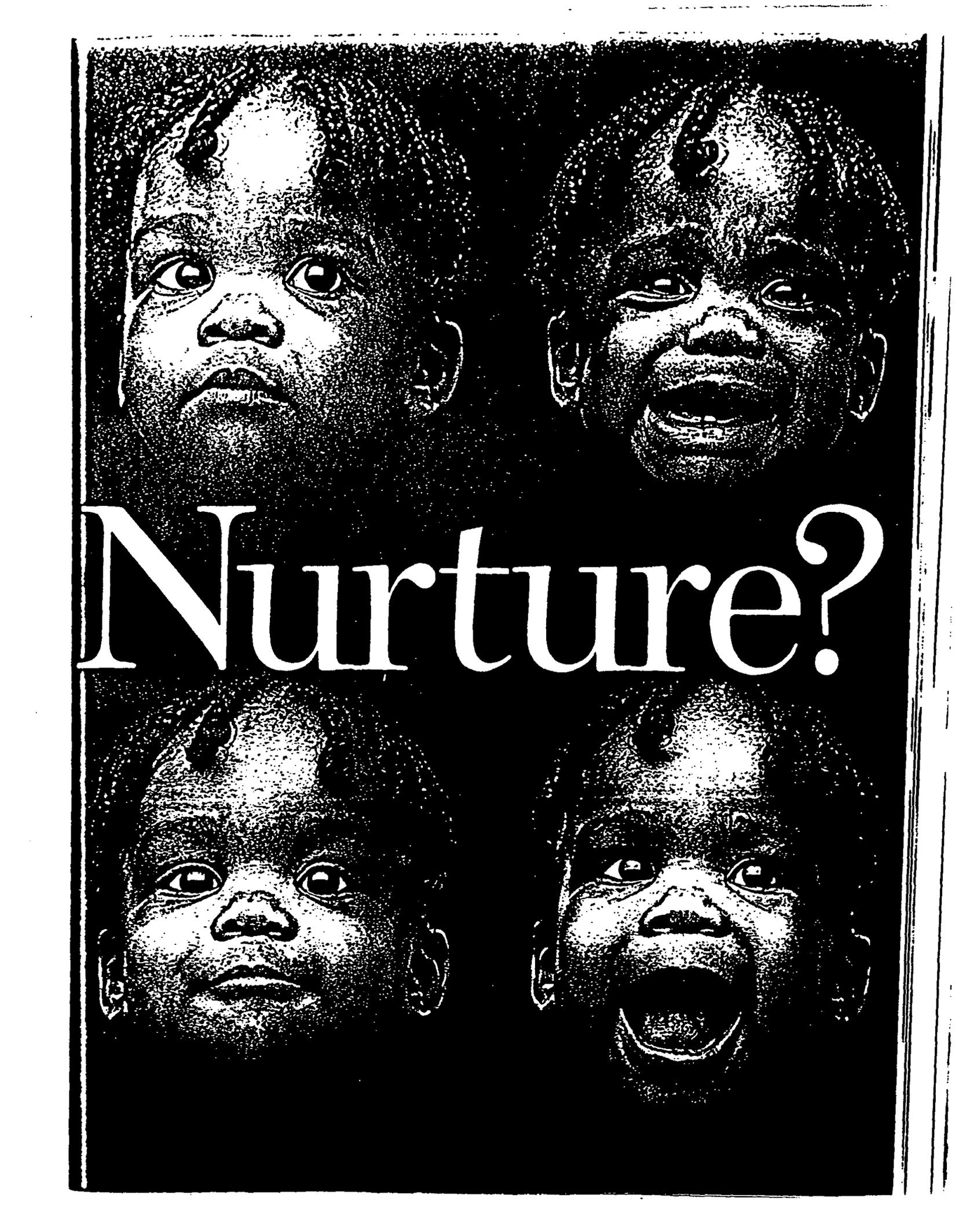
By Marc Peyser and Anne Underwood

IF ANY CHILD SEEMED DESTINED TO GROW UP afraid of her shadow and just about anything else that moved, it was 2-year-old Marjorie. She was so painfully shy that she wouldn't talk to or look at a stranger. She was even afraid of friendly cats and dogs. When Jerome Kagan, a Harvard professor who discovered that shyness has a strong genetic component, sent a clown to play with Marjorie, she ran to her mother. "It was as if a cobra entered that room," Kagan says. His diagnosis: Marjorie showed every sign of inherited shyness, a condition in which the brain somehow sends out messages to avoid new experiences. But as Kagan continued to examine her over the years, Marjorie's temperament changed. When

she started school, she gained confidence from ballet classes and her good grades, and she began to make friends. Her parents even coaxed her into taking horseback-riding lessons. Marjorie may have been born shy, but she has grown into a bubbly second grader.

For Marjorie, then, biology—more specifically, her genetic inheritance—was not her destiny. And therein lies our tale. In the last few years scientists have identified genes that appear to predict all sorts of emotional behavior, from happiness to aggressiveness to risk-taking. The age-old question of whether nature or nurture determines temperament seems finally to have been decided in favor of Mother Nature and her ever-deep-

61% of all parents believe that differences in behavior between girls and boys are not inborn but a result of the way they're raised



Nurture?

Scientists estimate that genes determine c

ening gene pool. But the answer may not be so simple after all. Scientists are beginning to discover that genetics and environment work together to determine personality as intricately as Astaire and Rogers danced. "If either Fred or Ginger moves too fast, they both stumble," says Stanley Greenspan, a pediatric psychiatrist at George Washington University and the author of "The Growth of the Mind." "Nature affects nurture affects nature and back and forth. Each step influences the next." Many scientists now believe that some experiences can actually alter the structure of the brain. An aggressive toddler, under the right circumstances, can essentially be rewired to channel his energy more constructively. Marjorie can overcome her shyness—forever. No child need be held captive to her genetic blueprint. The implications for child rearing—and social policy—are profound.

While Gregor Mendel's pea plants did wonders to explain how humans inherit blue eyes or a bald spot, they turn out to be an inferior model for analyzing something as complex as the brain. The human body contains about 100,000 genes, of which 50,000 to 70,000 are involved in brain function. Genes control the brain's neurotransmitters and receptors, which deliver and accept mental messages like so many cars headed for their assigned parking spaces. But there are billions of roads to each parking lot, and those paths are highly susceptible to environmental factors. In his book "The New View of Self," Dr. Larry Siever, a psychiatry professor at Mount Sinai Medical Center, writes about how the trauma of the Holocaust caused such intense genetic scrambling in some survivors that their children inherited the same stress-related abnormalities. "Perhaps the sense of danger and uncertainty associated with living through such a time is passed on in the family milieu and primes the biological systems of the children as well," says Siever. He added that that might explain why pianist David Helfgott, the subject of the movie "Shine," had his mental breakdown.

A gene is only a probability for a given trait, not a guarantee. For that trait to be expressed, a gene often must be "turned on" by an outside force before it does its job. High levels of stress apparently acti-



vate a variety of genes, including those suspected of being involved in fear, shyness and some mental illnesses. Children conceived during a three-month famine in the Netherlands during a Nazi blockade in 1945 were later found to have twice the rate of schizophrenia as did Dutch children born to parents who were spared the trauma of famine. "Twenty years ago, you couldn't get your research funded if you were looking for a genetic basis for schizophrenia, because everyone knew it was what your mother did to you in the first few years of life, as Freud said," says Robert Plomin, a geneticist at London's Institute of Psychiatry. "Now you can't get funded unless you're looking for a genetic basis. Neither extreme is right, and the data show why. There's only a 50 percent concordance between genetics and the development of schizophrenia."

SCIENTISTS HAVE BEEN DEVOTING enormous energy to determining what part of a given character trait is "heritable" and what part is the result of socialization. Frank Sulloway's book "Born to Rebel," which analyzes the influence of birth order on personality, opened a huge window on a universal—and largely overlooked—environmental factor. But that's a broad brushstroke. Most studies focus

on remarkably precise slivers of human emotions. One study at Allegheny University in Pennsylvania found that the tendency for a person to throw dishes or slam doors when he's angry is 40 percent heritable, while the likelihood a person will yell in anger is only 28 percent heritable. The most common method for determining these statistics is studying twins. If identical twins are more alike in some way than are fraternal twins, that trait is believed to have a higher likelihood of being inherited. But the nature-nurture knot is far from being untied.

The trick, then, is to isolate a given gene and study the different ways environment interacts with it. For instance, scientists believe that people with the longer variety of a dopamine-4 receptor gene are biologically predisposed to be thrill seekers. Because the gene appears to make them less sensitive to pain and physical sensation, the children are more likely to, say, crash their tricycles into a wall, just to see what it feels like. "These are the daredevils," says Greenspan. But they need not be. Given strict boundaries, Greenspan says, thrill-seeking kids can be taught to modulate and channel their overactive curiosity. A risk-taking child who likes to pound his fist into hard objects can be taught games that involve hitting softly as well. "If you give them constructive ways to meet their needs," says Greenspan, "they

about 50 percent of a child's personality



Parents can foster their baby's sunny disposition or—unwittingly—some antisocial traits

can become charismatic, action-oriented leaders."

Shyness has been studied perhaps more than any other personality trait. Kagan, who has monitored 500 children for more than 17 years at Harvard, can detect telltale signs of shyness in babies even before they're born. He's found that the hearts of shy children in the womb consistently beat faster than 140 times a minute, which is much faster than the heartbeats of other babies. The shy fetus is already highly reactive, wired to overmonitor his environment. But he can also outgrow this predisposition if his parents gently but firmly desensitize him to the situations that cause anxiety, such as encouraging him to play with other children or, as in Marjorie's fear of animals, taking her to the stables and teaching her to ride a horse. Kagan has found that by the age of 4, no more than 20 percent of the previously shy children remain that way.

Will the reprogramming last into adulthood? Because evidence of the role of genes has been discovered only recently, it's still too early to tell. But studies of animals give some indication. Stephen Suomi at the National Institute of Child Health and Human

78% of those polled who are in two-parent families say that they share equally when it comes to setting rules for their young child

Development works with rhesus monkeys that possess the same genetic predisposition to shyness that affects humans. He's shown that by giving a shy monkey to a foster mother who is an expert caregiver, the baby will outgrow the shyness. Even more surprising, the once shy monkey will become a leader among her peers and an unusually competent parent, just like the foster mom. Though she will likely pass along her shyness genes to her own child, she will teach it how to overcome

her predisposition, just as she was taught. And the cycle continues—generations of genetically shy monkeys become not just normal, but superior, adults and parents. The lesson, says Suomi: "You can't prejudge anyone at birth. No matter what your genetic background, a negative characteristic you're born with may even turn out to be an advantage."

But parents aren't scientists, and it's not always easy to see how experience can influence a child's character. A baby who smiles a lot and makes eye contact is, in part, determining her own environment, which in turn affects her temperament. As her parents coo and smile and wrinkle their noses in delighted response, they are

reinforcing their baby's sunny disposition. But what about children who are born with low muscle tone, who at 4 months can barely hold up their own heads, let alone smile? Greenspan has discovered that mothers of these kids smile at the baby for a while, but when the affection isn't returned, they give up. And so does the baby, who over time fails to develop the ability to socialize normally. "If you move in the wrong patterns, the problem is exacerbated," Greenspan says. He has found that if parents respond to nonsmiling babies by being superanimated—like Bob Barker hosting a game show—they can engage their child's interest in the world.

The ramifications of these findings clearly have the potential to revolutionize child-rearing theory and practice. But to an uncertain end. "Our society has a strong belief that what happens in childhood determines your fate. If you have a happy childhood, everything will be all right. That's silly," says Michael Lewis, director of the Institute for the Study of Child Development in New Jersey and the author of "Altering Fate." Lewis estimates that experience ultimately rewrites 90 percent of a child's personality traits, leaving an adult with only one tenth of his inborn temperament. "The idea that early childhood is such a powerful moment to see individual differences in biology or environment is not valid," he says. "We are too open to and modifiable by experience." Some scientists warn that attempting to reprogram even a narrow sliver of childhood emotions can prove to be a daunting task, despite research's fascinating new insights. "Children are not a 24-hour controlled experiment," says C. Robert Cloninger, a professor of psychiatry and genetics at the Washington University School of Medicine in St. Louis. "If you put a child in a Skinner box, then maybe you could have substantial influence." So, mindful of the blinding insights of geneticists and grateful for the lingering influences of environment, parents must get on with the business of raising their child, an inexact science if ever there was one. ■

Good Kid, Bad Kid

From scary tantrums to a flat refusal to get dressed in the morning, young children keep testing their limits—and yours. Take a deep breath and try not to flunk.

