Selective interspecific information use in the nest choice of solitary bees

Olli J. Loukola[1,2,4,*], Elia Gatto[3,4], Ana C. Híjar-Islas[4] and Lars Chittka[4,5]

[1] University of Oulu, Ecology and Genetics Research Unit, PO Box 3000, FI-90014, Oulu, Finland

[2] Botanical Museum, Biodiversity Unit, PO Box 3000, FI-90014, University of Oulu, Oulu, Finland

[3] University of Padova, Department of General Psychology, 35100 Padova, Italy

[4] Queen Mary University of London, Department of Biological and Experimental Psychology, School of Biological and Chemical Sciences, London E1 4NS, United Kingdom

[5] Wissenschaftskolleg zu Berlin, Institute for Advanced Study, Wallotstrasse 19, D-14193 Berlin, Germany

[*] Corresponding author; e-mail: olli.loukola@oulu.fi

Supplementary material

Text S1

We analyzed the full data, including also observations of 20 mason bees that chose to nest in an empty nest block adjacent to a red mason bee's nest block. We used Bayesian generalized linear mixed models, package MCMCglmm (Hadfield, 2010) in R version 3.2.5 (R Core Team, 2016), to estimate the effects of the treatment on the nest-site choice of the later-nesting bee. In our model, we used the first nest-site choice of the bee as a response variable (family categorical), with treatment (simulated nesting success of red mason bee: parasite-free or infected with parasites) as

fixed effect and study site as random effect. We ran the model for 1,400,000 iterations with a burn-in of 400,000 and sampling that produced 1,000 estimates of the posterior distribution.

Table S1. Results of Bayesian generalized linear mixed-effects models (MCMCglmm) explaining the probability of the nest-site choice of the observing bee.

Coefficient	Posterior mean	95% Credible interval	pMCMC
Choice (next)	–0.57	–2.58 to 1.19	0.492
Choice (opposite)	–1.56	–3.63 to 0.64	0.124
Choice (next): Treatment (parasitized)	1.08	–0.39 to 2.73	0.156
Choice (opposite): Treatment (parasitized)	2.43	0.69 to 4.04	0.006**

Video S1. Bees acquiring information about possible nest sites in the experimental units. Footage shows that bees were flying close to the nest blocks and were visually inspecting the state of the artificial nest and symbol associated. The observing bees were actively checking all the empty nest blocks prior to nesting.

Video S2. Nesting behaviour. Footage shows the speed and efficiency of a female sealing her nest to protect her brood from parasites. The bee made several trips to plants nearby to collect enough material, which she mixed and attached at the nest block's entrance using her forelegs and mandibles. This final cell, or protective cap, occupied a large portion of the whole nest block.
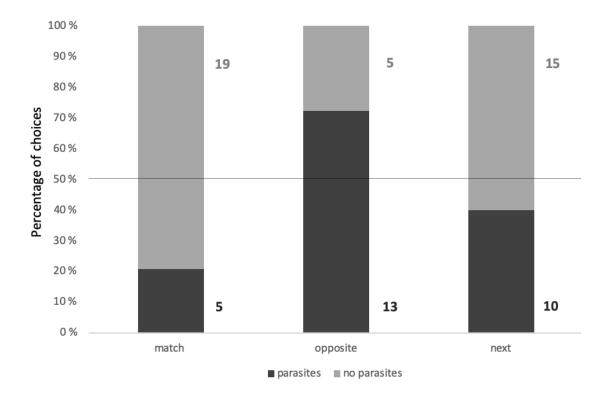
Figure S1. Nest-site feature choices of later-nesting bees. The bar on the left (match) denotes percentage of observing bee's nests with a symbol matching the symbol on the simulated red mason bee's nest block; the bar in the middle (opposite) denotes percentage of observing bee's nests in nest blocks with a symbol opposing the symbol on the simulated red mason bee's nest block; the bar on the right denotes percentage of observing bee's nests in nest block adjacent to the red mason bee nest block. The colours of the bars denote the treatment group (dark grey = parasitized red mason bee's nest; light grey = healthy red mason bee's nest). The numbers on the right side of the bars denote the number of choices within a treatment group and the colour of the number denotes the treatment group. The dashed line denotes the null expectation of 50%.

References

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