

CHAPTER SEVENTEEN

Parents and Innate Behavior. Chapter Six from *Nursing Your Baby,* *Updated for the '90s.*

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Instinct and the new insecurity

In 1850, a new mother learning to take care of her first baby might have felt nervous, but she was bolstered by the firm conviction that whatever she did was right. Only a mother knew what to do for her infant, and she—by the grace of God, having become a mother—would be able to feed and care for her infant, thanks to her “mother instinct.” Today, however, parents feel a distinct insecurity about child-rearing in general, as shown by the proliferation of parenting advice from columns, books, magazines, talk shows, and famous experts. The more experts, the more confusion. Today, many parents are uneasy about the job. Parenting authorities (who, after all, see and address themselves to the most confused of us) seem to take for granted that the primary parental emotion is not affection, or satisfaction, or enjoyment, but “inadequacy.” What ever happened to mother instinct?

We are coming to understand that instinct is not a blind, inflexible force but a series of nudges, of small reflexive responses

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to internal or external stimuli that, added together, tend to produce certain patterns of behavior. There is room for lots of variation, however. Innate behavior does not operate mechanically in every animal, every time; even ants have been found to display individuality in their behavior. It is only by long and careful observation of many individuals that the patterns of innate behavior can be seen.

We know now that unrestricted breastfeeding elicits and promotes appropriate mothering behavior. So it is perplexing to read the current medical research literature in which breastfeeding is seen as an *outcome* of a mother's nurturing feelings when it is in fact a cause. The psychological literature is even more astonishing. Whole schools of thought and research on parent-child "attachment" have arisen in which breastfeeding is completely ignored. A recent monograph titled "Growing Points of Attachment Theory and Research," supposedly a review of all significant new research on parent-child attachment, includes not one reference on breastfeeding. It's as if one were to study the marriage bond without considering sex.

Learned and innate mothering

It seems infuriating that humans, with all their advantages of brainpower, face the care of an infant with minimal instructions from Mother Nature, while any cat or cow or rabbit has the genetic programming to raise fine babies, knowing exactly what to do from start to finish. But is that really true? Do animals have a real advantage over us? The truth is that with animals, as with people, experience is a factor in successful mothering.

Every person who has raised horses or dogs or any other animal knows that mammal mothers do not do a perfect job the first time. Some horses are so nervous with their first foal that they must be restrained by force before they will let it nurse. Laboratory rats may lose some or all of their first litter through inexperience—letting the babies get chilled, or go hungry too long or stray from the nest.

Many dogs are quite incompetent with their first litter. When puppies are born, they, like other animal babies, move toward the nearest large object; when their noses make contact with

fur, they grope around until they eventually find the nipples. An inexperienced female may get up and down a lot at first, giving her babies no chance to start sucking. As one kennel owner put it, "It looks as though the bitch is *puzzled*. There they are, ten babies, and she thinks she ought to do something about them, but she isn't sure what. Finally she gives up, and lies down to rest—and it happens."

Experimenters have found that animals have a chance to practice some aspects of baby care before the babies arrive. If a female rat is made to wear a collar throughout life, so that she cannot reach her body and never has a chance to lick herself, she does not know how to lick her babies as they are born. Then they have a hard time functioning normally and making contact with her; generally they do not survive. If a rat is deprived of the experience of carrying things in her mouth, she will not know how to build a proper nest, nor how to retrieve her babies if they stray. It is possible that some house cats arrive at maturity without good carrying experience. A new mother cat, for all her aplomb, may not know how to pick up a kitten. She may spend half an hour taking it by a paw, by the nose, by the tail, before she discovers the scruff-of-the-neck hold. The cat that has had a chance to hunt and kill and carry mice will pick up a kitten properly on the first try.

Observation can be important, too. A chimpanzee that was reared in the London Zoo and had never seen a baby of her own species was so horrified at the sudden appearance of her first baby in her hitherto private cage that she leapt backward with a shriek of terror, and could never thereafter be persuaded to have anything to do with it. Her second, born a year later, she accepted only after her friend the keeper demonstrated its harmlessness and showed her how to hold it. Gorillas are even more susceptible to problems of inexperience. For many years, gorillas born in captivity had to be taken from their mothers and hand-raised if they were to survive. Zoos have now learned that captive gorillas should be kept in compatible groups instead of alone or in pairs. In these colonies, when a young and inexperienced female gives birth, older females not only watch her and the baby, but tend to coach or reprimand her if she does something hazardous, such

as holding the baby by one limb or upside down. One zoo had success in breeding a solitary female gorilla when a keeper persuaded a woman friend to bring her nursing baby to the zoo after hours and breastfeed in the aisle of the gorilla house, so the pregnant female could see how it was done. The gorilla watched with every evidence of interest, and was indeed able to feed and raise her own baby when it arrived.