By SUSAN MILLER
AND LARRY REIBSTEIN

SURE, MAYBE WE CAN CLONE sheep, but what about trying to get a young child dressed? For this there should be a Nobel Prize. Take Andrea Hessekiel, of Rye, N.Y., who still remembers every frustrating detail of one particular day three years ago, when her daughter, Kira, was 3. "It was in the morning," she begins, "and we were trying to get ready for nursery school and she just didn't want to get dressed." After basically ignoring her mother's reasoned arguments, then her coaxing and pleading, Kira "went back to bed, jumped in and pulled the covers up over her head." Watch out. "I peeled back the covers and whacked her on the bottom a few times," she recalls. "She was hysterically crying."

Kira got dressed, but she apparently forgot the point of the spanking—it wasn't the last time she avoided dressing. But Mom didn't forget. "I obsessed about it for days," she says. "I was very upset with myself for losing control. I don't believe in spanking."

OK, so Mom strayed from the '90s parenting manual—what parent hasn't? The young child, especially from 1 to 3, is a jumbled mass of egocentric, limit-testing, conscience-deprived nerves and cells. Fortunately, they're cute. But figuring out what proper behavior is—and teaching it, to say nothing of enforcing it—is one of the great questions still plaguing mankind, even after thousands of

trendy advice books that tend to contradict each other. Should a 9-month-old be taught not to pull on Daddy's glasses? Can a 14-month child really be expected to share toys? Can a 2-year-old be guided out of temper tantrums? In short, says Victoria Lavigne, assistant professor of clinical psychiatry at Northwestern University Medical School, "How do you get your child to do what you want them to do when you want them to do it—while still maintaining a positive relationship?"

For children younger than 1, it's hard to imagine needing to use "discipline" to guide them between right and wrong behavior. When babies pull on telephones or stick their fingers in sockets or other kids' eyes, they aren't candidates for the shrink's couch. They are simply exploring what they find fascinating, essentially their job at that age. The three most important strategies: relocate, relocate, relocate.



The Debate Over Discipline

YOUR KID IS FLINGING food, whacking his sister and screaming endlessly. What do you do? As you carefully consider your range of choices, consider this: how you discipline your child in the early years will go a long way in determining whether your child turns into a nightmare by the time he's 3. Hit him and he may turn into a noncaring scoundrel. Ignore her and her obnoxious behavior will escalate. Child-rearing techniques

can be as varying as fashion. A look at some methods:

■ For this generation of educated middle-class parents, spanking is as politically incorrect as smoking. "My parents spanked us, but I don't think it's a good idea," says Terry Staudenmaier, the Baltimore mother of 2-year-old Gabe. The NEWSWEEK Poll showed that 31 percent of parents spanked sometimes or often. But experts say parents should avoid the practice. "Spanking and physi-

cal force in general accomplish quick compliance but build up resentment, anger, fear of the parent," says Martin Hoffman, psychology professor at New York University. Studies also show that spanking isn't especially effective, anyway. Families who start spanking before their children are a year old are as likely to spank their 4-year-olds as often as are families who start spanking later—suggesting the children aren't learning any lessons.



Patty Gibson
Ralph
watching
daughter
Jessie's antics



Ben Carloni, 2½, likes his routines; sister Leah, 6 months, swings along

As the child grows older, bad behavior often springs out of the stirrings of independence, or a play for attention, or maybe just frustration. Children haven't yet developed a conscience telling them what's right and wrong; that begins around the age of 3. Still, by around 18 months to 20 months, children are old enough to be reasoned with, according to Martin Hoffman, a psychology professor at New York University. And they're just starting to figure out that other family members need to be accommodated. A look at some typical early-childhood behaviors:

Tantrums: Ben Carloni, 2½, knows what he likes and when, and God help those who change it. Explains mother Barb Carloni of Columbus, Ohio: "He has to brush his teeth a certain way. He climbs up into his chair a certain way. He has to help pour the juice and he has to hold the cup." One time recently Ben thanked his father, Steve, who,

instead of responding "You're welcome," said, "No, thank you, Ben." This was enough to propel Ben into a fit. Experts say tantrums are perfectly normal for the child learning to express anger and frustration. Only if the tantrums are more frequent, and continue as the child gets older, will there be a need for more serious intervention. The Carlonis handle Ben much as the experts recommend. They keep their distance but try to talk to him and get him to explain why he's angry. Sometimes it works; other times nothing does. Lavigne points out that trying to appease the child, by picking her up or giving in to heated demands, will only encourage more of the same behavior.

Sharing: Kids may begin to share things between 2 and 3, but don't bet on it. And don't worry about the tugs of war, either. "It is less important than the back-and-forth interaction with other children," says Dr. Stanley Greenspan, professor of psychiatry

and pediatrics at George Washington University Medical School and author of "The Growth of the Mind." "Sharing is one piece of successful learning that occurs because of these interactions." Patty Gibson Ralph, who lives in Manhattan Beach, Calif., tries sharing and praising her daughter, Jessie, 2½, to mixed results. "She's kind of obsessed about not sharing," her mother reports.

Hitting: A child's striking out is not acceptable after a year, but "don't blow it out of shape," argues Greenspan. Sometimes children hit to get control of a situation they don't like, or they learn it from other kids, which is what happened with 13-month-

the "humane" alternative to making the timeout, has gained popularity over the last decade as a quick method to deal with a wayward kid. The NEWSWEEK Poll showed that 71 percent of parents often or sometimes used timeouts. Patty Gibson Ralph uses it on those occasions when her daughter, Jessie, 2½, whacks her younger brother, Jack. "I have her sit in a certain place and I have an egg on her head and I put that on for one minute," says Patty. But she says just the threat of a timeout is often more effective. Most experts advise sparing use of time-

outs. And they should always be combined with an explanation of why the behavior is bad. For infants and young toddlers, timeouts shouldn't be used at all, because those kids don't understand right from wrong.

■ In layman's terms, modeling means that if parents behave appropriately, their kids will notice and learn from it. Teaching a child empathy depends greatly on showing by example. Comforting a child imparts the lesson that the needs of others must be considered.

■ Immobilization is a controversial technique recommended by

Dr. Burton White, director of the Center for Parent Education in Newton, Mass. It's aimed at children 7 to 14 months old who persist in behavior such as hitting. He advises first giving a warning then constraining the child in your lap, facing you, while firmly holding his arms and shoulders. After a minute or so release the child and explain the behavior that was inappropriate. Critics deride this one-size-fits-all approach to discipline, but White insists that a week of using this method will change the behavior.

LARRY REIBSTEIN and
SUSAN MILLER

old Laura Scott, an American living in London. Once, after Laura hit another child, her father, Al, grabbed her arm and gently told her "No, no." She hasn't done it again.

Dressing: Jessie Ralph likes to wear her shirt backward, put on clothes that don't match or put her shoes on the wrong feet. Once she wanted to wear her pajama top to nursery school. This could have the makings of a power struggle, but it shouldn't. As her mother, Patty, deals with it, "she's learning how to express herself, and as long as she's not going to freeze to death I say 'Fine.'" Greenspan agrees that dressing shouldn't be a discipline issue.

Eating: In Victorian times children sat still through meals and ate all that was served, or at least that's the myth. Forget it. A child under 3 who can sit at a table for more than 15 minutes is called a miracle. "The rule is not to have a rule," says Greenspan. "You want to adapt it to the individual child." And the constant struggle with children to eat different foods is largely wasted energy. "They have food jags and usually that's not harmful as long as they're sleeping and eliminating properly," says Charles Flatter, professor of human development at the University of Maryland.

As behavioral matters go, those are the easy ones. It's the high-strung child who understandably challenges the patience of parents, writes Dr. Stanley Turecki in "The Difficult Child." This is the child with an extremely high activity level, who is impulsive and stubborn. He may be unable to concentrate for even a brief period. Children who exhibit the most extreme of these behaviors might be suffering from Attention Deficit Disorder—or, says Turecki, they might simply be "difficult children with a very high activity level." But doctors rarely diagnose a child under 3 as having ADD. Beyond those issues are even deeper behavioral problems, according to Greenspan. "The child who does not by any time after 8 months show very purposeful or intentional reaching, smiling or vocalizing. The child who in the second year of life is not showing more gradually complex social problem-solving." These types of behavior, says Greenspan, can be signs of children who may exhibit, at 3, severe emotional and intellectual difficulties—such as difficulty learning to distinguish reality from fantasy, or appropriate cognitive and language skills. As Greenspan puts it, "These are big-league concerns." ■

A baby needs to form a secure 'attachment' to the mother or another caring adult. How do these early relationships develop trust—and why do some of them fail?

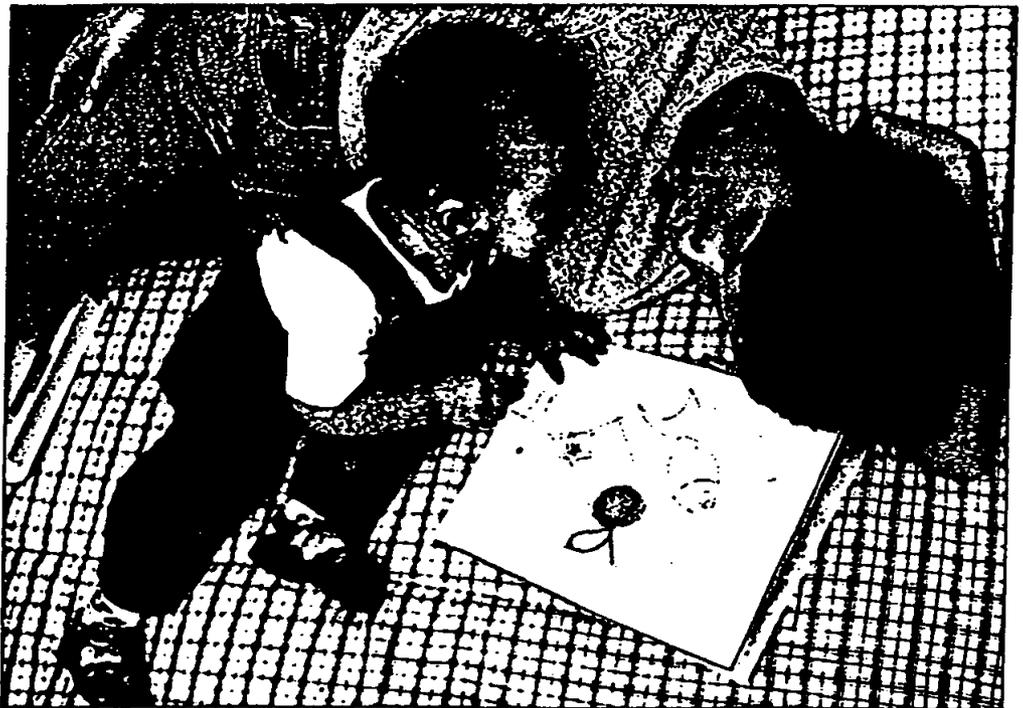
BY SUSAN H. GREENBERG

WHEN GOSLINGS hatch, they will immediately become attached to the first moving object they see, whether it's their mother or the Energizer bunny. Human babies are smarter. Even in utero, they begin to recognize the muffled voices of those who will care for them. By 10 days of age, they can distinguish the smell of their mother's breast milk from that of another woman. Around 5 weeks, babies demonstrate a preference for their primary caretakers by smiling or vocalizing. They follow them intently, first with their eyes, then later on hands and knees. By 9 months, many infants scream when their parents try to leave, as if to say, "I can't bear being without you!"

And so it is that babies fall in love with

their parents. Psychologists, of course, have a less romantic name for it: attachment. First postulated by British psychiatrist John Bowlby in the 1950s, attachment remains one of this century's more enduring theories of human development. It has far outlived the particular—and unfounded—notion of bonding popularized in the 1970s that mothers and babies need prolonged skin-to-skin contact immediately after delivery to form a proper love connection. Attachment holds that infants and their parents are biologically wired to forge a close emotional tie, which develops slowly over the baby's first year of life through an ongoing dialogue of coos, gazes and smiles. How it unfolds may influence everything from how we perform in school to what kind of partners and parents we become. Says Alicia Lieberman, a psychology professor at the University of California, San Francisco: "The foundation for how a child feels about himself and the

The Loving



Parents who meet their child's needs—to eat, to play, to feel safe—foster security



*Most babies
form multiple
attachments
for protection*

Ties That Bond

MINA BERMAN - SEPA

world is how he feels in his relationship with the primary caregiver."

