Family Guy

Move over, "mommy brain." Men go through their own biological changes after a baby is born. But dads are programmed to challenge their kids, not coddle them

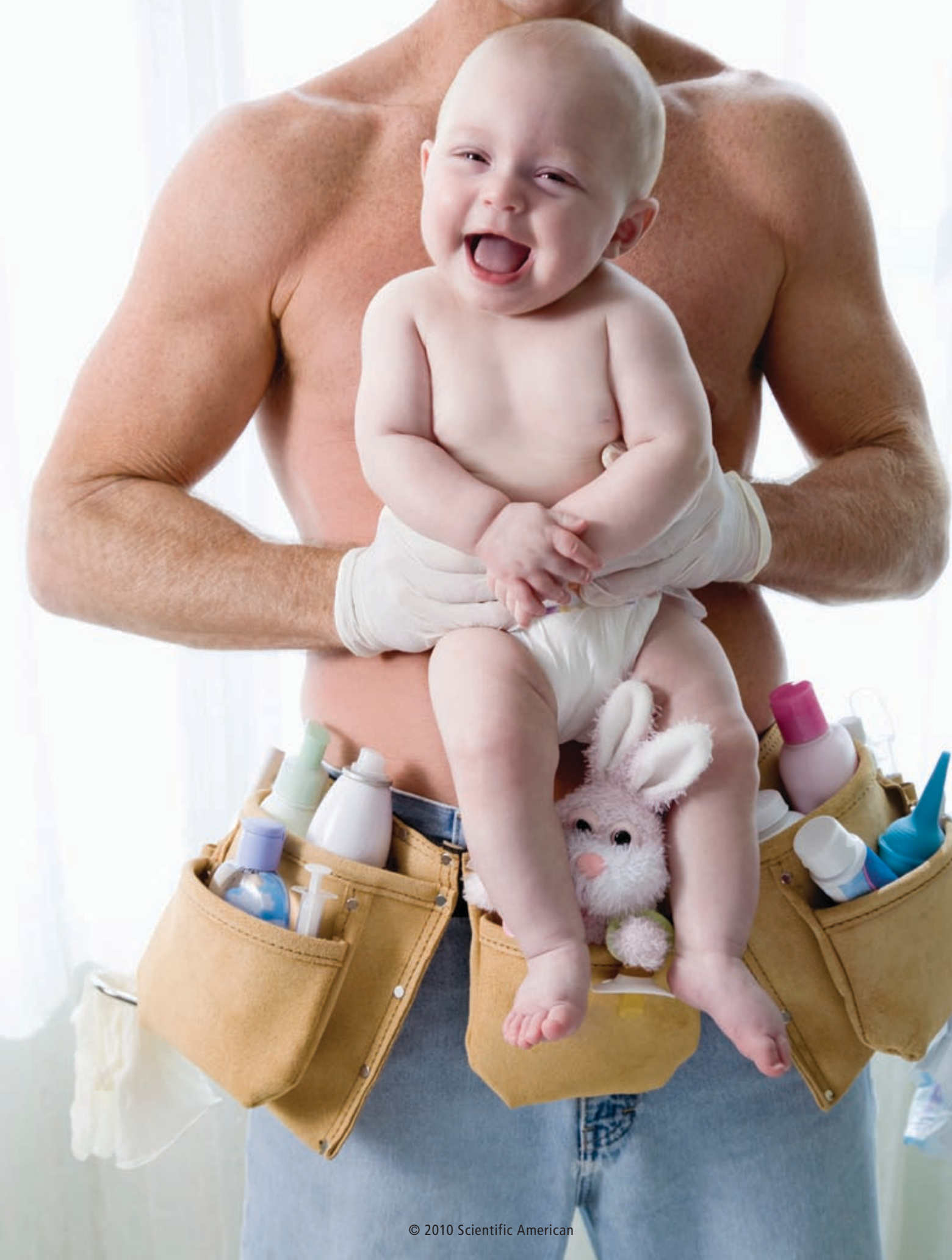
By Emily Anthes

Mark Oppenheimer, a part-time stay-at-home father of two young girls, is used to stares. "When I'm walking down the street with one baby strapped to my chest and the other in a stroller—and the kids all look happy—and I walk by a group of mothers, they're just blown away," he says. "The easiest way in the world to get a smile is to be a man with a baby."

