

Baby apes: Shake, rattle and think

When Samara first arrived at the nursery, she flailed her arms about and made high-pitched cries whenever her blanket was taken away to be washed. She soon began sucking one of her fingers and clapping her hands, then reached out to shake rattles, ring bells, play with toys and feed herself. Later, the play became more complex — she combined several toys at once and experimented by placing objects on various parts of her body. She next began to learn about the functions of objects — that balls can be dropped, thrown, rolled, bounced and caught; that toys can be deposited and removed from buckets, that toy boxes may be reached by using a stepladder and that cribs are not escape-proof. Finally, she began to solve such problems and tasks before actually physically attempting them.

This evolution of behavior is fairly typical of an infant's development during the first two years of life, according to Jean Piaget's six stages of human intellectual development. But Samara is not a human child — she is an orangutan. And the development exhibited by Samara and many of the other 35 orangutans, gorillas and chimpanzees involved in a behavioral study intriguingly parallels that of the eight human infants they were compared with during the first two years of life.

"I am finding that orangutan and human infant development are strikingly similar," says Suzanne Chevalier-Skolnikoff, an anthropologist specializing in primate behavior at Stanford University. She reports on her work in the June/July *ANIMAL KINGDOM*, published by the New York Zoological Society. Chevalier-Skolnikoff, who began the study four years ago, first saw Samara in the baby animal nursery at the San Francisco Zoo. Like the other great ape subjects in the study, Samara was hand-reared by human surrogate mothers in settings where play patterns could be observed and various intelligence tests administered.

In attempting to "enhance our knowl-

edge of ... the history and evolution of human intelligence and human language," the anthropologist compared the apes with human babies at Piaget's six stages:

- Reflex — From birth to one month; grasping for nearly everything within reach, particularly the mother.

- Self-investigation — One to four months; sucking fingers, clapping hands and feet. Previous research has strongly indicated that chimpanzees and orangutans possess a sense of self-awareness (SN: 5/28/77, p. 340).

- Reaching out — Four to eight months; reaching for objects, beyond mother, in the nearby environment and attempting to bring most of them into the mouth.

- Combinations and coordinations — Eight to 12 months; combining behaviors and coordinating body movements.

- Experimentation — Twelve to 18 months; trial and error testing of relationships among objects, problem solving.

- Mental problem solving — Eighteen to 24 months; solving through insight or symbolism rather than through physical experimentation.

While apes and children alike experienced these stages, there are differences. First, the ape's "rate of development is different from that of a human baby," Chevalier-Skolnikoff says. Stages two through four seem to be reached two months earlier in apes, while the two later stages develop more slowly than in humans.

The primary difference, however, is in vocal behavior. Like human infants, orangutans and other apes may cry at birth. "But the similarities in vocal development between ape and human end here," she says. Apes do not progress along the remaining five stages of vocal development — from cooing and babbling to speaking words. Rather, the apes acquire only "emotional vocalizations," such as grunts, laughs and various calls.

Samara's behavior reflects both the similarities and the differences detected in the study. "Manipulatively she is almost human," says the anthropologist. "Vocally she is an animal, in use of her feet she is strictly an orangutan. Figuratively speaking, Samara is a human baby, an animal and an orangutan all in one little orange furry bundle." □

First ape hybrid: C'est 'Siabon'



Sister Moore

What do you get when you cross a gibbon with a siamang? A siabon, naturally. The resulting animal, already three years old, constitutes a unique "accident" in primate science. She is not only the first reported hybrid ape to survive, but she is the product of a "natural" mating between the two species, unforced by humans.

The achievement is even more noteworthy because the genetic makeup of the siamang and that of the gibbon — both "lesser" apes — are surprisingly dissimilar. "We had expected the gibbon and siamang to look much alike [genetically] — but they're very, very different," says Richard H. Myers of the Human and Behavioral Genetics Research Laboratory at the Georgia Mental Health Institute in Atlanta. The gibbon has 44 chromosomes and the siamang 50; the banding patterns and other structural characteristics of the chromosomes in each species are markedly different, says Myers.

The siabon is the result of the mating several years ago of an adolescent male gibbon with one of two female siamangs he shared a cage with in the Atlanta Zoo. The hybrid, with a total of 47 chromosomes, has been reared at the primate lab since the age of three months, Myers and colleague David A. Shafer report in the July 20 *SCIENCE*. A second hybrid born a year later to the same parents died at 4½ months from infection complications.

The survival of the first siabon is intriguing because, purely on a genetic level, it appears less feasible than the survival of an offspring of two different great apes — such as a chimpanzee and a gorilla. Gibbons and siamangs seem to be farther apart genetically than even great apes and humans, Myers told *SCIENCE NEWS*. (Humans have 46 chromosomes and great apes 48.) Theoretically, a "viable" hybrid from two such different species is "within the realm [of possibility] genetically," Myers says. Although such a union could be attempted through artificial insemination — and has been "talked about" in reference to great apes — he says, "I don't think that would be fruitful. ... I don't know what we'd do with [such an] animal." The scientists believe the siabon probably cannot produce her own offspring, "but we're not absolutely sure," Myers says. □



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Human and orangutan babies display similar "reaching out" behavior by ringing bell.