For most infants that is their mother, simply because she's usually around them the most. But young babies will become attached to anyone who is consistently available and responsive to them. "If you handed a newborn to a male cousin and he acted like the typical mother, it wouldn't matter to the baby," says Jay Belsky, professor of human development at Penn State. In fact, most babies form multiple attachments. It's nature's way of protecting them against the loss of their primary caretaker.

Yet not all attachments are good attachments. Parents who respond sensitively to their child's needs—to eat, to play, to feel safe, to be left alone—will likely build strong, nurturing relationships, which some psychologists call "secure." Parents who don't are more likely to establish "insecure" or "anxious" attachments. "Chil-

dren are prewired to fall madly in love with their caregivers," says clinical psychologist Robert Karen, author of "Becoming Attached." "The sense that that love is returned, that they're valued and that they can count on their mother and father, is secure attachment." Karen estimates that two thirds of 1-year-olds in middle-class American homes are securely attached; the percentage is lower in households that face hardships such as poverty.

This notion of secure versus insecure attachment is probably the most controversial aspect of attachment theory. Bowlby's colleague Mary Ainsworth first made the distinction in the 1960s, when she devised an experiment called the "strange situation." Over several months she studied mothers and infants in their homes. When the babies turned 1, she invited each pair into the lab and placed them with a stranger in a toy-filled room. Then she observed

how the baby responded when his mother left the room and when she returned. As Ainsworth expected, the mother's departure distressed some babies and not others. But what defined their quality of attachment was how they greeted her return. The babies whose mothers were considered responsive all rushed to them—whether for comfort or to play—as if to say, "I know you're there for me!" Ainsworth labeled those children "securely attached." The infants of those deemed less responsive in the home study either ignored or rebuffed their mothers when they returned. Ainsworth concluded that these "anxiously attached" babies had no confidence that their mothers would give them what they wanted.

Such labels make many people uncomfortable. "The 'attachment people' decided incorrectly that the most important aspect of that relationship is security/insecurity," says Harvard psychologist Jerome Kagan.

"The 'strange situation' is not an accurate measure, because the child's behavior in that situation is a function of its temperament and how it's been treated." Even proponents of attachment theory acknowledge its limitations. "Attachment hasn't left enough room for what any mother of two has noticed: that children are different," says psychologist Arietta Slade of the City University of New York.

To be sure, some children find it harder to form attachments than others. Children who suffer from autism and other developmental disorders, abused children, even colicky babies, all present special challenges. But most psychologists believe that with enough sensitivity and perseverance, every caretaker can form a secure attachment with almost any child. "There is such a thing as a poor fit," says Robert Karen. "But you hope parents will find a way to connect."

They needn't do it alone. Counselors can help parents overcome their own obstacles to bonding, such as depression or substance abuse. One of the most common sources of insecure attachment is what child psychiatrist Selma Fraiberg called "the ghost in the nursery," a parent's unresolved mourning for a loved one. Psychotherapy can be extremely effective in helping mothers learn how to be more sensitive to their babies. In 1985 Alicia Lieberman proved that with a group of mothers from Latin America, many of whom had recently immigrated to the United States. She performed "strange situation" assessments on their children. Of those deemed anxiously attached—about 65 percent—she offered psychotherapy to half. "After a year, these mothers were significantly more empathic, responsive and interactive" than the control group, Lieberman says.

And what if, despite everyone's best efforts, an infant fails to form a close bond with a caring adult? "Kids who were secure as infants or toddlers in general function better in ways we value in this culture," says Belsky. "But it would be a mistake to draw the conclusion that how you end up after the first year of life determines how you'll be in later life." Indeed, few people could look at a room full of teenagers and guess accurately who was securely attached at age 1. And adults who failed to bond with their own parents are not destined to revisit that fate upon their children; plenty of them transcend their early experience—whether through attachment to another caring adult, a fulfilling marriage or psychotherapy—and raise perfectly secure kids. By the same token, a secure attachment is only a beginning. "Being secure is an asset, not a guarantee," says Belsky. In this life, that's about as good as it gets. ■

Will It Be on the Test?

It's not always enough just to rely on what comes naturally. Parents can take classes that will teach them what to do.

BY PAUL O'DONNELL

CONTRARY TO THE adage, babies do come with instruction manuals. They are called families. Traditionally, experienced relatives have interpreted for new parents the coos, wiggles and arcane eating habits of children. But in today's society, according to Minalee Saks, a founder of Birth to Three, a parent-education program in Eugene, Ore., "there is so much mobility. People don't have their families around. They leave the hospital, and suddenly there is a void."

Now parent educators like Saks are trying to fill the extended family's shoes. When she started Birth to Three's first instructional groups in 1979, Saks was a pioneer; now hers is one of many local and national programs like HIPPI, MELD and Healthy Families America. Dwarving all others is Parents as Teachers, begun as a project of the Missouri Department of Education in 1981. "We were

working with 3- to 4-year-olds, but we were playing catch-up," says Mildred Winter, executive director of PAT. "We realized we could reduce the number of children who needed help later by teaching parents how to teach their babies." Educating parents about emotional, physical and intel-

lectual development has also proved to reduce child abuse. PAT has exported its curriculum to all but three states and has trained an infantry of 8,000 professional parent educators, who spend an hour a month in parents' homes.

Grandma would approve of PAT's lessons. Parents are

told to give infants plenty of "tummy time" on a blanket on the floor, to let 9-month-olds crawl in and out of a cardboard box, or to play make-believe with toddlers. "Most people know to be nurturing, to dress the baby and not let it cry," says Jean Tucker at PAT in Newark, Dela. "But they don't know it's important to be talking to the baby." Often, according to Fort Worth, Texas, administrator Julie Miers, "it's enough that we reassure them that what their child is doing is normal."

Stressing the normal, in fact, has been one key to success. PAT, like Birth to Three, is not perceived as remedial because it is open to parents of all economic backgrounds. "Parents bring the best part of themselves if they're not identified as problem families," says Saks.

Nonetheless, some PAT leaders estimate that nearly half of their families are "environmentally distressed." Tucker, who grew up poor herself, says hers was a happy, busy home that provided plenty of stimulation. "Some low-income mothers didn't experience much joy, and their grandmothers didn't either," she says. Now, thanks to programs such as hers, the failings of the past don't have to be visited upon children.



A PAT educator (right) makes a home visit in St. Louis

It's a Wise Father Who Knows ...

...his child. If Dad helps with the rearing, the baby is likely to grow up stronger, smarter and more in control.

BY JERRY ADLER

HIS IS OFTEN the first face the newborn sees, looming out of the dimness of the delivery room, open-mouthed with wonder at the creature springing into being from his wife's very body. Men who witness the birth of their child almost invariably react the same way, says Dr. Kyle Pruett, a professor of psychiatry at the Yale University Child Study Center; they are "taken over" by the experience, electrified to realize that they have brought a human being into the world, a new life whose fate is inextricably and eternally bound up with theirs. Women, he adds, "describe the experience quite differently. Long before the baby's born, they've already been taken over."

As for the newborn, no one knows just what he makes of that first encounter with his father; almost certainly, not much. But before his first year is out, the urgency of his needs—for nourishment, for stimulation, for comfort in a crazy world where a snug, warm diaper can inexplicably transform into a cold and sodden clump—will lead him into a relationship with his father that psychologists call "attachment" but that parents are pleased to think of as "love." Sometime around the sixth to eighth month, the human infant, among the most defenseless creatures on God's earth, will become attached to the adults who take care of him—to prefer them to strangers, to notice their absence, to seek comfort from them. This usually happens earlier or more strongly with the mother but mostly just because she's more likely to be around in those early months. Anyone who provides regular care for the baby will become the object of his or her attachment—even if



Daddy and me, learning to be brave in the world

the care isn't especially good or loving—including fathers and babysitters.

Which is not to say that babies don't distinguish among adults; on the contrary, they can tell mother from father as early as six weeks, or (depending on which studies you accept) even three. Almost invariably, they make the same distinction, becoming calm in the presence of the mother, aroused and stimulated by the approach of the father. The interactions between infant and father, as between infant and mother, follow a pattern that transcends social class and cultural expectations. Each mother has a distinctive way of cradling her baby, and will hold him that way nine times out of 10, Pruett says; a given father, by contrast, in 10 tries will pick up his baby nine different ways, including upside down. That is so, he adds, even for fathers who stay at home with their infants while

the mothers work. Mothers make more use of toys in playing with their children; fathers are more likely to employ their own bodies as portable, interactive monkey bars and rocking horses. "Even when they are the primary caregivers," Pruett says, "fathers do not mother."

And that difference is apparent all through the years of early childhood. Dr. Robert Moradi, a psychiatrist at UCLA School of Medicine, has been studying young children and their parents, in separate "Mommy and Me" and "Daddy and Me" groups, for several years. Fathers, he says, help the child "individuate"; they are more willing than mothers to let a child out

of their sight, and on average will let a baby crawl as much as twice as far before retrieving her. When a child confronts a novel situation—a dog, a stranger, a new toy—mothers instinctively move closer, offering the reassurance of their familiar presence; fathers tend to stay back and let the child explore it for herself. Both modes of parenting—the reassuring and the challenging—contribute to a child's emotional growth. Research shows that infants whose fathers took an active role in their care were less likely to cry when separating from a parent or in the presence of a stranger.

And that's only the beginning of a lifetime of good things that flow from having a father actively involved in child care. "Children whose fathers help care for them are less likely to become violent; they have higher IQs, better impulse control, better social adaptations—all of the elements of mental health are better," says Moradi. And if that isn't persuasive, consider Pruett's finding that "men who have been involved in the physical care of children under the age of 3 are significantly less likely to become involved in the sexual abuse of children." The very intimacy of feeding, of changing diapers and bathing, seems to inoculate men against subsequent sexual arousal, not just in relation to their own children but to others as well. Moreover, Moradi asserts, controlled studies with inner-city men show that those who take care of their children are less likely to join gangs and commit violent crimes. Few forces are as powerful, and as underused in our culture, as this sacred bond between father and child, the magnetic attraction of strength for weakness, the "attachment" that begins with dependence and grows into love. ■

DR. T. BERRY BRAZELTON

BUILDING A BETTER SELF-IMAGE

The renowned pediatrician explains why early interactions are so vital in teaching children about themselves, their world and success

WE ARE PAYING A TERRIBLE PRICE for our nation's inattention to the increasing stresses on children and families. Violence among teenagers, suicide and teen pregnancy are the obvious signals that our children are growing up with hidden anger and self-destructive impulses. Less obvious is the cost in lost motivation for learning when we fail to inculcate decent self-images in our children. My own work has shown me the vital importance of enhancing the child's development in the first few years. I feel that the developmental crises in these years offer parents a chance to build qualities in the child that will be useful for a productive future. The opportunities for establishing a pos-

itive self-image, a sense of being important, of trust and motivation, are all available to babies in these early years.

We have learned so much from working with fragile, even impaired, infants about their potential for recovery from injuries sustained in the uterus or at birth. We can now apply that thinking to normal development. In a stressed infant, there are extra pathways still intact in the immature nervous system that can take over and help the child recover. A threatened nervous system is likely to be hypersensitive and easily disorganized by incoming stimuli and by the baby's own efforts to respond. Even in infants who are highly stressed (by maternal undernutrition, drugs or heavy smoking), caretakers who are sensitive to them can give them the fuel they need to begin to make progress. This flexibility and power of recovery is less reachable in older children. But it's available in infancy and early childhood even in damaged or delicate infants—so imagine how powerful an opportunity it offers to strengthen the development of normal children.

The maturation of the nervous system pushes a child from one stage to another, relentlessly. One important source of fuel comes from the *internal* feedback system—the baby's own recognition of having completed a developmental task such as walking, crawling or reaching. When he achieves it, his face lights up as if to say, "I just did it! Aren't I great?" The *external* feedback from parents be-

comes another vital source of fueling. But if parents hover—if they never allow the child to struggle, to feel frustrated, to finally achieve for himself the developmental step and to experience his own joy at the achievement—they devalue the force of the internal system. Each completed cycle gives the child a secure sense of himself: "I did it! I can do it!" This leads to a sense of autonomy and a confidence in his capacity to master his world. And this in turn motivates the baby to take the next developmental step.

The external feedback cycle is important in other ways. With a newborn, the mother's quiet voice helps the baby soothe herself, enabling her to stay calm enough to look around at her world. Every time in the early weeks a small baby smiles, someone smiles back. Every time she vocalizes, someone vocalizes back. At 8 to 10 weeks, these smiling, vocalizing responses get set into a rhythmic game—one that will later be reflected in speech rhythms. As she gets a few months older, she plays with this response. She plays peekaboo. "If I cover my eyes, you will cover yours. If I uncover mine, so will you. Now we can make predictable games out of it."