Fatherhood has undergone a profound change in the past half a century. In 1965 fathers were spending 2.6 hours a week on child care; by 2000 that figure had reached 6.5 hours. There are three times as many stay-at-home fathers as there were a decade ago, and families headed by single fathers are the fastest-growing household type in the U.S. "When I started studying American mothers and fathers, the majority of the fathers I studied had never bathed their children. Many of them had never changed a diaper," says developmental psychologist Michael Lamb of the University of Cambridge. That was in the 1970s. "Now," he says, "men would feel embarrassed to say they hadn't changed their children."

For years social scientists considered fathers to be second-string parents, bench players whose main role was to jump in when Mom was otherwise engaged. That view has changed, partly thanks to research revealing that dads are anything but backup mothers. Scientists are now turning to the nuances of how and why they matter. The work shows that fathers are biologically as responsive to their children as mothers are. And yet fathers seem to influence children in unique ways. In particular, they

CHRISTOPHER HUDSON *iStockphoto (family icon)*; PAUL BARTON *Corbis (man and baby)*



Dads relate to kids differently than moms do, tending more toward rough-housing than cuddling or coloring.

play an outsized role in challenging their kids and stretching their emotional and cognitive capabilities, preparing them for the big wide world.

Partners in Play

In a 1958 paper British psychiatrist John Bowlby debuted a then controversial idea that became known as attachment theory: to develop properly, all children require a safe, secure relationship with an adult, he claimed. He called his opus, "The Nature of the Child's Tie to His Mother." But some of the first studies to actually assess fathers, in the 1970s, found that dads are just as capable as mothers at caring for their children. Dads are equally able to interpret their infants' distress as, say, a sign of hunger or fatigue and to respond accordingly. Men and women have the same physiological responses—changes in heart rate, respiration, skin temperature, and more—when they encounter fussy newborns. Just like mothers, blindfolded dads can pick their babies out of a nursery lineup merely by touching all the infants' hands.

Research also shows that dads and dads-to-be go through many of the same physiological changes that pregnant women do. For example, in a study published in 2000 psychologist Anne E. Storey of Memorial University of Newfoundland in Canada and her colleagues found that expectant dads had elevated levels of prolactin, a hormone that is also sky-high in new mothers who are attached and responsive to their children. The researchers also discovered that the men's testosterone levels dropped by about one third in the first few weeks after their kids arrived, a change that may make a man less aggressive and more nurturing. A follow-up study published in 2001 revealed that new fathers had lower testosterone levels than age-matched controls. Fathers can even suffer from postpartum depression: from a 2005 survey of 26,000 mothers and fathers, psychiatrist Paul G. Ramchandani of

CORBIS

FAST FACTS

Mr. Mom?

1» Fatherhood has undergone a profound change in the past half a century. In 1965 fathers were spending 2.6 hours a week on child care; by 2000 that figure had reached 6.5 hours. There are three times as many stay-at-home fathers as there were a decade ago.

2» For years social scientists considered fathers to be second-string parents, but that view has changed, partly thanks to research revealing that dads are anything but bit players in their children's lives. Fathers are biologically as responsive to their children as mothers are.

3» Fathers influence children in unique ways. In particular, they play an outsized role in stretching their emotional and cognitive capabilities—enriching their verbal skills, for example, and encouraging them to take risks.

An infant picked up by his mother will calm down. When picked up by Dad, the child's heart rate jumps, a sign that Junior's getting excited.

the University of Oxford determined that 4 percent of fathers had symptoms of depression within eight weeks after their children were born. Fatherhood can alter the brain in other, more positive ways as well [*see box on page 51*].

But although parenting is just as biologically natural a role for men as it is for women, fathers typically interact with their kids in a way distinct from that of mothers. In traditional two-parent households, moms tend to provide most of the care and comfort to infants, whereas dads are more likely to play with them. "Fathers spend proportionally more of their time engaging in play with kids, which tends to be highly arousing and usually quite positive," Lamb says. Classic studies conducted in the 1970s and 1980s show this discrepancy is pervasive in the U.S. And in a 2006 assessment Lyn Craig, a senior research fellow at the University of New South Wales's Social Policy Research Center, and her colleagues found that Australian fathers spend about 40 percent of their child care time engaging in interactive activities such as play or reading as compared with 22 percent in the case of mothers.