The bonding period

Marshall Klaus, M.D., and John Kennell, M.D., were the first, in 1972, to publish research demonstrating the existence of a special period, in humans, for mother-infant bonding. Scientists knew that such periods existed in animals. In 1935, ethologist Konrad Lorenz, M.D., had demonstrated in geese a phenomenon known as imprinting, in which the newly hatched bird recognizes as its parent whatever it sees and hears on first hatching, whether that is an adult goose or a professor making gooselike honks. The subtle detail was that imprinting can occur only in a brief, critical period after hatching; subsequently, the gosling can never learn to recognize or follow a parent or parent substitute. Helen Blauvelt, Ph.D., demonstrated the existence of a similar critical period in goats. Ordinarily, right after the birth of a kid, the mother smells and licks it, lets it nurse, and from then on recognizes this infant as her own, and will accept no other. This instant formation of attachment is called bonding. If the mother, however, is separated from her offspring immediately after birth for as short a period as one hour, she may never accept it; the critical period has passed.

Obviously, matters are not as critical with humans; we are often (and in the past were routinely) unconscious or separated from our babies at birth, and yet we accept and love them. We can bond to adopted babies and to older children as well. But Klaus and his associates began to look closely at what happens when mothers and babies are not separated at birth. They compared a group of women who first saw and held their babies briefly six to twelve hours after birth to a group of women who were given their babies, nude, to hold (and breastfeed, if they liked) for an hour, soon after birth. A month later, a year later,

even two years later, the "early contact" mothers behaved differently from the separated mothers toward their babies, fondling them more, holding them more, comforting them more in the doctor's office, and giving them fewer orders and instructions. This study, and work that followed, demonstrated a sensitive period in humans. And it became obvious that mothers in a hospital setting were being denied an interaction that the 1850s mother, whose children were born at home, experienced as a matter of course.

Other researchers have also investigated this phenomenon; the studies have come up with some surprisingly uniform results. Mothers who get some time with their newborns in the first hour of life, *and* have long and frequent contact with them thereafter, show long-term differences in behavior from mothers who are separated for hours and then restricted to six or eight twenty-minute feedings a day, the standard-care hospital routine. Furthermore, the babies of early-contact mothers laugh and smile more and cry less than those of delayed-contact mothers. One study of more than three hundred mothers examined parenting disorders: seventeen months after birth, ten of the delayed-contact, standard-care children had experienced abuse or neglect vs. two of the early-contact group. One study found that the effect of early and extra contact with their newborns was greatest on women who had "low social support." These differences were measurable whether or not the mothers were breastfeeding.

Among those mothers who were breastfeeding, the long-term patterns also showed differences. Mothers who had early contact were about three times more likely still to be breastfeeding when the baby was two months old than were hospital-routine mothers. Early-contact mothers on the average also continued breastfeeding for more months than the control-group mothers, and touched and looked at their babies more during feedings. And at twelve months, the babies of early-contact mothers weighed more.

The "bonding" evidence seems to be catching on. To quote T. Berry Brazelton, M.D., Harvard Medical School pediatrician, "One marvelous effect of Klaus and Kennell's elegant research has been that most hospitals are sensitized to the fact that they

must change to be most effective for new parents." Now, many hospitals are routinely giving mothers—and fathers, too—a quiet hour immediately after birth in which to play with and get to know their baby. Many medical care givers also now delay giving the baby the legally required disease-preventing silver nitrate eyedrops (which sting) until after the first hour, so the baby can keep his eyes open and see his parents' smitten faces.

Innate tendencies in new mothers

One need not conjure up elaborate explanations to understand at least partly why contact in the hour of birth can have critical and long-term effects. The completion of the birth process is a tremendous thrill and relief in itself. Parents' emotions are heightened already by the dramatic birth experience; they begin a series of interactions with the baby, who is also wide-awake and responsive in this hour, in a flood of euphoric feelings. It is the perfect setup for love at first sight.