Each of these episodes is fueling her brain's development. Her entire system—motor, cognitive and emotional—is intensely involved in each task. A sense of her own importance, of trust in her world and in the future, begins around each of these seemingly unimportant interactions between parent and child. An expectation quickly develops that she can control her own world. Teasing for a cookie or driving a parent to a disciplinary response becomes a toddler's way of proving that "it's my world and I can master it!"

Each stage offers the developing child a chance to renew her motivation and self-confidence. And the child's passion as she tries to walk, to master her own toileting, to read, to put together and express her own ideas, is matched by the parent's fierce desire to help. These early opportunities are laying the groundwork for more independence, more inner security, more hunger for conquering this world. We need to help parents recognize these stages, and let parents know how valuable their own role is in reinforcing the child's sense of self.

How does a child's self-image begin to develop? Certainly, parents who are able to mobilize an eagerness for the baby in utero are already preparing that baby for a successful future. Then the newborn is equipped with a marvelous series of behaviors to capture a parent for him. We have developed a newborn assessment (Neonatal Behavioral Assessment Scale, or NBAS), which



A feeling of competence: Brazelton tests an 8-month-old

One source of self-esteem is internal—the young child's own pleasure at having accomplished a task. Another is external, feedback from parents who recognize the child's achievement.

identifies 28 observable behaviors that can help parents understand and relate to their newborn. As she suppresses interfering motor behavior, controls her breathing and accelerates her heart rate in order to follow her mother's face and voice, as she turns to her mother's (or father's) voice in preference to mine, I have never seen a parent who didn't automatically reach out for her newborn to say, "You know me!" When the parent's and the newborn's temperament fit, they are off to a winning start. When they don't, we can find ways of helping them come to understand each other.

A child's sense of competence, his expectation of success and his motivation to work toward it are laid down in the first years. I can tell by a child's behavior as I test him at 8 months of age whether he expects to succeed or fail in the future.

As I offer an 8-month-old two blocks and show him how to match them and bang them together, I watch for this expectation. I am testing him for imitation, for cognitive recognition that the two blocks match and for his motor capacity to perform for me. All of these are within an 8-month-old's capacities. He is likely to be proud to show them to me at this age. A child who expects to succeed will drop one cube to see whether I'll retrieve it. After I do, he tries it again. I say, "Bang them together like I showed you!" He brings them to bang them together, and then he looks up at me, as

if to say, "See how great I am?" He expects to succeed. He has had an environment that approves of him, and he knows it.

When I test a child who comes from a non-nurturing environment or who realizes he is not able to process information as he should (he may be learning disabled or attentionally disordered), he will bring the cubes close enough to show that he knows what I'm asking. But he'll slide them by each other, then look up at me cringingly, as if to say, "See, I'm no good. Reject me again!"

We have become aware of how vital a responsive environment can be. On the other hand, we have learned all too well that a non-responsive, neglectful, abusive or depressed environment produces angry, depressed, hopeless children by the ages of 2 and 3 years. The opportunity for recovery and reorganization is not lost, but it becomes more and more endangered and expensive. Our children can't wait. We can't afford to ride insensitively over these vital early years any longer. Helping parents to help their children may cost businesses or the government some money. But if we fail, the cost to our nation will be far higher. And our own children and grandchildren will pay too high a price.

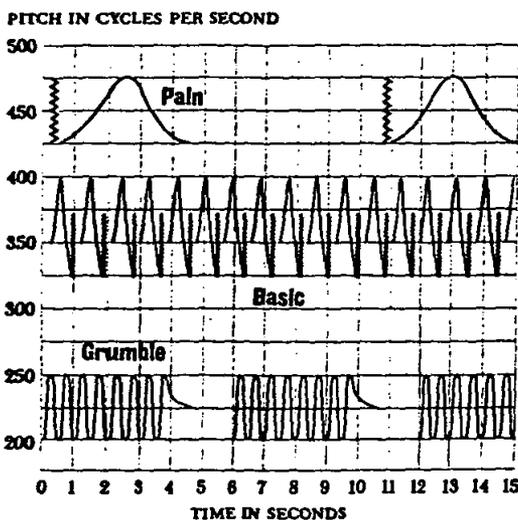
BRAZELTON, professor emeritus of pediatrics at Harvard Medical School, is the author of many books, including "Infants and Mothers," and appears on "What Every Baby Knows" on Lifetime cable.

A Bundle of Emotions

Whether by smiling or screaming, crying or cuddling, babies find ways early on to tell us how they feel. Good behavior comes along later. What to watch and listen for:

🕒 A Repertoire of Cries

All babies cry, and usually for good reason. Before they learn to talk, crying is one way to express their needs and send out signals of distress. Examples of three typical cries, and their differences in volume, pitch and rhythm:



Pain A cry of pain or distress usually begins with an inward gasp followed by a long, rising shriek. There is a long pause until the next painful scream. Soothe the baby by rocking or with music.

Basic A basic cry rises and falls rhythmically, broken up with a breath and a pause. The child may cry this way when demanding food or attention.

Grumble A grumble cry is the first attempt at communication. It has a lower pitch and volume, often sounding whimpery and whiny. It is a signal that the child may be getting restless. Move the child to a different environment and provide new stimulation.

0-2 months old

1 month old

Behavior Alert to stimuli like loud sounds and bright patterns. Quiets to holding or cuddling.
Interaction Child may recognize parent's voice or make eye-to-eye contact.
Tips Spend special time with siblings who may feel abandoned or jealous.

2 months old

Emotions Cries to show distress or pain, coos when happy or excited.
Tips If leaving child with a sitter, choose someone both you and the baby know, like a grandparent or close friend. Keep a list of emergency numbers handy.

🕒 Toys and Games for Curious Tots

Children love playtime, especially when parents or siblings join in the fun. Look for educational toys and games that encourage development:

1-3 months old Mobiles, unbreakable mirrors and activity centers attached to crib, rattles, stuffed toys with black and white patterns, music boxes, large colorful rings.

4-8 months old Beach balls, chunky bracelets, building blocks, squeaky toys, paper streamers, books made of cloth or vinyl, playing peekaboo or come-and-get-me with others.

7-9 months old Stuffed animals, balls, nesting cylinders, pop-up toys, large dolls and puppets, bath toys, performing "so big" or pat-a-cake.

10-12 months old Push-and-pull toys like miniature cars, ordinary household objects like empty egg cartons and large spoons, stacked rings on a spindle, playing simple ball games.

13-15 months old Toy telephones, acrobatics, pushing a carriage or toy horse, playing with cups and clothespins.

16-18 months old Sandbox, simple musical

instruments like a drum or tambourine, large colored beads, jack-in-the-boxes, blowing bubbles.

19-21 months old Rocking horse, toys to take apart and fit back together, small rubber balls, digging toys, large crayons, kiddie cars, water games, easy jigsaw puzzles, making mud pies, playing tag or hide-and-seek.

22-24 months old Kiddie lawn mowers and kitchen sets for make-believe play, modeling clay, construction sets, action toys like trains, telephones, dump trucks and fire engines, old magazines, baskets, tubes and containers with lids.

2-3 years Beginner tricycle, mini-trampoline, roller skates or Rollerblades, dolls and accessories like strollers and baby bottles, dress-up clothes, coloring books, easel, crayons and markers, music, kiddie cassette player, swing sets, books, finger paint, mini basketball hoop, woodworking bench, kiddie swimming pool.

3-8 months old

3 months old

Behavior Smiles often to others or while sleeping.
Interaction May cry differently when mother leaves the room than with other people. Begins to sort out who's who in his life. May prefer certain people.

4 months old

Behavior Laughs while playing and may cry if playtime is interrupted. May still act passively, taking in whatever toy or face comes near.
Emotions Shows curiosity when inspecting rattle and dependency when wanting to be held. Moods may change rapidly.
Interaction Tries to get parent's attention by banging rattle or crying.

5 months old

Behavior Child may become more assertive as he learns to reach for objects.
Emotions Shows anger when someone tries to take away his toy. May begin to handle stresses better because of maturing nervous system.
Tips Set clear rules if sibling tries to hurt baby. Give child responsibilities as big brother or sister.

6 months old

Interaction May fear strangers. Responds positively to other children.
Tips When baby repeatedly puts an object in his mouth that he should not, gently pull his arm away, say no and distract with another activity.

7 months old

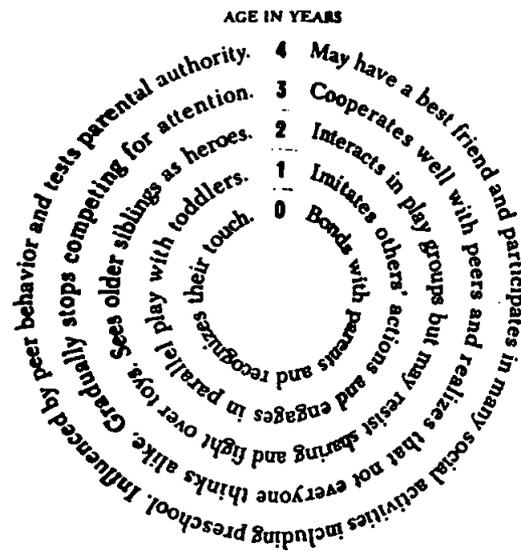
Behavior May test parents' authority by refusing to follow their directions.
Emotions Shows humor and laughs at funny expressions or positions.
Interaction May give familiar people hugs and kisses. May raise his arms to be picked up.

8 months old

Behavior Smiles at, pats or even kisses his mirror image. May distinguish between baby and image.
Interaction May reject being alone or confined in a crib or playpen. May fear being separated from parents as he learns to crawl. Buries head in parent's shoulder when meeting new people.

Circles of Friends

A baby's first friends are his parents, and interaction with them prepares the child for future relationships in larger social circles:



9-16 months old

9 months old

Interaction May perform tricks like "so big" and peekaboo for familiar people. May repeat act if applauded. Near the end of the first year, child may learn to assess moods and imitate them. If baby sees someone crying, he may cry too.

10 months old

Emotions Shows twinges of jealousy. May cry or whimper when sibling is at center of attention. **Interaction** Starts to become aware of social approval and disapproval.

11 months old

Behavior May use a security blanket for comfort in strange places. **Interaction** May assert himself among siblings. Likes to imitate gestures and sounds.

12 months old

Tips Try not to fuss when leaving child at home. Allow time for him to adjust to sitter. Distract baby with another activity and give a quick good-night kiss. Crying will probably stop after parents depart.

13 months old

Behavior Laughs when chased. May become more demanding and seek constant attention. **Emotions** After the first year, personality begins to emerge. May be an explorer, a tease, a showoff.

14 months old

Behavior Child may turn more aggressive as she learns to walk. May throw objects in anger. **Interaction** May enjoy playing alone, but still likes to act for an audience (toy chart, above left). **Tips** Time to baby-proof your house.

15 months old

Emotions May communicate feelings with a clear intent or purpose. **Interaction** By midyear, some babies may recognize when familiar people are missing. May offer toys to others but will quickly want them back.

16 months old

Behavior Instead of using words, child flings arms or moves away to say no. **Interaction** May hit parents in anger.

For More Information

Many organizations offer advice on parenting and child development. Check with your public school for local groups. A few notable programs:

Home Instruction Program for Preschool Youngsters (HIPPI USA): 212-678-3500

MELD (Minnesota Early Learning Design): 612-332-7563

Parents as Teachers National Center: 314-432-4330

Birth To Three: 800-680-7888
Family Resources: 800-641-4546

17-24 months old

17 months old

Interaction May respond correctly to what parents say. If scolded, child cries; if praised, she smiles. **Tips** Some toddlers shy away from others. Give child time to adapt to new situations and hold her hand.

18 months old

Behavior Frustration may trigger tantrums. At this age, child acts on impulse due to limited understanding of good and bad, rules and warnings. **Interaction** Communicates desire for closeness by plopping on parent's lap. Still has no sense of sharing with others.

19 months old

Behavior Enjoys getting out of the house and exploring new environments. **Interaction** Some children will play among others in a group. May engage in parallel play. **Tips** Praise will motivate child to obey the simple rules set. Give precedence to rules that keep her safe, as well as ones that prohibit hitting and kicking.

20 months old

Behavior During pretend play, child acts out what happens around her. **Emotions** May fear thunder, lightning, big animals and the dark. Install night light if sleep is consistently disrupted. **Interaction** Slowly warms to a new babysitter, but may still cling to mother around people she was comfortable with earlier.