By eight weeks old, babies have noticed this pattern. An infant picked up by his mother will calm down, showing decreases in heart rate and respiration. When Dad picks up his child, however, the child's heart rate and respiration increase—a sign that Junior's getting excited for a rollicking game.

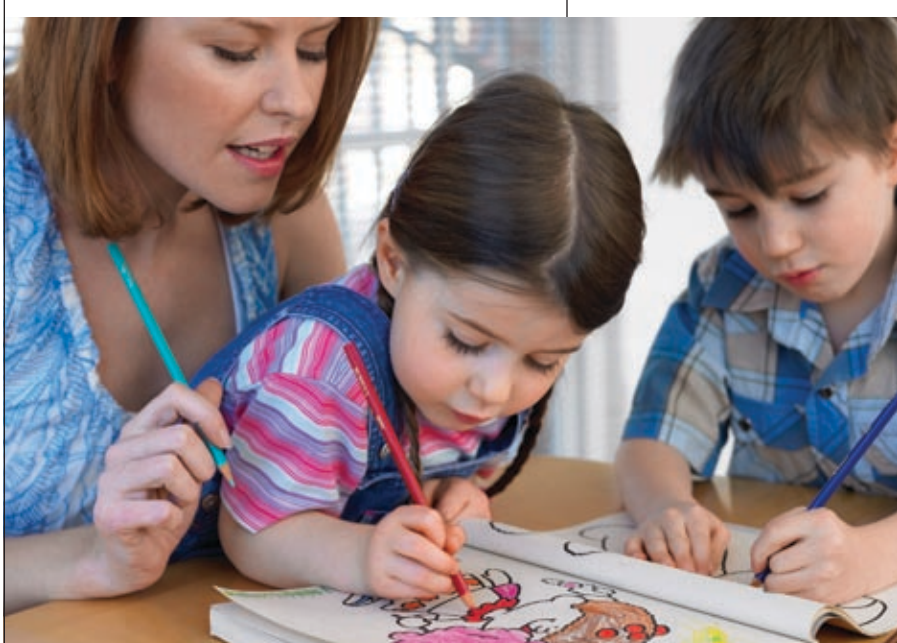
One reason for fathers' particular playfulness may lie in the traditional division of labor in American families. In her study, Craig found that 51 percent of mothers' child care time—but only 31 percent of fathers'—is spent performing physical and emotional care such as feeding, bathing, cuddling and soothing. If mothers are doing the bulk of the caretaking, fathers have the luxury of goofing off with Junior. Note that these differences are proportional and do not mean that men spend more total time playing with their children. In fact, a second reason for fathers' emphasis on play may stem from the fact that they tend to be around their children less than mothers are. "If you had a young child and only had an hour to be with that child, you might tend to use that time to have a lot of fun, to play a lot," says Catherine Tamis-LeMonda, a psychologist at New York University.

Cultural comparisons support the notion that the division of labor drives some of this parenting behavior. In cultures in which men take on more child care—such as the Aka foragers of Central Africa, a society in which fathers are equal partners in caregiving—they spend less of their time in play. And in the U.S., cultural norms regarding masculinity may also contribute, making some men more comfortable rolling a truck on the floor than rocking their infants to sleep. So although dads are biologically wired to take on any aspect of parenting, for cultural reasons they often end up carving out their own niche within that multifaceted job.

Taking Chances

Fathers also have different play styles than mothers do. An accumulation of studies now shows that fathers tend to engage in more physical play than mothers do. In 1986 researchers asked the parents of more than 700 children how they played with their kids. The results showed that dads are more likely than moms to bounce their kids on their knees, toss them into the air, give them piggyback rides, and wrestle, tickle and chase them. Moms, on the other hand, generally opted for less energetic games, such as patty-cake, with their little ones.

