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The chimpanzee is born following a gestation period of about 8.5 lunar months. Like all simian primates it is equipped to cling to the mother, to locate the nipple, and to suck. These responses do not appear to be as vigorous or as fully developed in the chimpanzee as they are in most other nonhuman primates and consequently the nursery-housed infant requires more diligent early postnatal care than the newborn macaque. Sucking is often sluggish during the first days of life, and when it appears the response is variable and spasmodic. The same is true of clinging, not only in the nursery, but apparently in nature as well, for as Goodall notes, the wild-born infant requires almost continuous assistance and support from the mother during the first few days of life. If the mother is inept or fails to handle the infant properly, its chances of survival are slim. Clinging and sucking are two of the primary means

of maintaining contact with the mother. A third means is provided by vocalization. The infant chimpanzee is ordinarily silent unless it is distressed, whereupon it whimpers or screams. The effect of these sounds on the mother is typically galvanic, but the specific response she makes varies with circumstances. If the infant is losing its grip on her, for example, she pulls it close; if it is crying in response to the unwanted attentions of another animal, she may scoop it up or threaten the intruder off. Under any circumstances the net effect of her actions is usually to enhance or re-establish contact with the infant. For its part, nothing seems to calm the infant more quickly or to yield a greater sense of security than being properly held - in a position of ventral contact with the mother, with its hands engaged in her fur. So situated, the infant seems insulated from the outside world and buffered against disturbing experience. We have found that while it is being

held the infant is less likely to vocalize in response to a painful stimulus, and its heart rate is lower than it is when there is no chance to cling. 23

1. Van Lawick-Goodall, J.: Mother-offspring relationships in free-ranging chimpanzees: in Desmond Morris *Primate ethology*, pp.287-346. (Aldine, Chicago 1967)
2. Mason, W.A. and Berkson, G. Conditions influencing vocal responsiveness of infant chimpanzees. *Science* 137: 127-128 (1962).
3. Mason and Candland, unpublished.

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Köhler seemed to have both the potential rewards and the difficulties in mind when he said that a chimpanzee kept in solitude is not a real chimpanzee at all. He was alluding in this remark to two rather different ideas: First, the chimpanzee is strongly attracted to group living. It seeks the company of others and upon being separated from familiar companions, makes every effort to rejoin them. If it cannot do so, it becomes extremely agitated and distressed. During a prolonged separation, this state may give way to sullenness and depression, which quickly dissipate when the animal is permitted to rejoin its group. Secondly, many essential forms of chimpanzee behavior require the presence of other animals. In its social relations the chimpanzee reveals most fully those qualities of psychological complexity and subtlety that we have come to expect from an animal so close



to man. Alone, the chimpanzee is cut off from that part of the environment which provides the incentive and the support that permit it to show the highest reaches of its abilities. All the conventional psychological processes – learning, perception, intelligence – are called into play in the service of social ends.

1. Köhler, W.: The mentality of apes (Harcourt Brace, New York 1925).

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The first indications that the infant is responding to the mother as though she were something more than a snug nest and a source of food, come within the first three months of life. It begins to crawl about on her body, to peer into her eyes, to poke and pry into her physiognomy, and to treat her in many respects as an interesting piece of furniture in the world it is beginning actively to explore. We know from Fantz's investigations of the early perceptual development of chimpanzees and human infants that visual preferences are shifting towards more complex patterns and outlines during this time, and it is likely that comparable changes are occurring in other modalities as well. Gradually the infant is putting together the information it acquires through sight and taste and touch and smell to form an integrated perception of the mother as an 'object' – a complex entity that moves through space, and that



maintains a certain constancy of attributes and functions despite radical transformations in spatial orientation, contour and the juxtaposition of parts. It is embarked, in short, on developing its first relation with another social being.

1. Van Lawick-Goodall, J.: Mother-offspring relationships in free-ranging chimpanzees: in Desmond Morris Primate ethology, pp.287-346 (Aldine, Chicago 1967)
2. Yerkes, R.M. and Tomlin, M.I.: Mother-infant relations in chimpanzee. J. comp. Psychol. 20: 321-359 (1935).
3. Fantz, R.L.: Visual perception from birth as shown by pattern selectivity. Ann. N.Y. Acad. Sci. 118, 793-814 (1965)

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The mother contributes to this development in myriad ways. Most simply, she does so by continuing to perform those activities that she must perform to guarantee her own survival and, incidentally, the survival of her infant. As she goes about her daily round - foraging, feeding, climbing, running, walking, interacting with other animals - she exposes the infant to varied patterns of stimulation and she creates new requirements to which it must adjust. Her status as a separate social entity is further developed by acts directed specifically toward the infant; she grooms it, restrains it, changes its position, and embraces it more closely. Maternal coercion and constraint will naturally increase with changes in the tempo and range of infantile activities. The mother comes more and more to assert herself as an individual whose interests are sometimes at variance with those of her child. Chimpanzee mothers are



