Lab Animal Housing: Numbers or Common Sense?

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At the Institute for the Study of Animal Problems' symposium on scientific and ethical issues in primate husbandry and use, (see Original/Review articles), Dr. William McGrew (Stirling University, UK) suggested that there was one very simple action that could be taken to improve the life of caged primates. Instead of keeping the animals in cages with slatted or hatched bases (to allow feces and urine to pass through), he suggested that they be kept in cages with solid floors covered with loose litter. Seeds and other particles of food could be thrown into the litter, giving the primates an opportunity to forage as they would in the wild. Dr. McGrew had experience with such a system at Stirling, and he reported that the animals appeared to be in a better psychological state. There was apparently little problem with odor, even though the litter was changed only every one or two weeks.

Dr. McGrew's remarks were challenged by Dr. William Mason (California Primate Research Center, Davis), who argued that it would be dangerous to take an anecdotal observation and generalize it to cover all situations in which primates are kept. This may be true for those researchers who are studying primate psychology and whose background knowledge of behavior is derived totally from primates kept in barren cages, but the qualitative information provided by McGrew appears strong enough to me to encourage at least *some* action in general primate facilities to improve the mental well-being of the animals. Dr. Mason's objections reflect a common failing among scientists today, namely, an urge to rely exclusively on numbers and statistical analysis of variance rather than on common sense.

This is not to say, however, that what is taken for common sense cannot lead one astray from time to time. Dr. William Paré (1977) found that an apparently improved situation for rat housing leads to premature deaths. Dr. Paré placed his rats in a living-cage which contained an exercise wheel. The rats were given unlimited access to water, and food was available for one hour per day. While such conditions (food, water and exercise) are apparently good for dogs, they produced dead rats. In the experimental groups, between 30 to 60% of the rats died within 21 days, while there were no deaths in the control group, which did not have access to exercise wheels.

This demonstrates, once again, the incredible complexity of the living organism and its interaction with environmental factors. It also indicates that we need to do far more work on the optimal housing of all types of laboratory animals, paying closer attention to ethological parameters as well as to mere physical survival. Dr. McGrew's 'common sense' innovation at the Stirling primate unit was based on ethological data taken from the field, which may help to explain its success. In contrast, Dr. Paré's failed innovation was based on an untested intuition about the benefits of unlimited exercise.

Wallace and Hudson (1969) have shown how simple it is to improve the housing conditions for wild mice and other small rodents. By taking data on nesting behavior into account, they were able to modify the lab cages so that the animals would breed. With a relatively small amount of effort, these approaches could lead to similar improvements for the usual strains of laboratory rodents and lagomorphs.

References

Paré, W.P. (1977) Organ weights in rats with activity-stress ulcers, *Bull Psychonomic Soc* 9:11-13.

Wallace, M.E. and C.A. Hudson (1969) Breeding and handling small wild rodents: a method study, *Lab Animal* 3:107-117.