

RESEARCH WITH ANIMALS

in Psychology



American Psychological Association

ANIMAL RESEARCH
ADVANCES
ANIMAL AND
HUMAN WELFARE

Psychologists do research to learn more about behavior and how knowledge of behavior can be used to advance the welfare of people and animals.

Although much research in psychology uses people as subjects, research with animal subjects continues to be essential for answering some fundamental questions.

Since Charles Darwin's work, which emphasized continuity in evolution from animals to people in their mental abilities and in physical characteristics, psychologists have worked to understand the basic principles and processes that underlie the behavior of all creatures, human and nonhuman.

As knowledge has accumulated, identification of characteristics that are unique to different species has yielded information that contributes to understanding and advancing the welfare of animals and people.

Contact APA for More Information

For more information about the use of animals in psychological research, please contact the Research Ethics Officer, Science Directorate, APA, 750 First Street, NE, Washington, DC 20002-4242.

From the *APA Guidelines for Ethical Conduct in the Care and Use of Animals*: "Psychologists undertake research with animals 'with a clear scientific purpose'.

. . . There should be a reasonable expectation that the research will

- a) increase knowledge of the processes underlying the evolution, development, maintenance, alteration, control, or biological significance of behavior,
- b) increase understanding of the species under study,
- or c) provide results that benefit the health or welfare of humans or other animals."

(Section VI.A.)

Animal Research Contributes Significantly to Knowledge of Behavior

Animal research has been the major contributor to our knowledge of basic learning processes and motivational systems, such as hunger, thirst, and reproduction. Animal research has provided critical information about the sensory processes of vision, taste, hearing, and pain perception. Studies of animal cognition have provided a comparative and ecological perspective on issues of the mind and intelligence. Other studies have shown how sensory functions and levels of cognition can depend critically on early experience.

Through research with animals, we have learned about modes of adaptation to change, including evolution, development, and all types of learning. The research has told us about important connections between stress and disease and has suggested psychological interventions for coping with stress more effectively.

Animal research has been used to identify and refine the basic behavioral principles that have led to the development of effective methods for promoting learning and self-reliance in a wide variety of populations. Animal research has contributed also to treatment of difficult clinical problems such as controlling self-injurious behavior in autistic children and adults and teaching children who have been tube-fed since birth to eat normally.

Animal behavioral research has been fundamental to understanding the range of behavioral effects of psychoactive drugs and environmental toxicants. Behavioral research by psychologists has contributed significantly to our understanding of drug abuse and physical dependence. Behavioral research with specifically bred strains of mice and rats is contributing importantly to understanding the nature and extent of genetic vulnerability to drug dependence.

On other fronts, psychologists have developed behavioral methods for screening compounds in laboratory animals and are active in developing new drugs used in the treatment of such disorders as anxiety, schizophrenia, and depression. Animal research is critical to current efforts to develop effective pharmacologic treatments for drug dependence and for the cognitive deficits of aging and Alzheimer's disease.

Animal research also has contributed to efforts to help animals, such as in programs to reestablish populations of endangered or threatened species, in designing appropriate living conditions and enhancing the well-being of captive animals, and in developing humane methods of animal control in the wild.

Animal Research Helps Explain the Central Nervous System

Although experiences in the world shape behavior, understanding how the nervous system works is critical to a complete understanding of behavior, including behaviors that are problematic in mental illness, memory disorders, and drug addiction. Much of what we know about the relationships among anatomy, physiology, and behavior has come from animal research. Recent research on the brain, particularly on processes of chemical neurotransmission, combined with behavioral research in animals has provided enormous leaps forward in our understanding of the functioning of the central nervous system. This information is critical to understanding:

- the process of recovery after neural damage;
- biological correlates of fear, anxiety, and other forms of stress;
- subjective and dependence-producing effects of psychotropic drugs;
- mechanisms that control eating and other motivational processes; and
- the biology of learning and memory.

Psychologists who conduct animal research have contributed to the study of all these areas on their own and in fruitful and dynamic collaboration and dialogue with biologists, chemists, molecular biologists, pharmacologists, and physicians.

Human Subjects and Alternatives to Live Subjects Have Been Proposed

Various alternatives to research with animals have been proposed, including the use of plants and tissue cultures and the use of computer simulations. In fact, all who do research with animals are required, legally and ethically, to consider the possibility of using alternatives to nonhuman animals. Animal laboratories are expensive and labor intensive to maintain; practically speaking, alternative methods could be an advantage.