21 months old

Emotions May sympathize with other people or recognize their feelings. Expresses love for parents by hugging and smiling. **Interaction** Still possessive of toys but may give up objects that belong to someone else.

22 months old

Interaction Cooperates with others. Language development facilitates communication. Engages in parallel play with toddlers, often back to back. **Tips** To build self-reliance, encourage child to separate from parents for short periods of time.

23 months old

Emotions May fear rejection and become frustrated with new activities. **Interaction** May be willing to play alone. Likes to follow siblings and imitate their actions. **Tips** Try to give siblings some privacy and designate a special time to spend with them.

24 months old

Behavior May become manipulative and bossy. Learns rules through trial and error. **Emotions** Able to explain feelings and desires using gestures and simple phrases. Trusts adults. **Interaction** Plays well with older children. May hand toy to another child. Imitates others through pretend play. May show signs of jealousy or revert to babyish actions when a new sibling arrives.

2-3 years old

25-29 months old

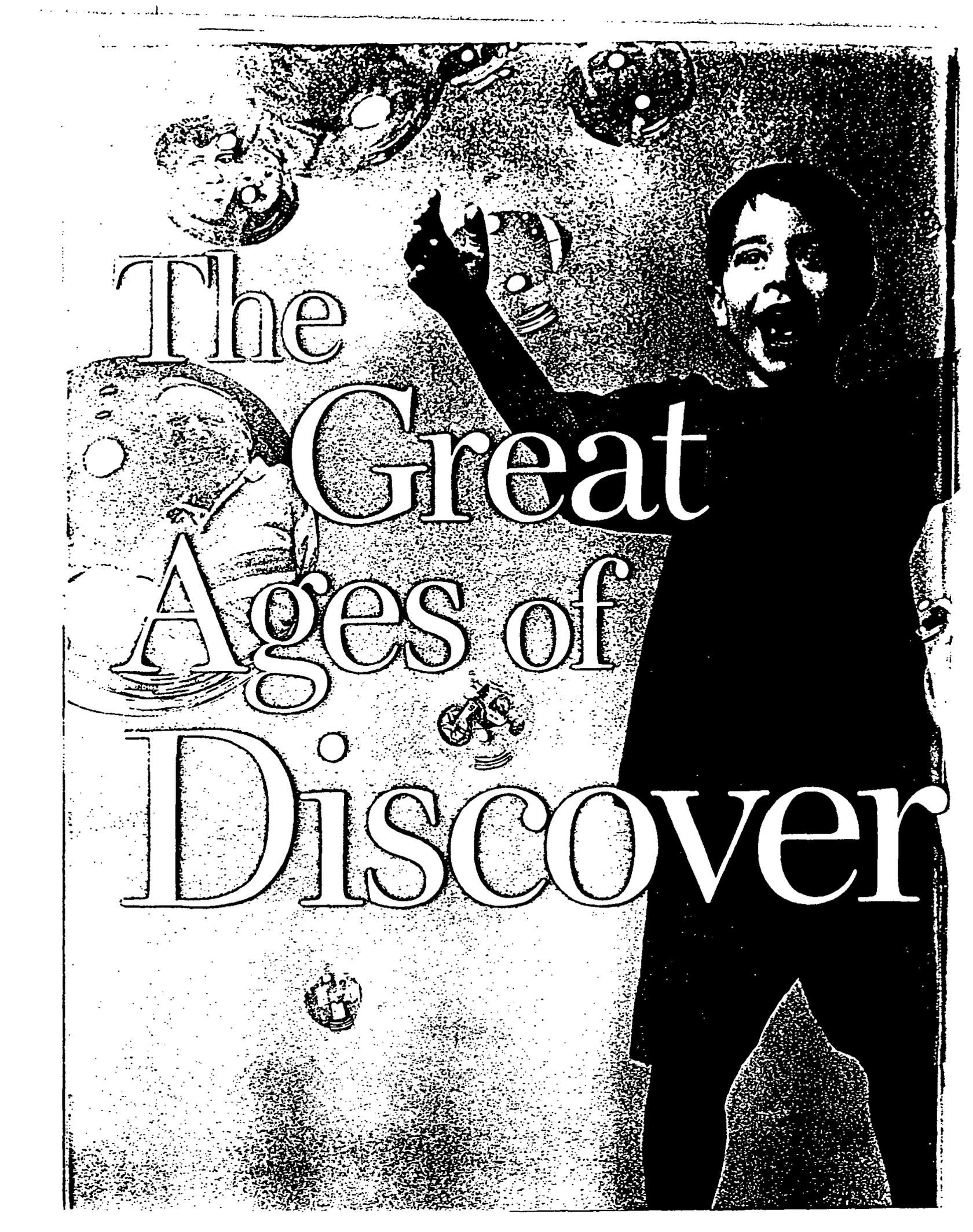
Behavior Sees the world almost exclusively through his needs. Assumes everyone thinks and acts like him. May throw tantrum when angry or frustrated. **Emotions** May have frequent mood swings. May pout or feel guilty when scolded. Learns how to express sadness or stress. **Interaction** May pull away from familiar children or adults. Siblings take on a greater role in daily life. May enjoy play groups; the concept of "friend" evolves. **Tips** Do not give child an audience during a tirade. Try not to scream back or dwell on the tantrum after it's finished.

30-36 months old

Behavior Toddler slowly begins to realize what's acceptable and what's not. May find it difficult to concentrate on new tasks. **Interaction** Child may be conscious of being a member of a family. May show pity or sympathy to familiar people. Sharing parent's attention with siblings can be difficult. Insists on being at the center of play and may dislike sharing limelight with peers. May be ready for nursery school, which can create separation anxiety. In nursery school, child learns to follow rules, to cooperate with others and to spend a few hours away from home. **Tips** Encourage child to act responsibly by setting limits on dangerous or antisocial behavior. Time-outs may help defuse anger. Be consistent with rules. Praise child when he plays well with others.

BY JENNIFER LACH

SOURCES: "THE EARLY CHILDHOOD YEARS: THE 0 TO 6 YEAR OLD," "THE SECOND TWELVE MONTHS OF LIFE," "THE FIRST TWELVE MONTHS OF LIFE" BY THERESA AND FRANK CARLAN; "CAREING FOR YOUR BABY AND TOUNG CHILD" BY STEVEN P. SHELLOV, M.D.; "FIRST FEELINGS" BY STANLEY GREENSPAN; "YOUR BABY & CHILD" BY PENNELOPE LEACH.



The
Great
Ages of
Discovery

THE WORLD

They start swaddled and protected; Mom is just an appendage. Then everybody else starts showing up: grandparents, siblings, babysitters, friends and eventually salesmen. They're a little taste of the world to come. Children can learn lessons from them that, for better or worse, will stay with them for the rest of their lives.

AS SOON AS THEY START MOVING, they start moving away. Surely it's hard to imagine while you're beaming down at your fuzzy little newborn, but you've already launched him on a life that will inevitably take him out of your arms, if never out of your heart.

You're not in this alone, and therein lies both the opportunity and the challenge. You will be the child's first guardian, teacher and moral compass. But you can't shield your baby from the world. Nor would you want to. Grandma wants to hold her; Sister wants to see if she'll bounce; babysitters are ready to rock the cradle. With any luck, you'll be able to look to your parents—whom, in a blizzard of energy and rebellion, you may have left behind years ago—for help and guidance, and love for their newest family member. (Amazing, isn't it, how the same people who were so seemingly flawed as parents can turn out to be such insightful grandparents?) It does take a family to raise a family.

It's all perfectly natural, the slow but steady transition of a little baby into the big, wider world. It starts with other family members, then moves outward as day care, then

friends, then television and marketers begin to exercise their influence. This is a journey babies are built for. They're born scientists, eager to test and taste and learn. You're there to be dazzled at their discoveries. Ride with them as long as you can.

A Grandparent's Role

BY KENNETH L. WOODWARD

AT BIRTH, A CHILD ENTERS THE mysterious world of its parents. At the same time, the child also enters the wider, even more mysterious world of its grandparents. Grandparents can, if they choose, remain aloof, becoming merely titular family figures in a grandchild's life, like the wooden image on the top of a totem. Or they can enrich that child's life—and their own—as a powerful and irreplaceable presence.

Unfortunately, some experts on the family dismiss the role of grandparents as old-fashioned, inadequate and even unnecessary in an age of new family patterns and government programs. In her best-selling book, for example, Hillary Rodham Clinton misconstrues the old African proverb "It take a village"—her title—"to raise a single child." Those African villages were not at all like small-town America in the 1950s. They were tribal clans, extended-family networks of grandparents and aunts and uncles with strong spiritual, emotional and biological ties. A more apt proverb for today's truncated nuclear family would be "It takes a whole village to replace a single grandparent." Indeed, in terms of nurture and emotional commitment, grandparents are infinitely more precious to grandchildren than a whole villageful of babysitters, child-development specialists, day-care centers and after-school programs. And when it comes to support for working

YOUR CHILD'S WORLD

single mothers, close grandparents can be indispensable.

Research by Arthur Kornhaber, a child psychiatrist with whom I wrote a book, "Grandparents/Grandchildren: The Vital Connection" (280 pages. Transaction Press. \$24.95), shows that "the attachment between grandparent and grandchild is second in emotional power and influence only to the relationship between parents and children." But there is an important psychological difference between the two. The normal tensions between parent and child simply do not exist between grandparent and grandchild.

Bonding between grandparents and grandchildren begins with the first viewing of the baby. For grandparents, the experience is usually love at first sight. (Some women have even been known to lactate when a daughter delivers her first child.) Infants need a few years before they can reciprocate that love. But gradually, children come to realize that, like themselves, their parents have parents—"great par-

ents" who seem to have existed since the creation of the world. In the same way, they eventually learn to recognize close aunts and uncles as "elders" of the family "tribe."

Attentive grandparents play a number of vital roles in the life of a developing child. One is oral historian. Grandparents are inherently interesting for having lived in "olden" days. Children are especially intrigued by stories about what their parents did when they were children themselves. To know that their parents were mischievous and made mistakes reassures children that they are just like Mom and Dad. In matters of family history, grandparents—not parents—are the ultimate authorities. A kindred role is family archivist. Children love exploring the grandparental attic, discovering old pictures, clothing, knickknacks and, in the process, their own roots. In these and

59% of all those polled say grandparents are very involved in their child's life; 37% say other relatives are very involved

other ways, grandparents supply grandchildren with a "we" as well as an "I."

Regardless of their education or experience, grandparents are natural-born mentors if they take the time and trouble. When the emotional attachment is strong, learning is playing in the presence of a grandparent. Whatever the "curriculum," young children readily absorb what a loving grandparent has to teach. Many years later, grown children often cannot remember when or how they

learned to build or bake, fix or make, the way a grandparent taught them. It has long since become instinct.

In religious matters, it is often a grandparent who provides spiritual sustenance to children of indifferent parents. Children always ask the big questions, like "Where does God live?" and "What does he look like?" Regardless of their grandparents' ac-



MICHAEL JOHNSON

tual age, grandchildren always see them as old and "closer to God"—and therefore in a position to know. As history has shown, Christianity survived in Russia largely because the grandmothers—the *babushkas*—kept the flame of faith alive during more than seven decades of communist rule.

With the emergence of two-worker families, some grandparents are taking on more practical roles, as part- or full-time parents to their own grandchildren. And with the increase in the numbers of divorced and never-married parents, aunts and uncles, often single, are rediscovering their importance to nieces and nephews. Like grandparents, aunts and uncles are family, but their nurture is delightfully different from that of parents. In short, Americans are gradually relearning an ancient truth: that the natural family is the extended family. In that widened womb, every child thrives with aunts and uncles and—as the family's foundation—those mysterious figures called grandparents.

As oral historians and confidants, grandparents play vital roles in the life of the developing child



MICHAEL L. ABRAMSON

The Sibling Link

BY TOM MORGANTHAU

JASON IS 4 YEARS OLD AND ALL boy—a dynamo, bursting with energy and curiosity, part Luke Skywalker, part Dennis the Menace, part comedian. It wasn't always that way, for Jason was adopted at 14 months, old enough to feel the loss of his biological family and the home he had known. But Jason was lucky. His adoptive parents, Tim and Ginny, already had two sons—Billy, 8, and David, 10—who took to Jason as if he were their own. "His eyes lit up the minute he walked in the door and saw the big guys," Ginny says. "They're everything to him now—he wants to do exactly what they do. He swam at 2 and rode a two-wheeled bike at 3. When they do their homework, he has to do 'homework' too. He'll do anything to get their attention—sometimes he's so aggressive I have to intervene to protect them. But they're great with Jason, and they helped a lot when he was settling in. There's just something terrific about raising kids with other kids."

