

STEREOTYPIES IN ANIMALS

A stereotypy is a repeated, relatively invariant sequence of movements that has no obvious function. It is the repetition of the same behavior pattern that makes the stereotypy so obvious to an observer, and the abnormality is also indicated by the distinction from useful repetitive behaviors such as breathing, walking, or flying. Among the most striking abnormal behaviors shown by some animals in zoos* and in confined conditions on farms are stereotypies such as route tracing, bar biting, tongue rolling, or sham chewing. Georgia Mason described a female mink, in a $75 \times 37.5 \times 30$ -cm cage on a mink farm, who would repeatedly rear up, cling to the cage ceiling with her forepaws, and then crash down on her back.

Stereotypies can be shown by humans with neurological disorders, by those with some degree of mental illness, and by those in situations where they have little or no control over aspects of their interaction with their environment. People with no illness may show stereotypies when confined in a small cell in prison or when exposed to situations like waiting for an important interview or waiting for their wife to give birth.

The causes of stereotypies in nonhuman animals seem to be very similar to those in humans. Frustrated individuals, especially those unable to control their environment for a long period, are the most likely to show the behavior. Individuals treated with particular drugs, especially psychostimulants such as amphetamine and apomorphine, may show stereotypies, but it is not clear what this tells us about the causation of stereotypies. Many stereotypies seem to be related to oral movement or to locomotion, so the control systems for such movements are clearly susceptible to being taken over by whatever causes repetition. The age of the individual and the amount of time in the housing condition can affect the stereotypies shown, for example, horses changing from crib biting to wind sucking or from side-to-side pacing to head weaving and confined sows changing from bar biting to sham chewing. Movements can also become more complex with age.

In most cases we do not know whether a stereotypy is helping the individual to cope (see ANIMAL WELFARE, Coping) with the conditions, has helped in the past but is no longer doing so, or has never helped and has always been just a behavioral abnormality. None of the studies that demonstrate a relationship between the extent of occurrence of stereotypies and opioid receptor blocking or opioid receptor density measurement tells us with certainty whether or not stereotypies have any analgesic or calming function. But in all cases the stereotypy indicates that the individual has some difficulty in coping with the conditions, so it is an indicator of poor welfare. Some stereotypies must indicate worse welfare than others, but any individual showing them has a problem.

Stereotypies are sometimes ignored by those who keep animals and may be taken to be normal behavior by those people if they see only disturbed animals. For example, zoo keepers may see route tracing by cats or bears, laboratory staff may see twirling around drinkers by rodents, and farmers may see bar biting or sham chewing by stall-housed sows without realizing that these indicate that the welfare of the animals is poor. A greater awareness of the importance of stereotypies as indicators of poor welfare is resulting in changes in animal housing. More complex environments that give the individual more control and hence result in the occurrence of fewer stereotypies are now being provided in good animal accommodation (see ENRICHMENT FOR ANIMALS). These environments also give opportunities for a larger proportion of the full behavioral repertoire to be expressed, and for the patterns of movements in the repertoire to be varied. The consequent reduction in frustration and increase in the proportion of an individual's interactions with its environment that are under its control improve its welfare.

Selected Bibliography. Broom, D. M., Stereotypies as Animal Welfare Indicators, in D. Smidt (Ed.), Indicators Relevant to Farm Animal Welfare, *Current Topics in Veterinary Medicine and Animal Science* 23 (1983): 81-87; Broom, D. M., and K. G. Johnson, *Stress and Animal Welfare* (London: Chapman and Hall, 1993); Lawrence, A. B., and J. Rushen (Eds.), *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare* (Wallingford: CAB International, 1993); Mason, G. J., Stereotypies: A Critical Review, *Animal Behaviour* 41 (1991): 1015-1037; Ödberg, F., Abnormal Behaviours (Stereotypies), *Proceedings of the First World Congress on Ethology Applied to Zootechnics, Madrid* (Madrid: Industrias Graficas España, 1978), 475-480.

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