

PAIN-INDUCED FIGHTING IN THE SQUIRREL MONKEY¹

N. H. AZRIN, R. R. HUTCHINSON, AND D. F. HAKE

ANNA STATE HOSPITAL, ANNA, ILLINOIS

Reflexive fighting in response to pain-shock has been obtained for mice (Tedeschi, 1959), hamsters (Ulrich and Azrin, 1962), cats (Ulrich, personal communication), and several strains of rats (Ulrich and Azrin, 1962). This experiment explored the possible existence of the reflex in primates.

Eight squirrel monkeys were subjects. An experimental space 36 by 24 by 18 in. high provided ample room for the monkeys to move about without contacting each other. The floor of the chamber was constructed of parallel grids through which shocks could be delivered. A large one-way window allowed unrestricted observation. One pair of monkeys was placed in the chamber and observed for approximately 5 min. In the absence of shock, the two monkeys explored the cage, briefly sat in the corner and moved past each other showing no signs of fighting. Brief (.15 sec) shocks of 3 ma intensity were then delivered every 30 sec. Upon the first shock delivery, the monkeys jumped and squealed but made no movements at each other. At the second shock, the monkeys suddenly lunged and bit at each other for a few seconds. No further fighting resulted until the next shock. Immediately upon the delivery of the next shock, the monkeys again attacked each other. The fighting continued long after the termination of the brief shock and did not cease until the experimenters forcibly separated the animals. A second pair of monkeys showed similar results. In the absence of shock, the monkeys could be described best as "huddled up" to each other. No fighting occurred during the first 10 shock deliveries. When the 11th shock was delivered, vigorous fighting resulted and persisted until the experimenters could separate the subjects. A third pair of monkeys did not fight at

any of the current intensities used. However, fighting was obtained from each of these two monkeys when they were paired with one of the other monkeys. Observation of a fourth pair revealed that the fighting was not precipitated by accidental contacts arising from the shock delivery. A grid partition was installed to physically separate the two animals thereby eliminating the possibility of accidental contact since the monkeys could touch each other only by deliberately reaching between the parallel bars of the partition. After four shocks, one monkey reached through the partition apparently attempting to seize the second monkey. The second monkey attacked the extended arm until it was withdrawn.

Previous study with rats (Ulrich and Azrin, 1962) showed that fighting was precipitated by pain-shock but did not last for more than 1 sec beyond the termination of the shock. Also, the rats rarely fought with sufficient vigor to inflict physical injury. In contrast, the squirrel monkeys typically continued fighting for a long period after the termination of the shock. Often they fought until forcibly separated. The monkeys typically inflicted serious physical injury unless precautions were taken.

It appears that reflexive fighting can be elicited under a variety of circumstances. For example, electrode-shock and extreme heat have also been found to elicit fighting (Ulrich and Azrin, 1962). Hence, the reflex is a reaction to several types of painful events and is not restricted to foot-shock. Similarly, this pain-fighting reflex is not restricted to lower mammalian species.

REFERENCES

- Tedeschi, R. E. *J. Pharmacol. exp. Therap.*, 1959, 125, 28.
Ulrich, R. E. and Azrin, N. H. *J. exp. Anal. Behav.*, 1962, 5, 511.
Ulrich, R. E. Personal communication.

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