None of this happened by accident. Ginny and Tim spent a lot of time explaining their decision to adopt Jason to Billy and David, and they reacted quickly to any sign of sibling rivalry. Ginny says David, as the oldest, was "fine" about Jason's arrival, but Billy, who was used to being the center of attention, was "freaked." That called for quality time, reassurance and firm rules. Billy and Jason are now very close, Ginny says, but when they begin to squabble, she reminds them there will be no hitting and no mean talk. "My kids aren't perfect, and I

don't want them to be," she says. "But they're very loyal to each other. When they get into a squall, I say, 'Just remember, your brother's going to be your friend for life.'"

All of which says sibling relationships are powerfully important in a young child's life—and that they are far more complex than the traditional psychiatric view, with its heavy emphasis on the inevitability of sibling rivalry, allows. This is something wise parents have always known. But psychologists have only recently begun to see sibling relationships in the round—to see that infants bond with their siblings during the first year of life, and to understand that even very young children know the difference between parents and other children in the family. Parents are godlike beings, the Source of All. Siblings are fascinating simply because they're kids. "Do they know the difference? I'm sure they do," says Judy Dunn, a developmental psychologist at the Psychiatric Institute in London. "They start enjoying their brothers and sisters pretty early on, even by the age of 6 months if the older sibs try to entertain them. It's very obvious in the ways babies behave toward their sibs. Often they're much more amused by their brothers and sisters than they are by their parents. There are shared interests and shared sources of what kids find funny, even in the second year."

Dunn, who is the mother of three (now adult) children, is the author of four books, including a common-sensical parent's guide called "From One Child to Two" (Fawcett Columbine, 1995). She is also one of the world's ranking authorities on the developmental significance of sibling relationships. Her research, typically based

YOUR CHILD'S WORLD

on extensive observation of the children in the home, suggests that sibling relationships can give a very young child a developmental head start—particularly if, like Jason's adoring bond with Billy and David, the relationship is warm and affectionate. Dunn and other psychologists are particularly interested in "pretend play," games in which children consciously share a fantasy ("You be Darth Vader—I'll be Han Solo"). This apparently simple act may be a critical step toward understanding the mental states of others—and, conversely, a major step toward a child's definition of self. Dunn's research shows that children with siblings begin such play six months to a year earlier than only children. More generally, she says, kids with sibs have a much richer experience with the whole range of human relations, including competition, rivalry, negotiation and just getting along. "It may mean that their whole way of understanding other people is different," she says.

Dunn does not argue that sibling relationships lead to higher IQ scores, or that the developmental advantage they seem to confer carries over into later childhood. No one has studied that yet. But her findings, taken as a whole, make a powerful case for revising the traditionally bleak view of sibling rivalry—of childhood hostilities that stereotypically lead toward neurosis. Siblings can get along, and benefit when they do.

Caring and Giving

BY SARAH VAN BOVEN

ALICIA BOND KNOWS THAT she is lucky to have found a nanny like Aimee. The Minneapolis mother can't say enough good things about the woman who has cared for her 4-year-old twin sons since they were 6 weeks old. "Aimee taught them to appreciate music by playing the piano, and she's teaching them how to grow vegetables in the garden," says Bond. Lowering her voice so Aimee won't hear, Bond adds, "I just hope the boys are learning as much from me." Like many parents who spend the workday far from their children, Bond can't help but worry that her sons will love their nanny "more." Fortunately, kids are capable of loving more than one caring adult—and these adults can teach a child a lot about the world.

Beginning at birth, babies form strong bonds with the caregivers in their lives—be they parents, grandparents or babysitters. According to Jay Belsky, Distinguished Professor of Human Development at Penn State University, not only can children form multiple attachments; they can benefit from them. "If you're secure to Mom and

Dad, that's better than being secure to just Mom. If you're secure to Mom, Dad and the babysitter, even better."

Parents would do well to worry less about kids' getting overly attached to a caregiver and more about finding the best possible care. According to a study by the National Institute of Child Health and Human Development, scheduled for release in April, high-quality care is extremely important. The NICHD tracked 800 children to see how nonparental care affects mental and linguistic growth at 15, 24 and 36 months. The researchers found that "whether a baby spent zero hours or 60 hours a week in care, *quantity* of care did not influence cognitive and linguistic development," says Sarah L. Friedman, scientific coordinator for the study. Children in "extensive care," defined as more than 30 hours a week, did not score lower on tests of either cognition (problem solving, reasoning and attention) or language (vocabulary and sentence complexity).

More critical was *quality* of care. The NICHD researchers looked for "positive caregiving"—hugs, responsiveness to the

30% of all parents say finding good day care has been a problem; 32% say they've had trouble finding a job with flexible-time options

child's needs and, especially, verbal stimulation. The better the care, the better kids tended to score on cognitive and language tests. This doesn't surprise Ellen Galinsky, president of the Families and Work Institute. "Children need warmth and responsiveness," she says. "If a 2-year-old comes to day care excited about seeing a fire truck, I want to hear the provider say, 'We've got a book about fire trucks. Let's look at the pictures.'"

If parents can find a caregiver who does that, their children reap the benefits. "A warm, loving care provider can give children a broader social horizon and teach them how to get along with adults who have different temperaments, different strengths and weaknesses, different skills," says psychologist Alicia Lieberman of the University of California, San Francisco. Aimee, the Bond family's nanny, gets a little embarrassed by her employer's praise about how she has enriched the boys' days. "I try to teach them as much as I can and to make it fun, because they are just as important to me as I am to them," Aimee says. "I'm really just doing my job." ■



Handle with care: Warm, responsive caregivers can broaden a child's social horizons

MICHAEL JOHNSON

Won't You Be My Buddy?

At first, they just play alone. Then kids start playing in 'parallel' games. Finally, they learn to make friends.

BY JOHN MCCORMICK

JUST WHEN DOES FRIENDSHIP begin? The wisest minds in child development can't agree. Many, like Alice Sterling Honig of Syracuse University, see something truly friendly in the giggles of two toddlers who stumble together in pursuit of a puppy. Others, like Claire B. Kopp of Claremont Graduate School, are more stingy with the term. They see friendship as a richer stew of trust and intimacy, something kids aren't able to fully appreciate—because they don't feel particularly bad about losing it—until they're 8 or 10 years old. But all the experts agree that something clearly happens when two children interact. If the kids aren't friends, they're learning how to make them.

Curiously, many parents don't worry as much about their child's social skills as they do about, say, his or her emotional development. In focus groups, parents have told researchers from the Washington, D.C.-based child-advocacy group Zero to Three that this is one area where kids who are slow can more easily play catch-up. That conjecture may be right or wrong—there isn't any convincing research on the subject—but it misses a bigger point: that the parents' own relationship with the child predicts volumes about his future capacity to make good friends.

Typically, children clumsily begin to bond relationships when they are toddlers. They learn about sharing, including and enjoying. Well before the age of 2, kids master "social bids," offering one another toys, looks or phrases. This also is the time when children begin "imitative play" and "parallel play." The former can be boister-



Between 2 and 3, 'parallel' play can evolve into true friendship

ous, with, for example, one child's happy claps being mimicked by a roomful of copycats. The latter occurs when kids play side by side with similar toys but without interacting: they may look as obliviously content as two cows in a field of alfalfa. By the age of 3 mutual play can evolve, not always happily, into rough competition for toys. Much as you try to silence the bickering, realize that it helps kids learn how to disagree with peers—and, eventually, how to get past quarreling.

There are ways to help a child down this uncharted road to friendship. But don't fall

for one-size-fits-all prescriptions. "Start with your child. What kind of kid do you have?" says Theodore Wachs of Purdue University. From there, pay attention. Don't hesitate to intervene if a play date is causing more tears than happiness, and make sure the toy chest is filled with the rag dolls, rattles, balls and stuffed animals that they like. Duplicates can't hurt. "You need a lot of equipment if you want friendships to develop," Honig says. "If one child is playing with a red ball, the other will want to do the same." By the second year, markers, blocks, music boxes and teeter-totters are especially popular tools

for play groups. So are everyday household items that, transformed by a child's imagination, double as toys: don't be surprised if your toddler disdains the \$30 marvel you bought him for his second birthday in favor of emptying big poker chips from a coffee can and then filling the can up again. No matter what the age, Honig says, "shoot for a level of difficulty that's doable if the children struggle."

Bungled efforts at play with other kids don't doom your child to a life without friends. As a glance around your office will confirm, not everyone masters friendship easily. Some youngsters draw their energy from toys or objects rather than people. Often, too, the problem is just a mismatch of play pals. "Age is the worst criterion for determining who should play with your child," Wachs says. "The styles of the kids are more important." Matching a leader with a follower is OK, but too many leaders can mean ... well, look at Congress. You also can help your child learn to get along with others by running a quiet household. Wachs's latest research shows that the greater the "noise confusion" in a child's home, the poorer the quality of his social play in day care.

The least-mentioned tool for building friendships is an attitude that parents can teach by lecture or, preferably, by example. Honig and others think that the reason a toddler offers her bottle to a sobbing playmate is because we come into the world hard-wired for empathy and altruistic social behavior. Often, though, that sense of generosity gets bulldozed by too much parental emphasis on the individual—what's in it for me? There's plenty of time for the kid to learn about that. ■

Brittany Avant
plays with
mother Prilla
(right) meets
with an Out-
reach worker

MAGGIE STEBER FOR NEWSWEEK

Helping Families Help Themselves

BY PAT WINGERT

TWO YEARS AGO, MICHELE DAVILA—poor, single, clinically depressed and expecting a baby—went to a local clinic looking for medical care. Fortunately for her, Davila lives in Hampton, Va., a midsize city that not only recognizes the classic profile of a mother whose children are at risk—for neglect, poor health and school failure—but is unwilling to stand by and let it happen. Thelma Tucker, one of Hampton's family-support counselors, took the case. Unlike many social workers, who visit clients only sporadically at best, Tucker began her weekly visits before the baby's birth and is still on the job. It was she who encouraged Davila to stay in a prenatal program and to keep the baby's father involved. She was also there to get Davila through her postpartum depression and her inexperience with the new baby and to urge her to take birth control seriously. Now, with a healthy toddler and a husband working full time, Davila says of Hampton's early-intervention program: "I don't know what I would have done without it."

Like so many other American cities, Hampton, Va., is full of parents who need help. But instead of settling for easy denunciations, the town is trading rhetoric for action.

Studies have linked poor parenting to crime, poverty and a whole constellation of social ills. So it's no wonder that civic leaders in cities like Hampton argue that intensively intervening in at-risk families isn't just a kind idea but a social necessity. The movement started in the early '90s, when 50 communities across the country began experimenting with "proactive" programs to reach troubled families and individuals before their problems got worse. Today these programs have spread to 260 cities in 38 states and formed a national network called Healthy Families America. Hampton started its project in 1993 and has since taken 500 vulnerable citizens into its pro-

gram. Deborah Daro, research director of the National Committee to Prevent Child Abuse, which acts as a clearinghouse of information, says, "The beauty of this is that it is generated by the communities."

Hampton took action because it had become clear by the late 1980s that it could no longer use the same old methods to combat its social problems. Like many urban centers, Hampton was caught in a vicious circle. The city's industries were drying up and pulling the tax base down with them. Meanwhile, the demand for social services—from prisons to food stamps—was rising. "Spending more on prevention seemed the only way out of the cycle," says city manager Bob O'Neill. So the city launched the Hampton Family Resource Project—which tripled its spending on preventative social services with the aim of achieving a deceptively simple goal: to "ensure that every child born in Hampton is born healthy and enters school ready to learn."

The project's primary target is at-risk mothers and children, but it also aims to reach families from all economic walks of life. "They're taking a very holistic view," says Ellen Galinsky, who studied the program for the Families and Work Institute. Libraries greatly increased their stock of parenting books and videos. A local hospital pays for a series of newsletters on child development mailed to 4,000 homes. More than 1,400 residents have enrolled in free parenting classes, and some workplaces even offer them on site. That's how Jeffrey Sandford, a senior vice president at Old Point National Bank, found time to go to a session on corporal punishment that persuaded him to stop spanking his child. "I realized [the kid is] so hurt and angry that the reason you spanked him gets lost."

After only four years, an evaluation of the city's program by psychologist Joseph Galano of the College of William and Mary reports good news. He says the most troubled families participating in the Hampton Family Resource Project have fewer premature births, more stable and stimulating home lives for children and fewer repeat teen pregnancies than the control group. Hampton is proving, he says, that "we no longer have to wait until kids are broken to fix them." ■

The Magnetic Tube

The hand that rocks the cradle may rule the world, but the hand that holds the remote may be more important. It's never too early to start watching what your kids watch.

