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Monkey Love: Warm, Secure, Continuous

In 1958 the psychologist Harry Harlow reported a series of experiments that every college student now learns about in introductory psych. Harlow, a researcher and theorist in animal learning at the University of Wisconsin in Madison and the president of the American Psychological Association at the time of his now classic report, had been losing many of his rhesus monkeys to disease. To overcome this he had decided to separate sixty of his infant monkeys from their mothers six to twelve hours after birth and raise them in total, germ-free isolation. They were fed with tiny bottles and they thrived.

But Harlow did notice some curious developments. The infant monkeys became ardently attached to the folded gauze diapers that were used to cover their cage floors. Much like children who become attached to blankets or soft toys, the monkeys clung to their cloth pads and protested violently if an effort was made to remove them.[1] Other baby monkeys, raised on a bare wire mesh cage floor, had a difficult time surviving their first five days. Strangely, they fared better if a wire mesh cone was placed in the cage and quite well if the cone was covered in terry cloth.[2]

Such phenomena aroused Harlow's curiosity and naturally brought to

mind Spitz's study of hospitalism. Harlow now decided to attempt a replication of Spitz, this time with monkeys. His purpose was not just to understand the conditions under which withering away arises in infants and how it can be abated but also, more broadly, the nature of affectional ties and how they are reflected in biological conditions.

Until this time love had not received much attention from scientists. Academic psychology was worlds apart from psychoanalysis and its concern for emotions. Its realm was ruled by behaviorists, heirs of Watson and Pavlov, who considered behavior the only legitimate study for psychology. As a result, Harlow said, all we knew about love was based on casual observation, intuition, and informed guesswork. Regarding mother-love, sociologists and psychologists were in accordance with psychoanalysts: The baby loves the mother because she feeds it. Harlow found this implausible.

"It is entirely reasonable," Harlow said, using the language of behaviorism, "to believe that the mother through association with food may become a secondary-reinforcing agent, but this is an inadequate mechanism to account for the persistence of the infant-maternal ties."[3] This was an important point. If, for instance, a monkey learns that a poker chip can be used to obtain a banana, the chip will become a secondary reinforcer, and he will respond to it with some of the same enthusiasm with which he responds to food. But if the poker chip will no longer get him a banana, after a while he will lose interest in it. But, as Harlow saw it, human affection does not diminish when such associations cease. It lasts a lifetime. Harlow similarly could not accept the psychoanalytic emphasis on the breast and the infant's need to suckle as explanations for baby-love.

Harlow believed he had in rhesus monkeys the perfect vehicle to test some of these questions. Aside from being more mature at birth and growing more quickly, the rhesus infant was almost identical to the human infant in its responses related to feeding, physical contact, auditory and visual exploration, learning capability, and so on. (The similarity would cost many of these little monkeys dearly, for some of the experiments that followed were cruel, intentionally duplicating the concentration camp-like miasma Spitz had observed in children.) Harlow now devised an experiment that thirty-six years later remains one of the benchmark studies in the field. He separated eight tiny rhesus macaques from their mothers and raised them in cages where they were entirely

alone except for access to two contraptions he called "surrogate mothers." One of the contraptions was essentially a block of wood, softened with a coating of sponge rubber, and covered with cotton terry. It had a circular face with large eyes and a light bulb behind it to generate warmth. The other surrogate was made only of wire mesh but also had a face and a bulb. For four of the monkeys the cloth-covered mother was fitted with a feeding nipple. For the other four the wire mesh mother had the nipple. But regardless of which surrogate mother did the feeding, the infant monkeys spent virtually all their time, some sixteen to eighteen hours a day, clinging to the cloth mother. The monkeys' affectional ties to their cloth mothers were sustained even after long separations. And when the infant monkeys were placed in a strange situation, a room filled with a variety of stimuli known to arouse monkey interest, they always rushed initially to the cloth mother when she was available, clung to her until their fear dissipated, and rubbed their bodies against her. After several sessions like this, they began to use the cloth mother as a base for explorations.