The standard-care mother, on the other hand, may meet her baby, a wrapped-up, somnolent stranger, a day or more after the birth, when triumphant feelings are long gone, a sore bottom remains, and she has been worrying for hours about whether the baby is normal or even breathing. The father may see the baby at first only through the glass window of the nursery. In the first case, the baby is a powerful reinforcer of nurturing behavior; in the second, a neutral or even a negative presence.

Parents, of course, can become attached to their children without this instantaneous experience, just as one can fall in love at any time during a relationship; happiness does not require love at first sight. Mothers and fathers come equipped with many innate tendencies that help to bridge the distance and to form an attachment to the newcomer, whenever the opportunity finally arises. For example, in light of the evidence that babies are soothed by a sound simulating the maternal heartbeat, researcher I. Salk made a startling observation in 1960. Out of 287 newly delivered mothers the great majority, regardless of past experience or right- and left-handedness, held their babies on the left side, over the heart. This observation has proved to be so sound that care providers can use it diagnostically. The

mother who does *not* hold her new baby on the left (like the mother who does not look at her baby while discussing it) may be at risk for what are called parenting disorders: child neglect or abuse.

Another example is the almost irresistible tendency mothers have to unwrap their new baby and look at it all over when it is first brought from the nursery. If the nurses, in the interests of protecting the baby from exposure to germs, are particularly fierce about not permitting this, the mother may do it secretly, and try to wrap the baby up again exactly as it was. But do it she will, with the inevitability with which a little girl of two or three will strip the clothes off a new doll.

Many of the ways we touch babies have innate components. If a newborn is lying on its back, mothers tend to put a hand flat on the baby's chest, middle finger aimed at the baby's chin, and rock it slightly, in a gentle, rousing gesture. Holding the baby vertically against the shoulder and patting it between the shoulder blades is also a mildly stimulating or rousing behavior. A new mother tends to orient herself so that the baby is looking straight at her, and their heads are angled the same way, or face to face; researchers call this position *en face*. Mothers of preterm babies in incubators may bend over to put themselves *en face* to the baby lying on its side.

It's common for a new mother to place the baby in her lap, facing up, and spend long periods—many minutes, even hours—face to face, looking into the baby's eyes, talking, and touching the baby. One lactation consultant who works with many single teenage mothers teaches them to breastfeed in the so-called "football" hold, with the baby under one arm, looking up, so that the baby's eyes look straight into the mother's. This position tends to make the mother laugh, talk, and play with her baby, bolstering her sense of attachment, a crucial benefit in an environment where infant neglect can be a real risk.

Fathers and innate behavior

Fathers exhibit innate behavior in many of the same ways mothers do. Fathers, like mothers, respond to infant vocalizing by vocalizing themselves. Both tend to begin contact with a new

baby by touching the arms and legs, then by touching the body with the fingertips, then with the whole hand (men then tend to stroke the baby with the back of the fingers, which women do not). Men also tend to regard the baby *en face* and will twist themselves around to do so, if the baby is lying down, and they make regular and continuing eye contact.

Men are also susceptible to instant bonding to an infant at birth (although, of course, like women, they can also develop equally strong bonds through later exposure). In many hospitals, it has become customary to use the father as a labor coach and companion and to let him be present at delivery. The hour of birth can be an emotionally intense period for fathers. Yale University psychiatrist Kyle Pruett, M.D., in his book *The Nurturing Father*, quotes a man who had been present for his daughter's birth: "... she opened her eyes and looked at *me—right at me...* Perfect! Just perfect!... the doc cut the cord and put her on my wife's belly, and I touched her. I was sort of afraid because she was so small and soft... but she opened her eyes again when I touched her—like she liked it! A shiver went up my back." Dr. Pruett comments, "What a lucky little girl and mother. There appears to be no turning back from such experiences. This father seems hooked for good." With men, as with women, nurturing behavior, once elicited, flourishes.

Irinaus Eibl-Eibesfeldt, in his landmark book *Human Ethology*, looks at human behavior as it occurs in the natural setting in preliterate cultures. His studies show that even in the most warlike tribes it is not considered unmanly for a warrior to play with an infant; men as well as women spend a lot of time with babies and toddlers, and find them amusing. Fathers share food with babies and toddlers, cuddle, fondle, and kiss them, respond to them in sensible and competent ways, and feel and display affection from the first days on. Studies have been made, also, of middle-class American fathers who take a strongly nurturing role with their babies and small children. Interestingly, both sons and daughters of these nurturing fathers tend to exhibit high levels of nurturing behavior (toward pets and smaller children, for example) themselves.