BY JOHN LELAND

CARLA MEESKE IS NOT the type to fret over the niceties of child-development theory. In her entire career tending to the psyches of young children, she

scoffs, "I read a psych paper maybe twice." Instead, she honed her kid expertise in grittier climes: she was a toy marketer, managing brands like Nerf. In that role, she gained a unique appreciation of our young bundles of joy. "The beauty of young children," she says, "is that they are more receptive than any other young audience to brand consciousness. They become brand-loyal immediately." Meeske, who now teaches

marketing at the University of Oregon, says that a smart advertiser can implant its logo on the brains of children "from the moment their eyes are open." All you have to do is link your product with a character kids take to heart; the rest, she says, is like selling "Lion King" sheets to a baby. She didn't need any scientific basis for this claim; the proof was in the profits. While academics fiddle, she says, "we knew what worked."

Of all the challenges a developing child faces, few are more problematic than the one we

willingly bring into our homes: the television. It can be a godsend, especially when you're feeling one Pooh tape away from a really bad day. But the set also comes with its own sets of stories and mythologies, and its own values. It has ulterior motives. It captivates children sometimes when parents can't. And it teaches them things parents might not. From the moment children are born, researchers say, they learn to emulate what they see; that's how they learn. Television provides a whole universe of behavior to emulate, some desirable, some not. And the immersion begins early. By the age of 2, American kids spend an average of 27 hours per week in front of the set.

For any parent, that's a lot of competition. In nearly 40 years of study, researchers have found a correlation between children's TV habits and their levels of creativity, aggressiveness and social skills. As Peggy Char-

Television Shows to Grow On

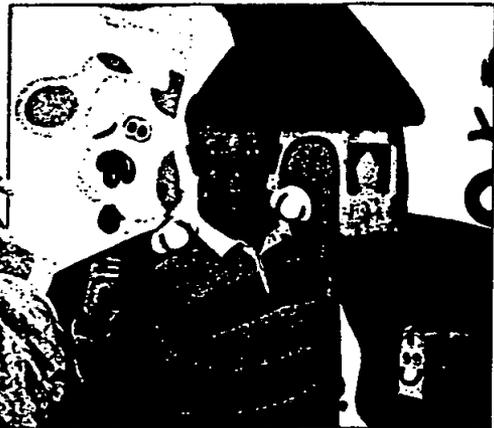
The kind of TV that kids see can be as important as how much they watch. The best shows can encourage lifelong creativity.



Dancing Barney



A scene from 'Gullah Gullah Island'



The news from 'Blue's Clues'

Elmo and Big Bird tickle—and teach—on 'Sesame Street'



ren, who heads the advocacy group Action for Children's Television, says, "The problem with television is that it's all educational." But just what is it teaching your child?

As any parent knows, television exerts a mesmerizing draw on children from a very early age. But children of different ages watch differently. For the first year, kids tend to look at a set only sporadically. After that, according to researchers, they'll watch only 10 or 15 percent of the time. At this age, says Dan Anderson, a psychology professor

emptys kids "from doing what they ought to be doing—learning to create mini-worlds that they can control. Kids who can do this are more cooperative, more likely to become leaders, less likely to be overtly aggressive." By contrast, he says, kids who watch more TV are more likely to show "negative emotions: not only anger, but also more distress or crying." The Academy of Pediatrics advises that parents should limit TV time to one to two hours a day.

But parents can also control what their

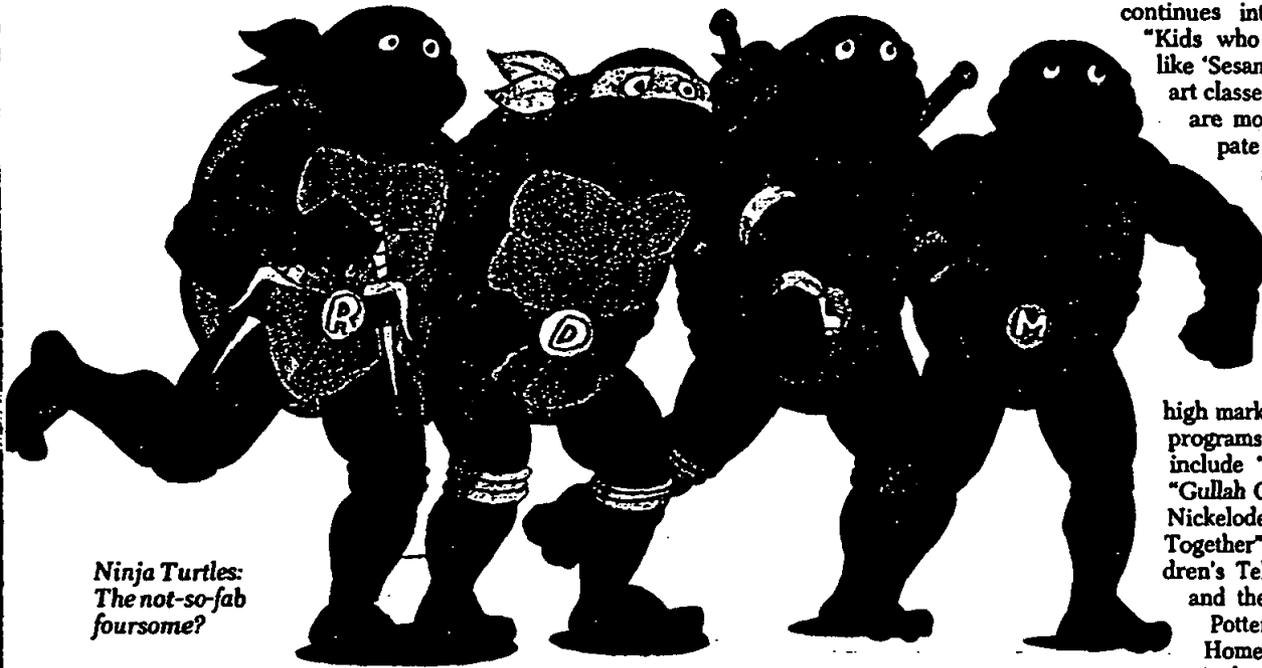
son, "the general lesson for preschool years is that what's important is not so much that they watch, or how much time they watch, but what they watch." In their three-year, 10-part study of Barney, Singer and his wife, Judith, also at Yale, found that the show encouraged creative play. After watching an episode involving construction, for example, a group of 2- and 3-year-olds did their own earth-moving games. The group that watched the Power Rangers, by contrast, "literally fought." According to Anderson, the positive influence continues into later childhood.

"Kids who watched programs like 'Sesame Street' take more art classes in high school, and are more likely to participate in extracurricular activities." Though psychologists like the Singers originally criticized "Sesame Street" for being too fast-paced, the show has since slowed down, and gets

high marks all around. Other programs touted by Charren include "Blue's Clues" and "Gullah Gullah Island" from Nickelodeon, "We All Sing Together" from the Children's Television Workshop and the series of Beatrix Potter tapes from Family Home Entertainment. And, of course, good old Mr. Rogers.

What troubles many parents, though, is the less controllable factors, especially on network TV: commercials or, worse, teasers for other programs, which might concentrate an hour's worth of mayhem into one 30-second spot. Kids 3 and under, says Cantor, "don't understand why the ads are there. They'll say, 'He told me to go buy it, so we should go buy it.'" But both psychologists and marketers agree that kids don't attach status to brand names until they are old

enough to feel peer pressure, usually around the first grade. Before that, they'll like a shirt for the picture of Barney, not for the designer logo. Mostly, it is parents who feel the craven pull of Baby Guess? Which only goes to show that you can't cut out all negative influences, even if you turn off the tube. But that still might be a good start. ■



Ninja Turtles:
The not-so-fab
foursome?

Who Are the Good Guys?

Like it or not, all television is educational. Cartoons full of violence, say some experts, teach kids to fight among themselves.

at the University of Massachusetts, they are mostly fascinated by the box. "[A 1-year-old] will look equally at a regular television program or random computer-generated shapes and sounds." Even at the age of 2, says Joanne Cantor, a professor of communication arts at the University of Wisconsin, children "think things in the box could still spill out. If there are monsters in the box, or scary animals, young children are not quite sure the monsters can't come out and get them."

For children in this age group, television can interfere with other, more necessary learning processes. Because toddlers don't understand that a TV show is a production that happens elsewhere, they are often disoriented by its form: the changes of angle, cuts in time, the visual effects like zooming in and out. Toddlers who watch a lot of TV are also less likely to engage in fantasy play. Jerome Singer, professor of psychology and child study at Yale, contends that TV pre-



The Power Rangers and the X-Men prepare for action

children watch. The good news, says Charren, is that programming for very young children has never been better. The bad news, though, is that you have to pay for much of it, either on cable or video. The commercial networks, for better and for worse, largely leave toddlers alone; the real money is in older kids. This affords parents a great opportunity. According to Ander-



Raising a Moral

A child's first few years of life are the key to whether you wind up with a darling or a delinquent. What may ultimately become empathy, generosity or charity stems initially from a child's selfish preoccupations.

BY DEBRA ROSENBERG

FIRST COMES HEALTH. "Doctor," every parent asks, "is my baby OK?" Then comes the harder part: "Will my child turn out to be good?" A child's first few years of life are the key to whether you wind up with a darling or a delinquent. What may ultimately become empathy, generosity or charity stems initially from a child's selfish preoccupations. Infants are unable to distinguish themselves from the rest of the world. That may be why newborns cry at the sound of other babies crying—they're not sure who's really hurting. This "reflexive crying" means that babies have the capacity to respond to others' distress—a primitive form of empathy. It also suggests that some morals are hard-wired from birth.

Scientists have long noted that empathetic parents tend to have empathetic children. One recent experiment on toddlers found that identical twins were more likely than fraternal twins to show similar inclinations to help people. Because identical twins share more genes, this is proof that nature, not just nurture, is at work, says Carolyn Zahn-Waxler, a psychologist at the National Institute of Mental Health (NIMH) and one of those who conducted the study. Researchers don't think there are "good" genes and "bad" genes. But they suspect that genes influence patterns of brain chemistry, which in turn govern some behaviors.

Still, genes are only part of the picture. It's up to parents to show their kids the ethical ropes. While newborns aren't likely to absorb long lectures, they can grasp many rules before they—or their parents—even realize it. Dr. Robert Coles, a Harvard

child psychiatrist and author of "The Moral Intelligence of Children," maintains that there are moral implications to nearly every decision a parent makes. "It's those everyday, minute-by-minute cues that the little ones pick up on," says Coles.

Rushing to the crib every time a child cries may train her to expect instant gratification. It doesn't do the harried parents any favors, either. Not only will they lose control of their lives while the child is an infant, but "it may be difficult for them to say no down the line," says Coles. Children who don't learn the meaning of the word "no" will be at the mercy of impulses and desires they don't know how to control. The result? Spoiled and demanding little tyrants. This isn't just a matter of discipline. "The child has to learn that there is a higher authority that you just don't question," Coles says.

Parents may be unintentionally sending signals from the start, or deliberately shaping the most crucial messages. In his book, Coles relates the story of Maisie, a woman whose 6-month-old son, Don, seemed to relish the act of tossing his emp-

ty bottle onto the kitchen floor. At first Maisie figured Don didn't know any better. But she quickly began to suspect he was enjoying the commotion. Maisie then waited by her son's highchair and, while distracting him with chatter, gently eased away the empty bottle. The boy soon lost interest in throwing it. What may seem like a clever mother's trick was actually an early lesson in morals. "That's a kind of moral awareness; it's learning the meaning of constraint," says Coles.

Most moral training doesn't have to be so calculated. Pat-a-cake and peekaboo look like innocent play, but the parent is in fact communicating complex sets of rules about

82% of all mothers and **74%** of all fathers say they plan to send their child to Sunday school or some other kind of religious training

WILLIAM DUKE

turn-taking and expectations. Learning to alternate coos or synchronize gazes with a parent prepares the baby for more intricate relationships later in life. "This is social reciprocity," says Dr. Robert Emde, a psychiatrist at the University of Colorado Health Sciences Center. This kind of give-and-take is at the heart of all moral systems. Put simply, it's the golden rule: do unto others as



you would have them do unto you. Babies who are cuddled and cared for—who aren't spoiled but have their emotional needs met—are more likely to demonstrate caring behavior later.

