

Using touchscreens to explore the welfare and cognition of zoo-housed primates

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Annually, over 180 million people visit zoos accredited by the Association of Zoos and Aquariums (AZA), giving them the chance to see a variety of primate species and to learn about their behavior and ecology. In the past decade, some zoos have also become increasingly involved in conducting high-quality cognitive research that not only contributes to the academic literature, but also increases our knowledge of captive primate care. Using technology such as touchscreen computers, scientists are able to explore a range of primate cognitive abilities through different types of computer tasks. In 2004, Lincoln Park Zoo scientists began a comparative touchscreen research program with resident Western-lowland gorillas (*Gorilla gorilla gorilla*) and chimpanzees (*Pan troglodytes*). In 2015, this research program was expanded to include Japanese macaques (*Macaca fuscata*). This applied and comparative research is exploring several facets of primate cognition: serial learning, prosociality, affective states, and individual preferences. The purpose of this research is threefold: to learn more about primates' cognitive abilities; to develop new ways to assess and positively impact primate welfare; and to facilitate public engagement with science. Both the macaque and ape facilities at Lincoln Park Zoo were designed specifically to accommodate touchscreen research that could be conducted in view of zoo guests while the primates remain in their social group during voluntary testing sessions. The cognitive research demonstrations are interpreted by zoo educators every weekday, where guests can observe the primates working on the touchscreens, and ask questions about the research. This zoo-based cognitive research program offers benefits to scientists, zoo visitors as well as to the animals themselves, as the research strives to improve the care and management of program participants.