In his 2009 book, *Children, Play, and Development* (fourth edition, Sage Publications), psychologist Fergus P. Hughes, an emeritus professor



Mothers spend just 22 percent of their time with children in interactive activities such as reading, playing or drawing. Fathers spend 40 percent of their time with kids that way.

CORBIS

Together two parents may strike a nice balance in which Mom acts as a "lifeguard" and Dad functions as a "cheerleader."

at the University of Wisconsin–Green Bay, reviews other peculiarities of fathers' play. Moms are more likely to engage in verbal play—singing songs or rhymes, for instance—as well as to use toys and play conventional games. When fathers do use toys, they are often inventing new ways of using them or integrating them into new games. Men also have less predictable play patterns, peppering children with surprises that may boost cognitive development.

In addition to promoting highly physical frolicking, dads encourage kids to take physical risks. In a study published in 2007 Tamis-LeMonda and her colleagues presented the parents of 34 infants with an adjustable ramp. Each mother and father was independently asked to position the ramp to the steepest slope he or she thought the child could crawl down. Most mothers and fathers overestimated their children's abilities (as it later turned out when the babies were put to the test). But when parents were asked to create the steepest slope they would permit their baby to crawl down if they were across the room, 41 percent of fathers would allow their children to tackle a ramp that was even steeper than the one they had set up in the first part of the experiment. Only 14 percent of mothers were willing to similarly challenge their kids.

Complete safety should not always be the dominant priority in parenting, Tamis-LeMonda points out. "In the physical motor domain, that might be one of the functions of dads—to challenge kids a little more," she says. Together two parents may strike a nice balance, she adds, in which Mom acts as a "lifeguard" and Dad functions as a "cheerleader."

A father's predilection for training his kids to be physically tougher and more daring suggests to some researchers that fathers open kids up to new experiences to help prepare them for future life challenges. A neat bit of research from 1995 encapsulated this idea. While studying the behavior of parents who had enrolled their one-year-olds in an infant swimming class, investigators found that fathers tended to hold their babies so they faced out

PHILIP AND KAREN SMITH *age fotostock*

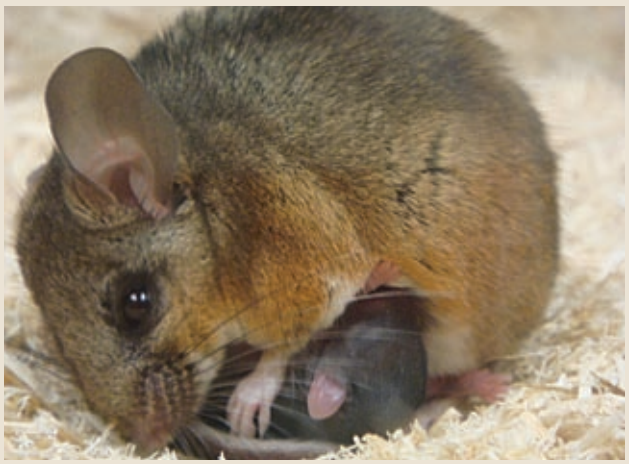
Dads often encourage their kids to take physical risks, helping prepare them to tackle challenges as they grow.

The **Daddy** Brain

Giving birth to, and caring for, offspring has been known to give mother animals a boost in certain cognitive domains, making them more efficient foragers, for instance. But recent research suggests that such benefits are not limited to mothers. In unpublished work, behavioral neuroscientist Kelly Lambert of Randolph-Macon College and her colleagues tested the mental skills of father and bachelor California deer mice, a species in which males naturally pitch in as caregivers. Compared with bachelor rodents, the fathers were better foragers—quicker to learn where food was located in a maze—the researchers found. The dad mice were also more comfortable in strange situations, showing less stress around novel stimuli.

These behavioral differences seemed to be rooted in the fathers' brains. Lambert's team found more cellular changes in the hippocampus, a brain region involved in learning and memory, in the fathers' brains than in the bachelors' brains. What is more, the brains of father mice—as well as those of foster fathers, who each cared for another male's pup for several days—contained more nerve fibers that were sensitive to oxytocin and vasopressin (hormones associated with caregiving behavior) than did males that had had no exposure to pups.