One of the experimental monkeys was born prematurely, before the faces for the surrogate mothers had been constructed. This monkey was thus forced to live with a faceless mother whose head consisted of only a blank circle of wood. This did not seem to impede the little macaque's attachment. But after six months it was given two new cloth surrogates, one rocking and one stationary, both with completely detailed faces. "To our surprise," Harlow said, "the animal would compulsively rotate both faces 180 degrees so that it viewed only a round, smooth face and never the painted, ornamented face. Furthermore, it would do this as long as the patience of the experimenter in reorienting the faces persisted. The monkey showed no sign of fear or anxiety but showed unlimited persistence."[4]

The monkey's indomitable preference for the familiar face to gaze at is indeed reminiscent of human love and some of its corollaries like homesickness. It also offered support for a view which Bowlby had expressed, that part of the human baby's affectional tie to the mother was its search for the mother's face.

Harlow's studies dealt the first scientific blow to the belief that affectional ties were based on nursing: For rhesus monkeys, at least, cuddly contact proved far more important—a fact that brought great joy to the Bowlby camp. But more than that they showed how important it is for

the infant to have someone to be attached to, and a particular someone, as the baby macaque with the blank-faced mother seemed to demonstrate. The surrogate mothers were woefully inadequate. They offered security but they were utterly passive, did no teaching, and did not relate to the babies, leaving them bereft of all the emotional skills that children naturally develop by being with their mothers. This relational vacuum would haunt Harlow's monkeys in later life, when future experiments found that they had difficulty relating to peers and more difficulty yet in raising children. And yet the surrogate mothers meant the world to these little monkeys. They seemed to love the cloth-covered mother dearly, despite the fact that she did so little for them, not even feed them.

Harlow was so impressed with the results of his study and the support it gave to the theories of the British analyst John Bowlby, of whom few in America had heard, that he wasted no time in generalizing to other members of the animal kingdom. Indeed, he became rhapsodic on the subject of mother-love, composing several bits of verse, like this one, accompanied by a picture of a baby hippopotamus with its mother:

The Hippopotamus

This is the skin some babies feel
Replete with hippo love appeal.
Each contact, cuddle, push, and shove
Elicits tons of baby love.[5]

In September 1957 Bowlby went to California for a year as a fellow at the Center for the Advanced Study in the Behavioral Sciences in Stanford. Having been alerted to Harlow's work by ethologist Robert Hinde, with whom, by now, Bowlby had been sharing ideas for several years, in April of 1958 he attended an American Psychological Association conference in Monterey, where Harlow gave his paper. "I heard him speak and I saw his films, which had a very powerful effect on me."[6] On his way back to England the following June, Bowlby visited Harlow for two days in Madison. The two were natural allies, and in the coming decades Bowlby and Harlow would remain intensely aware of each other's work. Each would inspire so much related research on both monkeys and children that the fields of ethology, comparative psychology, child development, child psychiatry, and psychoanalysis would become entwined in ways never imagined before.

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Then in 1961, Ronald Hargreaves, the chief of the Mental Health Section of the World Health Organization, who had commissioned Bowlby's original 1951 report on maternal deprivation, decided to put out a sequel. He asked authors in several disciplines, from pediatrician Dane Prugh to anthropologist Margaret Mead, to consider all the new research that had become available on the subject since Bowlby's bombshell a decade earlier. Bowlby asked Mary Ainsworth, an American colleague who had worked on his staff, to stand in for him. Ainsworth produced a brilliantly coherent statement of Bowlby's and her views. For the first time in one place she clarified many of the misunderstandings, successfully repudiated oft-repeated criticisms, and smoothed out some of Bowlby's own apparent inconsistencies and dubious hunches.

Ainsworth broke the debate down into its constituent parts. She noted that the catch-all phrase "maternal deprivation" was actually composed of three different dimensions—the lack of maternal care (insufficiency), distortion of maternal care (neglect or mistreatment), and discontinuity in maternal care (separations, or the child's being given to one mother figure and then another)—and that these three dimensions were frequently confounded, making it difficult to study any one of them alone. Carefully sifting through dozens of studies, she assessed what they had to say about the effects of each of these conditions, and, in doing so, she was able to disentangle many apparent contradictions.

