Abstract

In this paper we address the magnitude representation in black-handed spider monkeys (Ateles geoffroyi). From decades ago scientists working in this field have discussed if the representation is exact or approximate. Here we used the expectancy violation procedure. This means a researcher manipulating objects in front of an animal, as if acting "one plus one equals one, two or three". This procedure assumes that a non-expected outcome elicits more attention than an expected one. Operationally, the attention measure is the individual time spent observing the outcome. With this procedure the researcher can classify the outcomes into categories derived from cognitive hypotheses. For instance, according to an arithmetical hypothesis, in the sum "one plus one", the outcome "two" is "possible", while the outcomes "one" and "three" are "impossible". The researcher compares the observing time between categories and makes cognitive inferences. We classify the outcome in accordance to a "simulative hypothesis" and an "arithmetical hypothesis". Our data support the first one. We argue in favor of a representational system enabling the understanding of actions like "put on" and "take off" rather than an innate number sense which supports the arithmetic capability of adding and subtracting.

Keywords

Magnitude representation, expectancy violation, primates, spider monkey.