Other data hint that similar cognitive enhancement may occur in primate fathers. In 2006 scientists working in the laboratory of neuroscientist Elizabeth Gould of Princeton University reported that when marmoset monkeys became fathers, neurons in the prefrontal cortex, a brain region dedicated to planning and decision making, became more densely connected and sprouted more receptors for vasopressin, suggesting an increase in the area's cognitive capacity.



Male California deer mice not only care for their own pups but also will nurture others' offspring, as this father mouse is doing. Being a dad pays back, too: it boosts brainpower in these rodents.

The behavioral and biological changes seen in rodent and primate fathers are similar to those researchers have observed in mammalian mothers. But studying fathers is important—and not only because their biology differs at least subtly from that of their female counterparts. In mothers, researchers must untangle the effects of pregnancy from those of caregiving. Says Lambert: "The males are a purer model of parental behavior." —*E.A.*

KELLY LAMBERT

into the water, whereas the mothers stood in front of their children, establishing face-to-face contact.

Language Lessons

In addition to emotionally preparing children for new challenges, fathers help bolster their cognitive capacities—in particular, their verbal skills. In a 2006 study psychologist Lynne Vernon-Feagans of the University of North Carolina at Chapel Hill and her colleagues studied family triads—two-year-olds in free play with both their mothers and their fathers. They found that the fathers were far less verbal with their children, speaking fewer words and taking fewer conversational turns than the mothers. And yet the researchers found that fathers' language use—but not mothers'—independently predicted their children's language development at age three. The larger the variety of word roots that fathers used with their two-year-old children—where, for instance, "talk" and "talked" were counted as a single word root—the better the kids scored on a standard test of expressive language a year later. The size of a mother's vocabulary seemed to have no effect on children's scores.

Fathers' influence may stem from the different way in which they talk to their children. In a not yet published follow-up study, Vernon-Feagans discovered that fathers use more unusual words than mothers do when speaking to their kids. "Mothers use more emotion words. 'Oh, did you hurt yourself? Are you hungry?' " she says. "Their words aren't as complex as the dad's words. Fathers' approach is more talking about sports and cars and other unusual subjects." This finding jibes with earlier research suggesting that mothers are more likely to "talk

(The Author)

EMILY ANTHES is a freelance science and health writer living in Brooklyn, N.Y. Her work has appeared in *Scientific American Mind, Discover, Popular Mechanics, Slate, New York Magazine* and the *Boston Globe,* among other publications.

down" to their children, according to their perception of a child's linguistic abilities. Dads, on the other hand, may be less sensitive to their children's language skills (perhaps because they spend less time with them) and are therefore more apt to stretch them, speaking at a more sophisticated level.

Indeed, in a study published in 2004 psychologist Meredith Rowe, now at the University of Maryland, and her team showed that fathers in low-income families asked their toddlers more "who," "what," "where" and "why" questions and made more requests for clarification from their children, perhaps because they had more trouble understanding their children than mothers did. In response, these toddlers ended up using longer utterances and larger vocabularies when talking to their fathers than to their mothers.

Kids who have stable and involved dads are better off on nearly every cognitive, social and emotional measure researchers can devise.

Exposure to complex speech does positively influence language development in children. In a 2002 investigation psychologist Janellen Huttenlocher and her colleagues at the University of Chicago noted a connection between the syntactic complexity of a child's speech and that of his or her parents: differences in children's mastery of multiclause sentences paralleled the proportion of multiclause sentences in parent speech. Thus, if fathers are using more complex grammar and vocabulary than mothers, they might disproportionately influence children's linguistic development. Of course, fathers may also end up being more important in language development because their involvement is more likely to vary, and numerous studies have shown that the absolute amount of language a child is exposed to—that is, how much adults talk or read to them—has a powerful effect on the child's verbal development.

Dads themselves may not realize how much influence they have, so they may duck out of parenting when they don't feel like it. But an absence of fathering has a measurable effect on the children. In a study of new parents published in 2009 psychologist James Paulson of Eastern Virginia Medical School and his colleagues assessed 4,109 two-parent families to determine how depression influenced how often the parents read to their children. Fathers and mothers who were depressed when their children were nine months old read to their tots less often than nondepressed parents did. For mothers, however, the decline was minimal and did not affect a child's language development. But in depressed dads, the decrement was larger and had an impact. The less that fathers read to their infants, the worse their toddlers scored on a standard measure of expressive vocabulary at age two. "It may be that when dads were depressed, they had the flexibility to withdraw more. And because of that, their depression had more impact on their parenting and more impact on their child's language," Paulson says.