There are differences, however, between the ways in which men and women interact with babies that are consistent across cultures, whether the parents are primitive Eipos in New Guinea or upper-middle-class Americans. Fathers play with babies more often than mothers, but clean them far less; mothers feeding toddlers, for example, are far more likely than fathers to wipe the baby's face and hands during the process. If a baby chokes, coughs, sneezes, or starts crying, the father is apt to draw back and wait for order to restore itself, while the mother is more apt to intervene. And fathers interact with babies far more actively than mothers, initiating games and motor activity as mothers never do. Fathers are much more likely than mothers to hold babies high in the air, shake them, spin around with them, and, as they grow older, engage in roughhousing and physical scuffles. Babies learn to expect this; as early as eight weeks, an awake and alert baby will respond to the father's approach with hunched shoulders and evident excitement. The world over, mommies are a comfort, and take care of you, but daddies are fun!

Baby talk

One phenomenon in parenting that is hard to explain without reference to innate behavior is baby talk. Every mother and father in the world—every grandparent, too—speaks two languages: their own language, be it English, German, Russian, Tagalog, or Yanomami, and baby talk. Baby talk has absolutely universal characteristics: it is high-pitched, singsong, repetitive, and often ends sentences with a rising tone: "Are you a pretty baby? Hmm? Pretty baby?" It is also apt to contain diminutives, slips or elisions, and grammatical errors, as if a small child were speaking. "Is ums a pwetty baby?"

Like all innate behaviors, baby talk has purpose and value. Babies hear high-pitched sounds more easily than low-pitched tones; and both men and women raise their voices just about an octave when they talk to babies. Repetitions and questioning probably help babies to focus on the sounds more easily than they can on sounds in many-worded sentences; baby talk is actually a prelude to the way we talk to toddlers—"See the doggie? Look, there's a doggie. Can you say doggie?"—and part of the

path of learning language. And perhaps most important, baby talk signals to the baby that this voice is directed at *him*. Out of the sea of voices around him, even a small baby knows, from the tone and tempo, when he personally is being addressed, and should respond. This awareness does not depend on eye contact: a three-month-old can be made to laugh and wriggle by the sound of a grandmother's voice speaking baby talk on the telephone. Baby talk, in fact, is a powerful behavior for looping even very small babies into the social circle.

In the 1930s and 1940s, with the advent of "scientific" child rearing, baby talk was denigrated, even forbidden. It was "silly;" it was thought to set the baby a bad example; mothers were told, "Don't talk like that, the baby will never learn to talk properly!" The prejudice continues; in 1990, a syndicated newspaper cartoonist devoted several strips to the amusement afforded by father and grandfather secretly giving way to forbidden baby talk whenever they were alone with the baby. In fact, the almost irresistible strength of the urge to coax response from a baby in this "undignified" manner is evidence for the innate nature of the behavior.

Baby talk surfaces again in adult life during courtship and in affectionate exchange between lovers. Similar infantile exchanges are common in many species of birds and animals during courtship. In house sparrows, for instance, when a pair is being formed, the female chirps and flutters her wings like a begging chick, and the male offers food. While lovers might be embarrassed to have their pet names and baby talk broadcast in public, this undignified behavior is by no means trivial; the use of baby talk, signaling intimacy and dependency, is quite appropriate to courtship and pair bonding.

Adult responses to baby signals

Regardless of presence or absence of early bonding experiences, we grow attached to babies; and to facilitate this hold on adult emotions, babies have a large armory of attributes that function as social signals for eliciting attachment. All animals give and receive social signals, with ears, tail, posture, vocalizations: "Get off my hunting ground!" "Don't hurt me, I'm a harmless

subordinate." "Look out! Danger!" "Hey, I found something to eat!" "Shall we dance?" Konrad Lorenz called this kind of signal a "social releaser," a stimulus automatically supplied by one animal that triggers or releases a specific mood or emotion, often leading to action, on the part of other animals in the same species.

A social releaser can be a sound, such as the wailing cry given by a chicken when a hawk passes overhead, making every chicken within earshot run for cover. It can be a scent—the odor of the urine of a female fox, mink, or dog in heat that arouses mating behavior in the male. It can be a gesture—the way a puppy rolls on its back, exposing its vulnerable throat and belly, to plead for mercy. It can be a pattern, such as black or white markings on the tails of many birds, or the phosphorescent array of lights on the sides of some deep-sea fishes, conveying the message to others of the species, "Come with me, we are the same kind."