Children who go emotionally hungry in infancy may simply not have the biological wherewithal to be compassionate. Dr. Bruce Perry, a psychiatrist at Baylor Col-

lege of Medicine, studied brain scans of children who had been severely neglected. He discovered that the brain region responsible for emotional attachments never developed properly. According to Perry, babies who don't get their quota of TLC early in life may lack the proper wiring to form close relationships. Other research supports the theory. Bonnie Klimes-

Dougan, a psychologist at the NIMH, found that toddlers who'd been abused were themselves more likely to hit or insult a crying peer.

As infants learn to crawl and then to walk, the budding explorers grow familiar with how things look and where they belong. By the age of 2, kids have become sticklers for consistency and can't tolerate it when their own "rules" are violated. A toddler might become outraged, for example, if his mashed potatoes touch his peas. At the same time, children are constantly testing the boundaries of their new world. But they don't go it alone. By 18 months, kids will turn to Mom or Dad for guidance in unfamiliar situations. Experts call this "social referencing." In one study, Emde watched as toddlers glanced at their mothers' expressions, seeking tacit permission, before approaching a strange robot.

Social referencing helps children acquire the moral emotions of pride and shame. Pride is the celebration kids feel as a reward for "getting it right," says Emde. A big smile and a "puffed up" posture are telltale symptoms. Shame, on the other hand, occurs when kids form mental images of a disapproving parent. Ashamed children avert their eyes and try to shrink out of sight. That may not be all bad. "Shame is a part of growing up and developing a conscience," says Coles. It reinforces the notion that certain behavior—say, torturing the family pet—just isn't acceptable. Warns Coles: "If a child doesn't learn to be ashamed of that behavior, we're in real trouble by the age of 2 or 3."

As children learn to talk, parents can tutor them in positive behaviors, such as altruism and manners. By saying "Let's both of us say 'thank you'," a parent sets a good example and includes the child in the behavior. Such joint efforts are more effective than direct commands. They also help instill a sense of belonging to a team, what Emde calls "an executive sense of we." By the time they are 2, even when they are alone, kids retain a sense of a parent guiding them. In one experiment, Emde tempted children to play with toys forbidden to them by their mothers. Remarkably, the toddlers resisted—even though their mothers were out of the room. "Didn't you hear my mommy? I better not play with those toys," one toddler said.

Just as children learn to imitate language and gestures, they also mimic the moral practices they see. Good role models help. Consider the effect on a toddler who hears his father say "Tell him I'm not here" when the boss calls at home. Showering a spouse with a chorus of "pleases" and "thank yous," on the other hand, will likely lead to a thoughtful tot. "Every day is a school day when it comes to moral development," says Coles. By doing their homework, parents can help their kids graduate with honors. ■

HILLARY RODHAM CLINTON

DOING THE BEST FOR OUR KIDS

The First Lady calls for Americans to work together and give parents the tools they need to raise their children—and provide them with a lifetime of learning

SOMETIMES IT SEEMS THAT TIME HASN'T always been an ally to us parents. As Bill and I have discovered at every birthday and every milestone in our daughter Chelsea's life, months and years fly much faster than we ever want. Like other parents bracing themselves for a child's departure for college, we ask ourselves every day: "How did the baby we brought home from the hospital grow up so fast?" "Is there any way we can move the White House to her college campus?"

Of course, we know that Chelsea is ready to begin a new phase of her life and that college will be a great experience. But it still doesn't keep us from reviewing the past 17 years and wondering if we've made the most of every minute to prepare her for the challenges of adulthood.

As science is now telling us, some of the most important preparation we can give our children takes place during the earliest years of life. New research has confirmed what many parents have known instinctively: infants begin learning the minute they are born. They are acutely aware of their surroundings and their brains crave and absorb all sorts of stimulation. Recently we have learned that the combination of intellectual and emotional interactions with infants and toddlers—holding a child in your lap while reading a story, for example—is crucial to their learning and emotional development.

Although Bill and I didn't realize it at the time, the countless hours we spent cuddling with Chelsea and reading her favorite stories not only strengthened our relationship with her but literally helped her brain grow.

Unfortunately, too many children are still missing this early stimulation. Just half of all infants and toddlers in our country are routinely read to by their parents. Over the years I have met parents who tell me they never really talk to their babies because babies can't understand what they are saying. I've also met parents who thought that they

couldn't read well enough themselves to read to a child.

We must help parents understand that, no matter their educational level or reading ability, they can stimulate their children's cognitive and emotional development by talking to and reading to their children, even if they stumble over a few words here and there. Most likely, their children won't even notice. But they *will* notice the power of reading and the books to take them on fascinating adventures and introduce them to the world of words and ideas. And just as important, they *will* notice the time a parent has set aside to be with them, to hold them close and to share in a nurturing activity.

Earlier this year, I announced a nationwide effort to encourage early reading in homes across our country. I believe that few efforts can make a more dramatic difference over the next 10 years than to persuade parents of all educational and economic backgrounds to take this mission of reading, talking—and even singing—to babies more seriously.

At the same time, parents shouldn't go overboard. A friend of mine told me that he became so obsessed with making sure that he and his son finished reading two books a day that he rarely stopped for questions or allowed his son to look closely at the pictures. And mothers and fathers don't need to feel that they have to rush out and read the latest scientific paper on human brain development for exact instructions on how to interact with their children.

The point is that learning is a lifelong proposition—one that, in the best of worlds, begins at the earliest stages and continues for years. Yes, the first three years of life are crucial, but they are not the only time that parents need to be engaged with their children or help them develop the skills they need to progress in the world. We should not use this new research to ignore the learning needs of older children and adults. I thought about this recently when I visited Robben Island in South Africa, the prison where Nelson Mandela and other political prisoners were jailed for many years.



Reading to patients at a Kansas City, Mo., hospital

As Chelsea gets ready to leave for college, Bill and I can't help reviewing the past 17 years; we wonder if we've made the most of every minute to prepare her for the challenges of adulthood

While doing hard labor in a nearby limestone quarry, literate prisoners taught their fellow inmates to read by writing letters and words in the dust with their shovels and picks. One prisoner who learned to read that way went on to educate himself and now is a top official in the South African government.

My greatest hope is that we can find effective ways to apply the knowledge we are gaining from science and make it more easily available to parents. It seems as if every day more new information is piled on top of what already exists about how our children develop and what they need most to grow. And yet many parents lack access to this research and others aren't sure how to interpret it. What little information they do get comes in bits and pieces, with little guidance about how to apply it to benefit their children. This month, the president and I are convening a first-ever White House Conference on Early Childhood Development and Learning. Our aim is to bring together parents, scientists, policymakers, educators, business leaders and child-care providers to dis-

cuss the new research on the brain and early-childhood development and explore how we can deliver this information to more homes.

Many things can conspire against parents as they try to provide children with the attention and stimulation they need to develop. Parents are often stretched for time and resources, and can use all the help they can get.

As I've been saying for years, it does take a village to raise a child. That's why we can all work together to make sure parents have the tools they need to raise their children—whether it is providing information about the importance of reading and talking to children in the early years, strengthening prenatal care, expanding Head Start or ensuring access to affordable, high-quality child care.

Our children have so much potential to grow and thrive throughout their childhood. Wherever there is patience, love and commitment, the window of opportunity for raising a healthy, happy and well-adjusted child never closes. ■

Where You Can Turn

BY CARLA KOEHL

AVID "TELE-PARENTS" WILL TELL YOU THAT THERE'S nothing like a phone jack and 16 megabytes of RAM for navigating the mysteries, hurdles and hassles of life with an infant or toddler. If only you had Netscape and a 28.8 modem—or at least speed-dial—they'll say, you'd be surfing and dialing your way to parental bliss with all the child-rearing info that's available by PC and phone. Are they batty? No. Just a little excited.

There are now more places than ever to phone for help when mothers and fathers feel parentally challenged. And the explosion of parenting Web sites and newsgroups that's taken place on the Internet over the last five years is connecting families from household to household the way the telephone did for the first time in 1876. Only this time the advance in communications isn't just overcoming distance and isolation. It's conquering stigmas.

Kate Ripley was nursing her newborn in her cabin half an hour outside Fairbanks,



Online support: Rory and Kate

Alaska, when she found an online breast-feeding newsgroup. "I was really lonely," she says. "It was a huge relief." Now that Rory's 9 months, the baby books are hinting that he's eating too often. Ripley's group (misc.kids.breastfeeding) says otherwise. "You don't just want to have someone validate everything you think," she says. "But it's such a variety of voices, you can cull." Even in Los Angeles, where there's no such thing as a remote location, actor Brian Markinson logs on whenever he and his wife are stumped about their 9-month-old. "It's another resource," he says,

"rather than call a doctor and feel like you're being a pain."

Technological alarmists, of course, take delight in warning that millions of modem-happy moms and dads will do nothing but produce millions of antisocial, monitor-gazing kids. A reliance on dial-tone parenting, they insist, keeps families, friends and neighbors from trading advice the old-fashioned way: in person. But a glance at all the live, wired interaction out there suggests that, so far, the alarmists are wrong.

On the Net

Usenet

alt.parenting and misc.kids
Great places to start on the Usenet—the Internet's collection of newsgroups—for discussions on hundreds of topics from teething and breast-feeding to pets and snoring. Also, rec.arts.books.children is a 24-hour-a-day book group on children's literature.

Childbirth.Org

<http://www.childbirth.org>
Top discussion forums here, and a home page that gets right to the point on tough issues, including "Pregnancy & HIV," "Having Your First Baby Over 35" and "Complications."

Family.com

<http://www.family.com>
Disney's new site has been criticized for being more upscale than helpful. But their bulletin boards and chat rooms are filled with the voices of intelligent, caring parents. They must be doing something right.

ParentTalk Newsletter

<http://www.tnpc.com/parenttalk/index.html>
Clearly written articles by physicians and psychologists. What this site lacks in graphic creativity, it makes up for in sheer mass of information.

ParenthoodWeb

<http://parenthoodweb.com>
Pediatricians and psychiatrists respond (in due time) to your e-mail. Meanwhile, they've posted their stock answers to anything-but-stock questions, including "Did we make a mistake by having a child?"

Parenting Q&A

<http://www.parenting-qa.com/>
This site calls itself the only one on the Web "solely devoted to providing parents with answers to their most pressing questions." It does answer questions faster than most other sites we tried. But it also offers essays on touchy subjects like spirituality, and suggests reading lists for kids, games for rainy days.

ParentSoup

<http://www.parentsoup.com/>
Excellent discussion forums address everything from step-parenting and disciplining closely spaced siblings to premature babies and children with attention deficit disorder.

Zero to Three

<http://www.zerotothree.org>
The Washington, D.C.-based child-advocacy group has just launched its Web site. On it: a wealth of research and information on physical, cognitive and social development of infants and toddlers.

On the Phone

Child Care Aware

800-424-2246
Operators refer parents anywhere in the country to licensed and accredited child-care centers in their area. They'll also send, at no charge, an information packet on how to choose quality child care. Coordinated by the National Association of Child Care Resource and Referral Agencies. Weekdays, 9 a.m.–5 p.m. CST.
ChildHelp National Hotline
800-4-A-CHILD

Twenty-four-hour advice and referrals for children and adults with questions or in crisis. Staffers with graduate degrees in counseling field calls on issues ranging from child-abuse prevention to whether it's normal for a 3-year-old girl to try urinating while standing up. (Yes, says a hotline counselor, it is.)
Gerber Information Line
800-443-7237

Tipper Gore's recorded welcome message jolts you from thoughts of strained peas on this 24-hour consumer-info line (she reminds callers that doctors recommend having babies sleep on their backs). Moms, dads, grandparents—not nurses—work the phones, advising

callers on nonmedical essentials like diapering, sleeping and "lots and lots of questions about food," says one operator.
National Parent Information Network

800-583-4135
NPIN boasts the largest parenting database in the country. Researchers hunt down referrals, abstracts and answers—and send them free of charge—to hundreds of callers every month. Trouble with toilet training, the merits of co-op playgroups vs. private preschools, baby bowel movements: absolutely nothing is out of bounds here. Weekdays, 8 a.m.–5 p.m. CST.

Parents Anonymous
909-621-6184 (not toll-free)
The national office in Claremont, Calif., refers parents to 45 state and regional affiliates, which offer support groups, counseling, referrals. Weekdays, 8 a.m.–4:30 p.m. PST.
Single Parents Association
800-704-2102

This line, which has just gone national, helps parents find support groups and resources in their communities, fields questions on parenting skills and reminds single parents that they're not alone. Weekdays, 9 a.m.–6 p.m. CST.

With T. TRENT GEGAX