Aubrielle Maginness

Columbia, MO

Faculty Mentor: Dr. Kristy vanMarle, Psychological Sciences

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Foraging strategies and personality - does fear/shyness lead to more reward?

Aubrielle Maginness and Kristy vanMarle

Purpose: Herrnstein's (1961) Matching Law establishes that in an individual foraging task (one forager, n locations), participants divide time in proportion to the income available in each location. This "probability matching" is observed in animals (Gallistel et al., 2007) and humans (e.g., Bliss, Gilson, & Deaton, 1995; Koehler & James, 2010). Probability matching does not maximize individual reward, leading researchers to ask what factors affect strategy choice. West and Stanovich (2003) showed that adults using a "maximizing" strategy (i.e., spending most of their time in the most productive zone) had higher cognitive abilities than individuals employing matching. Likewise, Koehler and James (2010) suggest that matching is a heuristic that comes to mind easily, but when asked to deliberate over alternatives individuals are more likely to choose a better strategy, i.e., maximizing. Furthermore, Derks and Paclisanu (1967) found that probability matching emerges around age 6, while younger children use a maximizing strategy. The present study investigates strategy choice in preschoolers and adults and whether the temperment trait of shyness/fear is related to strategy in a foraging task.

Methods: Five adults (mean age=20) and three children ages (mean age=3.5) participated on Zoom, completing the Rothbart Temperament Questionnaires for Fear and Shyness (Rothbart et al., 2001, Evans & Rothbart, 2007), and playing a 15-minute computer game where they must hover the cursor over the location they think will be "rewarded" next in an attempt to garner the most rewards. Rewards are delivered in an unpredictable concurrent VI schedule and reward ratios vary (1:1, 2:1, 5:1, twice each).

Results: Preliminary results show that children reaped more rewards than adults but neither group picked a single strategy. Shyness was associated with lower rewards in both children and adults (R=-0.87,-0.81), whereas fear was associated with higher rewards (R=0.99,0.27).

References

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