Human babies automatically present many social releasing stimuli, to which all other humans are programmed to respond. Lorenz pointed out that the whole appearance of a human baby is a social releaser. For basic anatomical reasons, babies are born with disproportionately large heads, bulging foreheads, and large eyes, compared to adults. The very features that adapt the baby for breastfeeding—the fat pads that round the cheeks, the short nose and chin, the small mouth with elevated upper lip—also contribute to a characteristic look that makes us say, "Oh, how cute!" whether we are male or female, old or young, and whether the possessor of these attributes is a baby human, calf, raccoon, or even a duckling.

Soft cuddly contours and very short limbs complete the picture that seems to us innately adorable; this combination of characteristics may be seen in dolls, stuffed animals, and many cartoon characters. Think of Mickey Mouse, or Alvin the Chipmunk, or Bambi: big head, big eyes, button nose, no chin, short legs and arms, tubby tummy—all baby signs. At least two well-known artists have built careers on painting pictures of children and adults that are appealing solely because the eyes are about five times normal size, triggering the "cute" response.

Interestingly, human babies are not born with this full display of "cuteness" but develop it from about eight weeks on; people

unfamiliar with newborns are sometimes taken aback by their appearance. The newborn, perhaps, has enough other things going for it to appeal to the crucial people, its parents. Only as the baby grows older does it need to be able to promote affection and forestall aggression from all the other people in the community, no matter what age and sex.

Social releaser stimuli often consist of behavior. The baby's grasp reflex, besides helping him hang on to the mother, serves as a social releaser. At the Yerkes Laboratory in Florida, where chimpanzees have been carefully raised and studied for years, it has been noted that a female that has just given birth is apparently very impressed when her baby reaches out with its little hands and takes hold of her. It is this touch of hands that tells her the baby is one of her own kind. In humans, touching of hands conveys friendship in a simple, universal—and therefore instinctive—way. The firm, responsive way a newborn baby grasps one's finger is a moving experience for both parents. It triggers affectionate behavior.

One easily observed social stimulus presented by all young animals is the infant distress call. This is the cheep, cheep, cheep of a hungry chick, the earsplitting ki-yi-yi of a puppy caught in a fence, the bawling of a strayed calf, the wail of a newborn child. The infant distress call is usually loud, rhythmic, and distinctive. It is not easily ignored. All animals, including humans, react to the distress call of their own species by exhibiting anxiety and distress of their own. As Benjamin Spock, M.D., has said, "The cry of a young baby is like no other sound. It makes parents want to come to the rescue—fast!" It does indeed. It also makes unrelated people highly irritated, adding social pressure to a parent's desire to stop the noise. That is what a distress call is meant to do: to get on your nerves, to make you feel distracted and upset until you can put a stop to it.

An interesting social releaser in very small babies is sound other than crying. From the first weeks of life, breastfed babies murmur as they nurse. Little coos and hums that seem to express pleasure and relaxation can be heard throughout the feeding. A toddler may make the same little singing sounds when he is happily playing by himself, and one can hear the same class of

sound—little sighs and murmurs of comfort—from an adult who is enjoying, for example, a good back rub. Richard Applebaum, M.D., points out that bottle-fed babies do not vocalize during feeding, or, if they do, that the sound is apt to be sputtering and grunting rather than cooing, melodious murmuring. Furthermore, a breastfed baby who is switched to the bottle will stop cooing within a few feedings. If she is switched back to the breast, the vocalizing begins again. Probably the artificial configuration of mouth and throat during bottle-feeding hampers the baby's ability to vocalize and eat at the same time. Possibly, however, the baby does not feel the same sublime enjoyment at the bottle as she did at the breast, and so has no emotions of comfort and pleasure to be expressed in pleasant sighs and murmurs. Certainly the nursing baby's little song is received by the mother as a message of comfort, contentment, and love, even if she is not consciously aware of it, and thus serves to strengthen the nursing bond.

