

This Week's Citation Classic

Karli P. The Norway rat's killing response to the white mouse: an experimental analysis. *Behaviour* 10:81-103, 1956.
[Psychobiological Laboratory, Johns Hopkins Medical School, Baltimore, MD]

This paper consists of a descriptive study of the killing-response to the white mouse in both wild and domesticated Norway rats, and of an experimental analysis of some physiological and environmental conditions affecting this response. [The *SCI*[®] indicates that this paper has been cited over 170 times since 1961.]

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February 14, 1979

"About a quarter of a century ago (in 1954), a Rockefeller Foundation fellowship allowed a young French scientist, who had initially been trained in the morphological sciences, to come to the US in order to get additional training in behavioral science. I had chosen to work with Curt P. Richter in his Psychobiological Laboratory located in the Henry Phipps Clinic of the Johns Hopkins Hospital, Baltimore. On my arrival, I was provided with plenty of rats and mice, but with only a limited number of cages. Having housed rats together with mice out of necessity, I soon realized that some rats killed the mice while others did not.

"When I reported this observation to Curt, he replied: 'Look, Pierre, you may well have here the topic to work on for the twelve months to come. If this mouse-killing response proves to be a stable all-or-nothing response, it may well provide a useful behavior (it had not yet become fancy in those days to talk of a useful 'model') for the study of the biology of aggression.' We discussed the matter and it was decided that the study would have to deal with the following three points: 1) It appeared indispensable to observe and

describe thoroughly the behavioral response as such; 2) after that, it would be of interest to study the effects of manipulating internal factors (nutritional state, state of pregnancy, etc.) as well as environmental factors; 3) only then should I carry out brain lesion experiments that would aim at converting natural killers into non-killers and, conversely, natural non-killers into killers.

"Various difficulties had to be overcome. I felt rather desperate when not even one animal survived out of the first series of 25 rats that underwent a bilateral frontal ablation (I felt much better when the entire series survived after I had decided to carry out a two-stage ablation). Since I had acquired quite a bit of experience with the viciousness of the wild Norway rat, it was difficult to get rid of an uneasy feeling when tube-feeding some amygdectomized animals even though their viciousness had been dramatically reduced.

"A huge number of mice was needed to carry out all these experiments and I usually took them myself in a couple of large cages from the supplier to the laboratory. The day one of the cages opened and a few hundred mice were creeping around me in the car, I realized that even the best scientific training could hardly prepare me to cope with any kind of situation I may be faced with!

"Since then, my collaborators (M. Vergnes, F. Eclancher, J.P. Chaurand, P. Schmitt) and I went on carrying out a very extensive study of the rat's mouse-killing behavior. More generally, this behavior became one of the most widely used models for experimental work in the field of the biology of aggression.

"I happen to be President of the International Society for Research on Aggression (ISRA) for the period 1979-80. When thinking of the roads of human destiny, I cannot help wondering with both amusement and modesty whether I would ever have reached this kind of scientific achievement, had I not been led by necessity to house rats together with mice on my arrival at Richter's laboratory!"