

## **Intelligence, Impulsivity and Selective Attention have something to tell us about Hybrid Foraging performance**

Adrián R. Muñoz-García<sup>1</sup>, Jeremy M. Wolfe<sup>2</sup>, Beatriz Gil-Gómez de Liaño<sup>2,3</sup>

<sup>1</sup> Universidad Autónoma de Madrid

<sup>2</sup> Harvard Medical School-Brigham & Women's Hospital

<sup>3</sup> University of Cambridge

The modulation of Visual Search (VS) performance by intelligence has not yet been established. However, it has been found that for hybrid foraging there may be a significant correlation with fluid intelligence, Gf (given by the APM Raven test). In hybrid foraging tasks observers must collect multiple visual instances of several types of targets held in memory. The juggling of memory and visual search in hybrid foraging may involve strategies drawn more heavily than simple visual search on intelligence and attentional processes. In the present work we tested that possibility by asking participants (n=34) to perform easy feature foraging (looking for green/blue squares among red/yellow squares), and more difficult conjunction foraging (looking for green circles and blue squares among green squares and blue circles). We also collected measures of IQ using the Reynolds Intellectual Screening Test – RIST for IQ (including verbal and non-verbal intelligence), and attentional function (inattentiveness, impulsivity, sustained attention, and vigilance) using the Conners Continuous Performance Test CPT. Results show that IQ and attention are correlated with conjunction hybrid foraging: When general IQ is higher, RTs are lower ( $p=.02$ ) on trials when observers switch responses between target types. Also, False Alarms are reduced as non-verbal IQ increases ( $p=.005$ ). Finally, impulsivity and inattentiveness may also be weakly correlated with conjunction foraging measures: More inattentiveness weakly correlates with more misses ( $p=.06$ ), and with higher RTs for conjunction foraging ( $p=.05$ ). Surprisingly, higher levels of impulsivity correlate with more hits in conjunction foraging ( $p<.01$ , for all comparisons). Taken together, the results show that complex cognitive processes and maybe personality may impact foraging behavior.