· notably indulgent, but inevitably the day arrives when both will want the same tasty morsel of food, when one wants to be held and the other doesn't want to hold, when one wants to play and the other wants to sleep. If it comes to a physical contest, the mother would naturally win, but the issue is seldom resolved so simply. The indications are clear that the mother often gives in to the cries, the begging gestures, the tantrums and other importunings of her infant^{1, 2}. Surely, these episodes provide some of the first lessons that give-and-take is the very essence of social intercourse.

1. Van Lawick-Goodall, J: Mother-offspring relationships in free-ranging chimpanzees: in Desmond Morris Primate ethology, pp. 287-346. (Aldine, Chicago 1967)
2. Tomilin, M.I. and Yerkes, R.M: Chimpanzee twins: Behavioral relations and development. J. genet. Psychol. 46: 239-263 (1935)

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By the end of the first year, the infant is able to locomote independently, and, although it is still under close maternal supervision, it has frequent contact with other adults, older infants, juveniles and adolescents. Wrestling and other play activities become more vigorous, and are directed increasingly toward other young animals. By the third or fourth year, the growing chimpanzee is no longer dependent on the mother for food or transport; it finds much of its own food and makes its own nest at night. It continues to associate with the mother closely, however, and travels with her most of the time until well into its fifth year. The occasions when mother and offspring are seen together diminish with the onset of puberty, although some ties may persist into full maturity.^{1, 2}

1. Goodall, J: Chimpanzees in the Gombe Stream



Reserve: in DeVore Primate Behavior: Field study of monkeys and apes, pp. 425-473 (Holt, Rinehart & Winston, New York 1965).

2. Van Lawick-Goodall, J.: Mother-offspring relationships in free-ranging chimpanzees: in Desmond Morris Primate ethology, pp. 287-346 (Aldine, Chicago 1967).

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It will be appropriate in closing this section on mother-infant relations and early social development to touch briefly on the question of individual differences in maternal behavior. As all students of chimpanzee behavior have discovered, no two chimpanzees are alike. The same is true to a degree, of course, for any kind of animal, but in the chimpanzee, individual variability seems much more prominent than in other species, including most other nonhuman primates. It is clear, therefore, that any generalized description of maternal behavior can only be approximate in the individual case.

Variations in maternal care run from the extremes of oversolicitude and an excess of zeal, to comparative indifference and neglect. Most mothers, of course, fall somewhere in between and are neither generally good, nor generally bad, but perform adequately in some respects and poorly in others.

dominance
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The view taken here is that 'dominance' and 'subordination' are simply conventional designations for the fact that chimpanzees often stand in the relationship to each other of intimidator and intimidated. Naturally, we would expect the larger, stronger, more boisterous, and more aggressive animals in any group (being intimidating to almost everyone else) to display a kind of generalized dominance status. Presumably this accounts for the fact that in the wild, mature males are generally dominant over adult females, and they, in turn, are dominant over adolescents and juveniles.^{1, 2} Apart from this observation, however, there is no indication that chimpanzee groups as a whole are organized hierarchically; nor is there any convincing evidence of an autonomous drive for social supremacy.



Chimpanzees are willful, impulsive, and greedy, certainly a sufficient basis for the development of dominance and subordination, without the participation of specialized social motives and needs.

Dominance and subordination can thus be regarded as the natural by-products of social intercourse, and but one facet of the relationship between two individuals....

The experimental data are consistent with the view that mutual attractions may develop between animals that differ reliably in social status. In immature chimpanzees, at least, dominance and social attraction are largely independent of each other. Nowlis, during his investigation of companionship preferences, also tested dominance, using both competition for food and for escape from noxious stimulation as his measures. Dominance was clear, but was unrelated to social preference; animals preferred companions that were dominant over them as often as those that were subordinate.

The peculiar challenge that the chimpanzee makes to the behavioral scientist is its potential for individual achievement. The 'average' chimpanzee, like the man on the street, is a convenient fiction. What impresses us most is not the lowest common denominator of performance – the normal social patterns that are shared by all chimpanzees – but the discrepancy between group norms and the few highly idiosyncratic achievements of the individual. The home-rearing studies remind us that given the right social setting, every chimpanzee has within it the potential of going far beyond what it could achieve under less favorable circumstances. Like man, the full development of its abilities requires the stimulus, the direction and the support, that can only be provided by other individuals.

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