Smiling is a social releaser. A newborn baby, when his stomach is full, often smiles—a fleeting grimace—as he falls asleep. While the baby is still very small, four to eight weeks old, this smile of satiety becomes a true social smile. At first, the releasing stimulus for this smile is a pair of human eyes. When the baby sees you looking at him, he smiles. Smiling as he catches your eye is a very valuable instinctive response, and it in turn acts as a releaser for social behavior from the parent, or indeed from almost any human, even another child or a grouchy old man; in fact, siblings and grandparents are often especially elated when smiled at by their baby relatives.

Pheromones

One special class of social releasers is scent. Scents used as social signals in lower animals are called pheromones. In insects, these scents are single compounds giving single messages; in mammals, both the compounds and the messages are more complex, but the phenomenon of scent-triggered behavior is very widespread. Dogs, for instance, use scents to mark their territories and advertise their own presence, and recognize instantly the odor of a female in season. We humans are less aware of our

pheromone-like messages—in fact, in crowded cities, we do all we can to erase them, with cosmetics, bathing, deodorants, and laundering. Still, you may have noticed “good” scent markers—the enjoyable scent of the room or the clothes of a much-loved person—and “bad” scent markers, such as the sharp, sour smell of a shirt you wore to a frightening interview.

Scent signals are particularly profuse in the crucial area of reproductive behavior, even when we are not consciously aware of them. Researchers have found that when women of reproductive age live together as roommates or house mates, after a few months their menstrual cycles fall into synchrony; the evolutionary advantage of having your period at the same time as everyone else is not obvious, but the phenomenon is easy to demonstrate, and unconsciously recognized scent signals appear to be the mechanism. Women who live in close association with a man tend to reach menopause later than single women, not, the researchers say, because of sexual relations but of exposure to male body scent. In both sexes, pubic hair and underarm hair are scent traps, concentrating these reproduction-related messages; we recognize that a woman clasping her hands behind her head is in a provocative pose but we don't usually stop to think that she is also sending a scent message.

The fact that the nursing baby smells good is probably more important than we think; it is not just that smelling nice reinforces close contact from adults. Some working mothers who must pump their milk while they are away from home find that the letdown reflex can be triggered by smelling a nightie the baby has worn. Nursing babies put down to sleep in a crib drop off more easily if they are lying on a nightgown the mother has worn. These old, old signals of scent appear to be crucial in every stage of the reproductive cycle; lactation and care-giving behavior are certainly among them.

Kinship

All of the releasing stimuli presented by babies send the same messages to all related humans, not just mothers and fathers. The intensity of the response one feels increases with familiarity, of course; one's own child becomes heart-wrenchingly adorable,

while the children of strangers are merely cute. However, if people are hard-wired to like babies, how can one explain cruelty to children? Distorted behavior can arise from disruption of an individual's development, of course, or to individual pathology; and it may also be that humans, like other social animals, tend to favor known kin over unrelated people.

In recognizing relatives, personal experience may be augmented by the nonverbal behavior and attitudes of others. For example, if you are a member of a large family that goes in for reunions, you will be well-acquainted with the phenomenon that children who are cousins, meeting for the first time, may take to each other and start playing together more rapidly than they would with any new schoolmate. Babies and small children can form close relationships with grandparents and aunts and uncles, climbing all over them with the confidence of ownership from the first meeting, when they ordinarily would flee from a stranger. Adults may find themselves bonding strongly to a distant and seldom-seen niece or grandson, in a way they might never do to a neighbor's child. Intellectual awareness of the relationship plays a part, to be sure; but the genes murmur strongly in the background: kinfolk are more important than strangers.

The absence of kinship, in contrast, can disrupt parenting or care-giving behavior; an unrelated child may be seen as a liability or even a competitor. European and U.S. folklore abounds in wicked stepmothers who are good to their own children but mistreat their stepchildren. Cruel stepfathers do not show up as often in legend, but they are not infrequently found in real life. As the newspapers and police blotter testify, no one is more likely to abuse an infant than the mother's "boyfriend"—a male resident of the house who is not the infant's father. Perhaps the innate anxiety aroused by a crying infant causes anger in an adult who has no parenting skills and in whom the absence of kinship takes off the brakes. A more subtle mechanism may be at work, as well; in many mammalian species, including lions, horses, and quite a few primates, a new dominant male moving into a group of females is highly likely to kill or try to kill any present young (which have been sired by some previous male)

and replace them with his own. Humans usually control such antisocial behavior, but the genetic incentive is still there.

