

# ***This Week's Citation Classic***

Bolles R C & Woods P J. The ontogeny of behaviour in the albino rat. *Anim. Behav.* 12:427-41, 1964. [Department of Psychology, Hollins College, VA]

**Litters of rat pups with their mothers were observed systematically every few hours around the clock from birth through the age of weaning. The different patterns of behavior are described, and the results are analyzed in terms of their functional significance. [The Science Citation Index® (SCI®) and the Social Sciences Citation Index® (SSCI®) indicate that this paper has been cited over 150 times since 1964.]**

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"I have always believed in the idea that experimenters should look at their animals. While there is much to be said for automatic recording devices in terms of reliability and objectivity, machines have certain limitations. They tend to restrain rather than encourage new kinds of data. A machine is great if you know beforehand exactly what it is to do, but the human eyeball is the instrument of choice if you want to observe a new phenomenon, and particularly if you want to gain a new understanding of it. So I started looking at my experimental animals. I had watched them grooming themselves.<sup>1</sup> Following the lead of the late Dalbir Bindra,<sup>2</sup> I had watched them in their living cages to determine the effects of deprivation on general arousal.<sup>3</sup> And I had learned a lot about the organization of the rat's behavior

by watching them mate, eat, explore, and run around.

"Paul Woods was already at Hollins College when I got there, and he found such an approach quite congruent with his own thinking. The idea of simply looking at baby rats growing up was his. Woods was the developmental psychologist in the department. So we started watching baby rats. We observed them as unobtrusively as possible, i.e., with minimal intervention. We developed the techniques as we went along. It was a lot of fun—full of discovery. Even the day and night ritual became fun. Almost every day one of us would say to the other, 'Hey, you know what I saw last night?' So Woods and I taught each other what to watch for and how to record it. Actually, I like to think that those little animals taught us both how to collect the data.

"Soon we had mountains of data, and we set about writing it up. We worked out tables and graphs. We analyzed it in terms of age trends and by circadian cycles. We looked at everything chronologically and categorically. And with great confidence we broke out all the data in terms of postures, reflex figures, and functional categories. We also had a bit of evidence for early learning, and bits more on all sorts of phenomena.

"The wide citation of the paper reflects, I think, that we did have quite a variety of new data. We had noted a lot of things that simply had not been noted before, and we had a little of everything. Part of it, too, was that animal developmental psychology was a relatively new field then. It was just coming into its own and just beginning to establish its own methods of study. We had thought that some fairly substantial body of normative data would be useful, and we were right. For more recent work in the field, see *Ontogeny of Learning and Memory*."<sup>4</sup>

1. Bolles R C. Grooming behavior in the rat. *J. Comp. Physiol. Psychol.* 53:306-10, 1960.
2. Bindra D & Blond J. A time-sample method for measuring general activity and its components. *Can. J. Psychol.* 12:74-6, 1958.
3. Bolles R C. Effect of food deprivation upon the rat's behavior in its home cage. *J Comp. Physiol. Psychol.* 56:456-60, 1963.
4. Spear N E & Campbell B A, eds. *Ontogeny of learning and memory*. New York: Lawrence Erlbaum, 1979. 321 p.