However, alternatives are often unavailable or inadequate. Plants lack a nervous system and therefore cannot be used to learn about psychological phenomena. Tissue cultures cannot develop depression, alcoholism, autism, learning disorders, memory impairments, aggressive behavior, social abnormalities, or other psychologically relevant problems. To be useful, computer simulations have to be based on knowledge obtained from live behaving organisms, and, therefore, cannot substitute for studies of live animals. Many fundamental research questions cannot be addressed without the use of intact functioning organisms. Even when an alternative method generates useful information, however, the behavioral relevance of that information ultimately must be determined in a living organism.

Studies typically use animals when time requirements, risk, the need to control behavioral history, or other conditions make it impossible to use humans or when there are other practical or ethical reasons not to use humans. For example:

In psychopharmacology research, study of the behavioral effects of a chronically administered drug and its withdrawal requires many days or weeks of daily drug administration. Many drugs of interest are under development and not yet approved for use in humans. Some studies may require examination of brain tissue after drug treatment or require administration of drugs to specific sites in the brain to help understand their mechanisms of action.

Investigations into the process of aging are not practical with humans, who live 75 to 80 years. Scientists can get important insights into some aspects of aging by studying rats, which live an average of 2 years, or monkeys, which live 15 to 20 years, because the shorter lifespan yields more quickly crucial data on aging.

Experiments may require subjects of a particular size, age, or genetic makeup; they may restrict subjects to special diets or require environmental control or even particular behavioral histories. Studies of this sort would not be possible with humans.

It has also been suggested that animals be studied in the wild rather than in the laboratory. Psychologists do observe and study animals in natural environments; but for many investigations, the laboratory is the only setting in which causal variables can be isolated with sufficient precision to generate meaningful conclusions. The laboratory is often the only possible setting for investigating effects of drugs, chemicals, or pollutants.

Animals Used in Psychological Research Vary

About 7-8% of psychological research involves the use of animals. Although the range of species that have been used in various studies in psychology is broad, 90% of the animals used have been rodents and birds, principally rats, mice, and pigeons. Only about 5% of the animals are monkeys and other primates. Use of dogs or cats is rare.

Humane Care and Use of Animals in Research Are Safeguarded

Many safeguards exist to assure that laboratory animals receive humane and ethical treatment. Care and use of animals in research are regulated and monitored by various government agencies. Institutions in which research with animals is conducted have federally mandated review committees.

Federal Regulations and Guidelines Exist

The Animal Welfare Act, most recently amended in 1985, governs the care and use of many research animals. The U.S. Department of Agriculture is responsible for enforcing the Act and conducting periodic unannounced inspections of animal research facilities, both public and private. In addition, institutions that conduct research using animals covered by the Act are required to have an Institutional Animal Care and Use Committee (IACUC) to review each research protocol. The IACUC is required to include both a veterinarian and a local community member who is not affiliated with the institution. Animals may not be obtained and studies may not be conducted unless the IACUC has approved the protocol for its adherence to Federal guidelines for appropriate and humane use of animals. The IACUC must also maintain records about the use of animals at the institution and conduct periodic inspections of its own.

In preparing protocols for review by the IACUC, researchers must consider not only the rationale for their experiments and the conditions of animal care during the experiment, but also the rationale for the number of animals that they will use and whether or not this number is appropriate for the proper interpretation of the results. They are required to be familiar with the literature to assure that the research is not unnecessarily duplicative of previous studies. Furthermore, they are required to identify and address explicitly issues of pain and suffering that might be involved in their experiments and suitable approaches for alleviating any pain or suffering.

The Public Health Service has set guidelines that all recipients of grants from the National Institutes of Health (NIH), the major source of funding for behavioral and biomedical research with animals, must follow. These guidelines apply to species such as rats, mice, and birds, not covered by the USDA regulations.

The Scientific Community Also Sets Standards

The American Association for the Accreditation of Laboratory Animal Care (AAALAC) is nationally and internationally recognized for its institutional accreditation program. AAALAC sets the "Gold Standard" for laboratory animal care and serves as a guide for those research facilities seeking to assure the best conditions for their research animals. Once accreditation is obtained, thorough inspections are conducted every 3 years to determine whether an institution may retain its accreditation.

Professional societies whose members conduct animal research, such as the Society for Neuroscience and the Federation of American Societies for Experimental Biology, also have ethical standards and guidelines to which their members must adhere. Virtually all journals that publish animal research require that the authors affirm that the research was done in accordance with particular ethical standards.

APA Code of Ethics and Other Guidelines Cover Treatment of Research Animals

The American Psychological Association code of ethics includes principles for the humane and ethical treatment of research animals. All APA members are committed to uphold these principles. Failure to do so can lead to expulsion from the Association. In addition, APA's *Guidelines for Ethical Conduct in the Care and Use of Animals* establishes comprehensive guidelines for psychologists who use animals in their research. All individuals who publish in APA journals are required to conduct their research with animals in accordance with these guidelines.

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