

ASSOCIATION BETWEEN ERROR CLASS AND PERFORMANCE OF ZOO-LIVING CHIMPANZEES AND GORILLAS ON A COMPUTERIZED SEQUENCING TASK

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Performance and error rate are frequently used indices of learning in tasks that access serial order understanding in primates. The composition of errors may provide further insight into the cognitive strategies that support serial order processing; however few examinations have considered associations between classes of errors and general performance. At the Lester E. Fisher Center for the Study and Conservation of Apes (Lincoln Park Zoo, Chicago, IL, USA), apes are provided opportunities to engage with touchscreen computers during tests of serial learning abilities. Chimpanzees (n=2) and gorillas (n=3) were progressively shaped to reproduce a sequence composed of up to 5 arbitrary symbols. Subjects committed four non-exclusive types of ordering errors, including incorrect symbol-selection in the first position (30%), incorrect ordering of the penultimate (40%) and the novel (55%) symbols and, predominantly, skipping a single position in the ordered list (80%). Repeated-measures analyses across list lengths indicated that the proportion of single position-skip errors demonstrated a positive association with performance for both chimpanzees (R=0.787, P=0.002) and gorillas (R=0.512, p=0.028) and a similar positive association with latency across species (R=0.429, P=0.01). The relationship with performance was maintained on the 4-item (R=0.677, P=0.03), and 5-item (R=0.81, P=0.005) list across species but was not statistically significant on the 3-item list (R=0.626, P=0.053). Results suggest that high performing subjects used a sequencing strategy that relied on robust internal representations of symbol-position associations, predisposing these subjects to more frequent errors at adjacent positions.

Keywords: Serial order, Performance errors, Chimpanzee, Gorilla