To accomplish this Ainsworth had to chop through a forest of conflicting data and make sense of a hodgepodge of variables. The studies focused on children of different ages, different IQs, different predeprivation histories, different degrees and lengths of depriving experiences, and they used a variety of measures to assess the emotional and social consequences of these experiences. The result was a massive confusion in which it seemed that everyone could find something to support his point of view. Ainsworth found that many of the studies that seemed to disprove one or another of Bowlby's hypotheses suffered from unreliable measurements, sloppy research design, or a misunderstanding on the authors' part of the phenomena they were studying, thus disqualifying them from a voice in the debate. One research team, for example, took the friendliness of maternally deprived children in the institution they were studying to be a positive sign, apparently oblivious to the fact that clinicians since Levy and Bender had cited indiscriminate affectionateness as one of the chief symptoms of psychopathic or affectionless chil-

dren. Flaws like this, based on carelessness or incomplete knowledge, abounded, and Ainsworth sniffed them out, one after another, like a bloodhound.[7]

Ainsworth did a better job of defending Spitz than Spitz had done himself, citing evidence from a French study, whose statistics and methods could not be faulted, that supported his contention about the severe deterioration of seriously deprived infants.

After more than sixty pages of sorting through all the data, making sense of what seemed a hopeless complexity, updating, clarifying, and indicating where more research was needed, Ainsworth was able to conclude—and to conclude convincingly—that Bowlby's 1951 assertions were essentially sound. It was a tour-de-force performance, which many considered to be the outstanding chapter in the new volume, and it won the respect of some who had withheld judgment until now. Bowlby could have had no doubts about what she had done for him.

Meanwhile, Harlow and Hinde were both reporting a stream of new experimental results with monkeys, which, if not exactly proving Bowlby's theories, at least gave them considerably more credence, especially since in the monkey studies variables that confounded the research on separation among human children could be much more carefully controlled. The monkeys Harlow had isolated for six months in early life showed persistent abnormalities into adulthood, particularly in social and sexual behavior, and proved to be abusive, even murderous, parents.[8] Hinde, meanwhile, found that infant monkeys suffered even from short separations from their mothers and that their distress caused by a thirteen-day separation was more pronounced than that caused by a six-day. The separated monkeys exhibited protest and depression and tended to be clingier after reunion, just like the children Robertson and others had observed.[9] Interestingly, the young monkeys' disturbance was greatest if there had been tension between mother and child before. Five months after a separation experience signs of stress remained, the young monkeys being more timid than controls when placed near strange objects or in strange situations.[10]

Within a few years Harlow and his wife, Margaret, were also reporting on the development of normal monkey attachment in a paper called "Learning to Love." "The outstanding quality of the good primate mother's behavior during this time," they wrote of the first months of life, "is total or near total acceptance of her infant—the infant can do no wrong—and she anxiously supervises its beginning sallies beyond her

arm's reach." The monkey mother demonstrates "total, tender, loving care. She either does not punish her infant or at most punishes it with complete gentility." She handles her baby's physical needs, provides "physical support and intimate physical contact, which seems to be important to the development of childhood security." And she protects her child from all threats.[11] Coming on top of the Ainsworth review, such monkey studies, not to mention analogous studies of rats, dogs, and other mammals, quieted the opposition and placed attachment theory on a more secure footing. "Thereafter," Bowlby said, "nothing more was heard of the inherent implausibility of our hypotheses; and criticism became more constructive."[12]

But even if attachment theory had gained plausibility, nothing definitive could be said about the nature of human attachments based on monkey experiments. And given the restrictions on what a researcher could do with human babies, a more conclusive statement on the infant-mother bond seemed hopelessly out of reach. Unbeknownst to Bowlby, Hinde, and Harlow, however, Mary Ainsworth was about to change that.