Moms who have low self-esteem tend to dismiss or criticize dads' parenting attempts more often than self-confident moms do.

JUPITERIMAGES

Letting Dad Parent

Kids who have stable and involved dads are better off on nearly every cognitive, social and emotional measure researchers can devise. For instance, high levels of father involvement are associated with children who are more sociable, confident and self-controlled and less likely to act out in school or engage in risky behaviors in adolescence. Men such as Oppenheimer who share parenting duties with women derive more satisfaction and pleasure from their paternal role, and women whose male partners take on a fair share of the child care have higher marital satisfaction, are less stressed, and have more positive views about their children.

In many cases, psychologists say, mothers are behind Dad's involvement—or lack of it—as much as or more than fathers are. That is, mothers hold a lot of power to shape not only their own relationships with their kids but those between the kids and their father. Sometimes they use that power to block fathers' participation by acting as informal "gatekeepers" to their children. For instance, moms may bond so strongly with their children that they leave little room for dads or are so anxious about the way their children are raised that they need to maintain complete control. Or some women simply want home to be their place of authority and power.

In fact, research has shown that women with low self-esteem are more likely to act as gatekeeper, suggesting that parenting can be a source of validation for these women. In a study published in 2008 social psychologist Ruth Gaunt of Bar-Ilan University in Israel and her colleagues visited the homes of 209 couples with small children and asked each mother and father to complete a questionnaire assessing parenting behaviors and values as well as various personality traits. The investigators associated the tendency to be a gatekeeper with certain psychological traits of the mothers. In particular, mothers who scored low on a standard measure of overall self-esteem were more likely to agree with statements such as "My husband doesn't really know how to take care of our child, so it's just easier if I do these things" and "Most women enjoy caring for their homes, and men just don't like that stuff."

But Mom's attitude toward Dad's parenting can influence the man's contribution in either direction. In a 2008 study psychologist Sarah Schoppe-Sullivan of Ohio State University studied 97 couples after their first children were born. Schoppe-Sullivan found that in families in which the mothers engaged in behaviors critical of fathers—by, say, rolling their eyes or making a face in response to their partner's parenting attempts—dads did less child care. But when mothers encouraged fathers—by telling men that they made their babies happy or by seeking out their opinions on parenting questions—the dads had significantly higher levels of involvement.

What is more, allowing dads to do a considerable amount of caretaking in the first days of a child's life can have even more lasting benefits. Numerous studies show that fathers who are involved when their child is an infant are more likely to remain active parents years later. In a classic report from 1980, psychologists examined the fathers of children born via cesarean section; because these mothers are briefly out of commission, their male partners end up doing more infant care in the first few days after birth. Months later the dads were still more involved with their babies than were men whose partner did not have a C-section.

When a father does a lot of child care early on, he is more likely to be an active parent in later years, too.

JUPITERIMAGES

Understanding the unique characteristics that dads bring to the changing table can not only improve the family dynamic but can also help us identify the variety of influences that children require for healthy development. Kids clearly need what dads do, but that does not mean that men must be the only ones to provide those things. If we understand how fathering is and is not like mothering, we can ensure that children get the full complement of influences—such as sensitive care and arousing play—that they need to develop into happy, successful adults. M

(Further Reading)

- **Fathers, Families, and the Future: A Plethora of Plausible Predictions.** Ross Parke in *Merrill-Palmer Quarterly,* Vol. 50, No. 4, pages 456–470; October 2004.
- **The Role of the Father in Child Development.** Fourth edition. Edited by Michael Lamb. John Wiley & Sons, 2004.
- **Partnership Parenting.** Kyle Pruett and Marsha Kline Pruett. Da Capo Press, 2009.
- Father Involvement Research Alliance (FIRA): **www.fira.ca**
- Fatherhood Institute: **www.fatherhoodinstitute.org**