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Brains and the city in passerine birds: re-analysis and confirmation of the original result

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Our original paper [1] included two Bayesian analyses [2] of the association between brain size and the probability of a passerine species of bird breeding in the city centre—at the level of families and at the level of individual species—with both analyses suggesting the same pattern. It has since been brought to our attention that in one of the analyses at the level of individual species, the residual variance was not fixed to 1 resulting in overestimation of the variance. We re-ran the analysis using fixed residual variance and the results support the original conclusion that relative brain size is associated with breeding in the city centre (ln brain size: posterior mean, 324.53, 95% credibility interval, 52.61–601.35; ln body size: posterior mean, –276.22, 95% credibility interval, –490.60 to –70.32). Furthermore, we applied a complimentary approach using logistic regression to test whether brain size predicts breeding in the city centre (yes/no) without accounting for phylogeny. This analysis also resulted in a significant positive association between brain size and breeding in city centres (likelihood ratio tests: ln brain size: d.f. = 1, $\chi^2 = 11.08$, $p = 0.0009$; ln body size: d.f. = 1, $\chi^2 = 11.26$, $p = 0.0008$). Thus, our results are confirmed by both phylogenetic and non-phylogenetic analyses.

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