



Pigeon Adaptation to Unsignaled Changes in the Rates of Reward of VI–VI Concurrent Schedules

José Luis Baroja, Elena Villalobos, & Arturo Bouzas

Laboratorio 25, Psychology School, UNAM

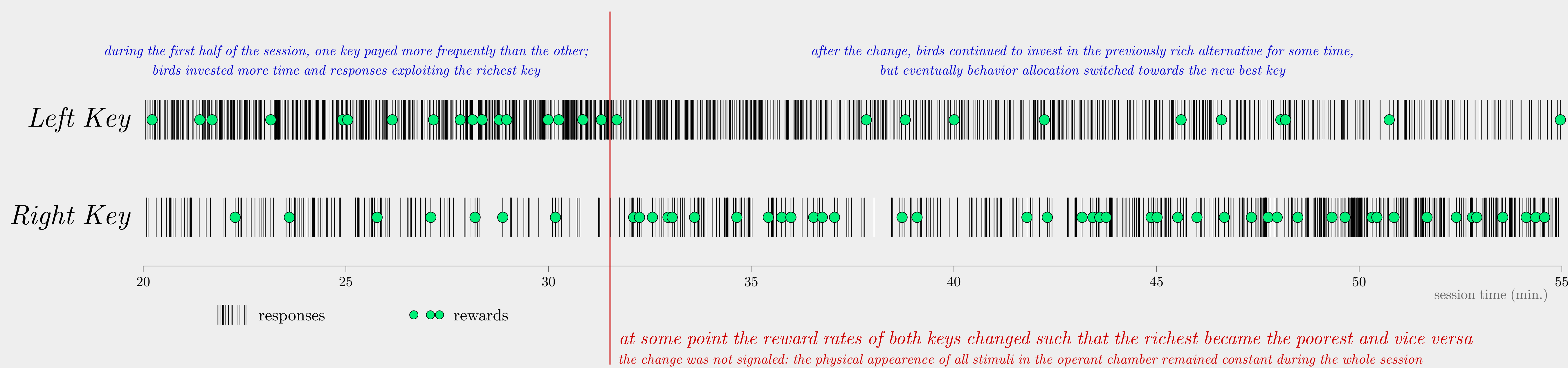


Many environments are dynamic, in the sense that the underlying reward probabilities may change suddenly and abruptly; besides, many of such changes are not necessarily signaled: the price of some stock, the outbreak of a new disease, or the relationships within our closest social groups, may dramatically switch from night to day, with little or no clues of the upcoming change. Arguably, the ability to detect and quickly adapt to such changes may be crucial for survival. In this work, we use an animal model to study the speed of adjustment to new environments following abrupt, unsignaled changes in the rates of reward. Research supported by grant PAPIIT IG120818

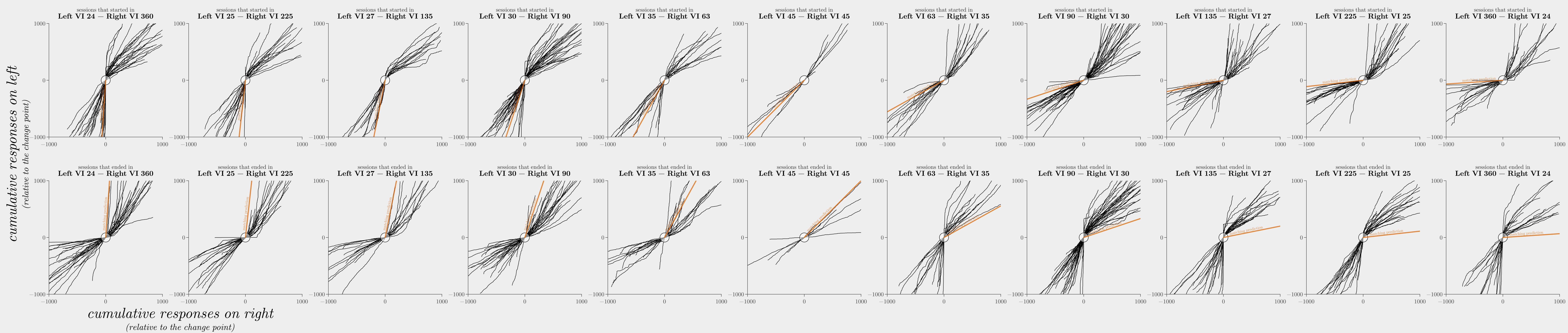
task

Six pigeons worked for food in standard operant chambers. Two keys were available during the session, each delivering rewards accordingly to a Variable Interval (VI) schedule: each second, the computer flipped a biased coin to decide whether to set up a reward on each key, waiting for the the next response that key to be delivered. During the first half of the session, one key payed more frequently than the other, but at some random second this relationship was reversed with no explicit signal to the bird. We attempted to measure the speed of adjustment to the new environment.