Breastfeeding—the great teacher

Both on the inborn and the learned levels, breastfeeding teaches new mothers what good mothering is. The innate needs and urges of the mother are met by breastfeeding. The frequent close bodily contact reassures mother as well as child—we all need hugs and cuddling, and babies can give this comfort as well as get it. Breastfeeding requires and creates attentiveness to and interest in the baby's moods and signals. The baby becomes easier for the nursing mother to understand; the comfortable interaction in a well-established lactation builds up a mutual communication, not dependent on words, that lasts long beyond weaning.

The hormones of lactation have a powerful effect on behavior. If prolactin is injected into male rats, they will retrieve baby rats and lick them. In humans, men as well as women have prolactin in their systems; researchers have found that prolactin levels increase in men who are nurturing small children. Prolactin levels are high during pregnancy, and in a breastfeeding mother will continue to be high for as long as a year.

The hormone that triggers mothering behavior most powerfully, however, is oxytocin. Dr. Niles Newton and her husband, Michael Newton, M.D., were the pioneering research couple who first demonstrated that humans have a letdown response triggered by oxytocin, and that the release of oxytocin and the letting down of milk could be inhibited by emotional disturbance. (They demonstrated this in a famous experiment, by tying a string to Niles's big toe as she nursed one of their four babies; if Michael, in the next room, unpredictably jerked the string during feelings—an annoying though not painful event—weighings showed that the baby got less milk.)

Oxytocin production can be reduced by emotional disturbance, but the reverse is also true, and very important for the nursing mother. Oxytocin release in itself triggers emotional tranquillity and strong nurturing feelings—and, unlike prolactin, which has a long-term, slow effect, oxytocin works its magic instantaneously. Laboratory animals that have never had litters

will exhibit mothering behavior within one minute of receiving a dose of oxytocin directly into the nervous system. No matter what her species, every time a mother's milk lets down, she is being primed on a very fundamental evolutionary level to cuddle and nurture. (Oxytocin is also the hormone of lovemaking, released during sexual climax in both men and women, although twice as much of the hormone is released in women.)

Many mothers are conscious of the soothing, almost euphoric side effects of oxytocin released during breastfeeding; it can be the working mother's daily high point, on reuniting with her child. A nursing mother is also sometimes conscious of how much she loves this particular baby, as the baby is nestled up to the breast; we now know that the flood of oxytocin, as the milk lets down, contributes significantly to that emotion. Niles Newton, now an international authority on the psychophysiology of lactation, points out that the survival of the human race depends on reproduction, and that the continuance of reproductive behavior depends on the "voluntary satisfaction" to be gained from those largely self-initiated behaviors, coitus and breastfeeding. "Sexual intercourse," Niles Newton has said, "is well-known to foster bonding and care-giving behavior, especially if frequently repeated with the same individual." The same, of course, is true of breastfeeding.

Newton has also pointed out that women who practice unrestricted breastfeeding become physically different from bottle-feeding mothers, not only in hormonal levels, but in galvanic skin response (they are calmer), heart rate (which alters, as the baby cries or is soothed, strikingly more than the heart rate of bottle-feeders), and thermal skin responses, as the mother's breast heats and cools in response to the baby.

If lactation is suppressed, prolactin levels fall abruptly after delivery, and breastfeeding's multiple daily flushes of oxytocin don't occur at all. This hormonal "crash" may be a major factor (in addition to separation from the infant and other loved ones) in immediate postpartum depression, the so-called "baby blues." Not only are all innate urges being frustrated, but the sustaining, love-and-tenderness-inducing hormones are rapidly draining from the system.

The mother who breastfeeds feels this hormonal deprivation much later—on weaning—and much more slowly; as the baby gradually nurses less and less often, the mother's body is weaned from lactation, too. Even so, many women feel some sadness on weaning, especially those who do not plan to have another child. This is not just hormonal; as Newton says, it's only natural: "We like to breastfeed."

We are just beginning to see some of the results of changes that have been occurring over the past decades. Long-term studies of cognitive growth, and social and family interactions, as related to duration of breastfeeding are now in progress. Perhaps, as we come to understand more about genetically controlled patterns in humans and the biological advantages of these patterns, we can remove some of the strict rules that our society imposes on such functions as childbirth and child care, and give the natural patterns freedom in which to emerge. Then, one part of the pattern can lead smoothly to another as nature intended. Biologically normal labor can result in appropriate parental responses to the baby; successful early contacts can contribute to bonding and nurturing in both parents; and successful lactation can lead to continued good mothering and healthy and happy children.

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