Paradoxical choice: when animals prefer fewer to more reward

Everything else being equal, animals prefer high to low probabilities of reward. However, when everything else is not exactly equal, animals may show apparently paradoxical preferences. We argue that such cases are important in revealing the mechanisms controlling choice and discuss an experimental task in which pigeons prefer an option with lower reward probability. Specifically, in the original task we gave pigeons two options: one yielding a 20% probability of food with the outcome signaled by a discriminative stimulus; and the other yielding a 50% probability of food with the outcome unsignaled. Although the optimal behavior would be to choose the latter, pigeons chose the first. Why would animals prefer fewer to more food? Would humans also prefer an option yielding less reward? In a series of experiments, we manipulated several parameters of the experimental procedure to better understand how animals and humans solve this task and develop their preference. The conditions under which this suboptimal behavior occurs (or not) are presented and possible explanations are discussed.