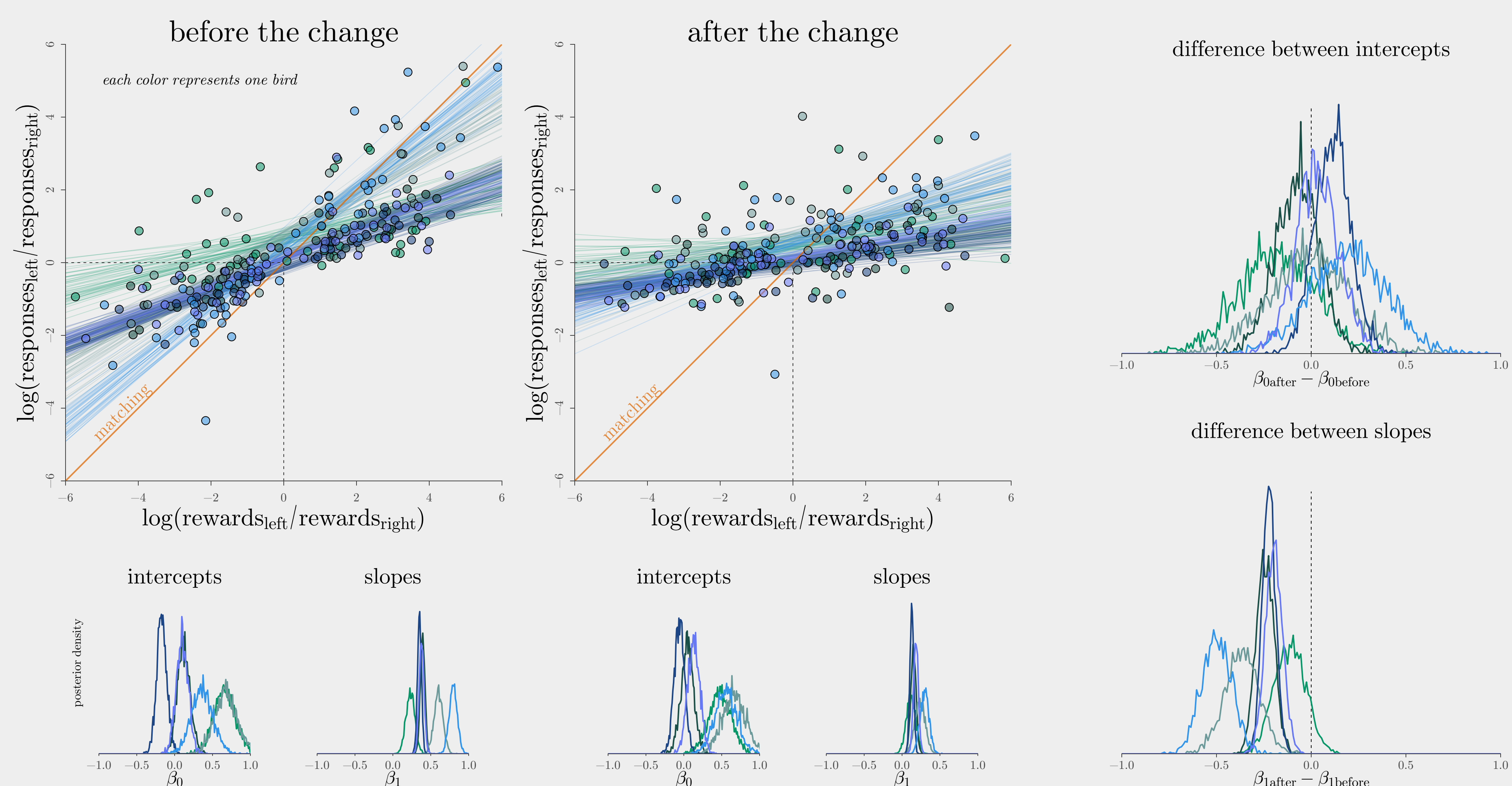
sample session



cumulative records



matching



discussion

During the first half of the session, previous to the change in the rates of reward, birds' distribution of responses was relatively close to the matching relationship. However, following abrupt, unsignaled changes in the rates of reward, they showed no immediate re-distribution of behavior: the new response equilibrium was reached only after several minutes and after having obtained numerous rewards in the new environment. This preliminary result contrasts with findings reported using rats and mice, that suggest those species detect and re-adjust to similar changes "as rapidly as they could in principle do so" (Gallistel et al., 2001). Future, more precise analyses are needed in order to better understand the source of this discrepancy and its implications regarding the study of change detection.

Gallistel, C. R., Mark, T. A., King, A. P. & Latham, P. E. (2001). The rat approximates and ideal detector of changes in rates of reward: Implications for the Law of Effect. Journal of Experimental Psychology, 27, 354:372.