**Supporting Information**

1. *Data collection – mating system and parental care moderator terms*

We searched *ISI Web of Science, Scopus* and *Google Scholar* using the search terms: “species name” AND “mating system” for mating system and “species name” AND “parental care” for parental care. For birds, we also searched the online reference database *Birds of the World* (birdsoftheworld.org; accessed via an ANU library subscription in 2019) by searching “species name”. We noted whether the mating system of the species was characterised by ‘multiple mating’ or ‘monogamy’, and whether the species provided ‘maternal’, ‘paternal’, ‘biparental’, ‘cooperative’ or ‘no care’. However, after data collection we decided to drop parental care from subsequent analysis because 1) we did not have enough data for enough species to run our proposed meta-regression models and 2) data quality was questionable. The location of data collected for both parental care and mating system (and body sizes for SSD) are provided in the data file ‘sexual\_selection.xlsx’ here: <https://osf.io/bwjyt/>

1. *Excluding studies and effect sizes*

After full-text screening, we were left with a total of n=247 studies. However, n=29 studies were excluded from this initial inclusion list because behaviours did not really fit into personality categorisation, or they were missing some key data required to calculate effect sizes. Another n=8 studies were excluded before analysis was conducted because studies were missing data required to calculate effect sizes, producing NAs. This left us with a total of n=210 studies in our final dataset.

Before analysis, we removed n=2 effect sizes (both from the same study on invertebrates) that were extremely large outliers. We also had n=24 effect sizes in our dataset that were more physiological than behavioural (i.e. breathing rate, max. heart rate after capture etc.). We decided to remove these effect sizes before running models, which reduced the total number of effect sizes, but did not change the number of studies or species in our final dataset.

While we decided not to email authors for missing data (i.e. sample sizes, error type, additional information), we did obtain sample sizes for males and females in study P077 via email correspondence with a co-author of the study.

Additionally, there were 3 studies in our dataset (P172, P210 and P231) that we were concerned might have issues with data duplication/unreliability. LMH checked the retraction database *retractiondatabase.org* regularly during data analysis to check if these studies had been either retracted or flagged for concern. As of 31 August 2020, none of the 3 studies had been retracted, nor had any other concerns been raised, so we decided to keep these studies in our final dataset.

1. *Score data*

We performed data transformations on latency data and proportional data in order to meet assumptions about normality. However, we were unable to adjust score data, and therefore assumed that scores were normally distributed. Scores did not make up a large proportion of our effect size dataset, but we decided to run contrast meta-analysis models to check whether data composed of scores were significantly different from the rest of our dataset. Summaries of these models are shown in Table S2.

*Score data - invertebrates*

Effect sizes calculated from scores were significantly different from the rest of the dataset (including transformed latency and proportion data) for mean differences in personality for invertebrates only (intercept: =0.30, 95% CIs: 0.02, 0.57, *t* = 2.12, *p*=0.03; score: = -0.29, 95% CIs: -0.57, -0.02, *t* = -2.11, *p*=0.04). Invertebrates had the most score data of any taxonomic group (n=61 effect sizes; Table S2). We therefore decided to exclude these scores from our invertebrate dataset and rerun our models. Study ID of these removed studies were P081, P103, P142, P153, P172, P199 and P210. All invertebrate model tables and figures report data *after* scores were removed.

1. *Calculating I2*

We extracted *I*2 from our meta-analytic intercept-only models (see Table S14) using the following equation:

Where is the total variance, is the phylogenetic variance, is the between-study variance, is the species-specific variance, is the study-specific variance (observation-level random effect), and is the remaining within-study sampling variance (random effects; Nakagawa & Santos, 2012). Further, we can then partition *I*2 to calculate study-level *I*2 and species-level *I*2 (*I*2s and *I*2u, respectively; Nakagawa & Santos, 2012):

*I*2s = / ,

*I*2u = /

Finally, we can determine the strength of phylogenetic variance using the equation:

Where = 0 there is no phylogenetic signal, but when = 1 there is a strong effect of phylogeny on heterogeneity (Nakagawa & Santos, 2012).

1. *Exploratory analysis*

We extracted information on factors that differed among studies where we had an *a priori* expectation that they might moderate the magnitude and/or direction of the effect size. For mating system, we followed methods similar to those used to obtain SSD measures. Where mating system was not reported in the research article, we searched *Web of Science*, *Scopus* and *Google Scholar* using the search terms: “species name” AND “mating system”. For birds, we first searched the online reference database *Birds of the World* (birdsoftheworld.org; accessed via an ANU library subscription in 2019). Initially we wanted to categorise mating system into the following: “monogamous”, “polyandrous”, “polygynous”, or “promiscuous”. However, it was difficult to find studies that agreed on mating system definitions for many species, so we collapsed our mating system categories into just “monogamous” or “multiple mating”. The location of data collected for mating system is provided in the data file ‘sexual\_selection.xlsx’.

1. *Exploratory analysis - results*

*Mating System*

Monogamous and multiple mating systems were not significantly different from each other for means or variability for any of the taxonomic groups (see Table S3).

*Age*

Adults and juveniles were not significantly different from each other for means or variability for any of the taxonomic groups (see Table S4).

*Population*

Fish from the wild had greater differences in variability than fish from lab populations (intercept: =-0.09, 95% CIs: -0.18, -0.01, *t* = -2.11, *p*=0.04; lab: =0.08, 95% CIs: -0.02, 0.19, *t* = 1.55, *p*=0.12), but not for mean personality differences, and not for any other taxonomic group (see Table S5).

*Study environment*

Studies conducted in the lab were significantly different to field studies for mammals (intercept: =0.24, 95% CIs: -0.10, 0.57, *t* = 1.38, *p*=0.17; lab: = -0.30, 95% CIs: -0.56, -0.04, *t* = -2.26, *p*=0.02), but not for variability, and not for any other taxonomic group (see Table S6).

*Study type*

Effect sizes from observational studies were significantly different from experimental studies for mammals (intercept: =0.00, 95% CIs: -0.21, 0.22, *t* = 0.04, *p*=0.97; observation: = 0.38, 95% CIs: 0.12, 0.64, *t* = 2.81, *p*=0.005), but not for variability, and not for any other taxonomic group for which comparisons could be made (see Table S7).

1. **D** *matrices – results*

*Intercept only models*

Regardless of whether the correlation between personality traits was set to either *r* = 0.3, 0.5 or 0.8 (i.e. to control for traits that were measured on the same individuals within the same study), there remained no significant sex difference between either the mean or the variability for personality overall, for any of the five taxonomic groups (see Tables S8-S10). We therefore interpreted our initial intercept only models without **D** matrices (Table S14).

*Personality trait models - mean differences*

Female birds were more social than males, while male reptiles/amphibians were more explorative than females (at each of the levels of rho; see Table S8 for *r* = 0.8). These significant sex differences, and their direction, were consistent with those from models without any **D** matrix (Table S15). However, male invertebrates were more active than females when *r* = 0.3, when *r* = 0.5, and when *r* = 0.8 (Tables S11-S13). This significant sex difference, for invertebrates, was not found in our initial MLMR personality models (but was marginally significant, see Table S2). However, since we also observed significant publication bias in our invertebrate data (Table S4), we therefore decided to interpret and report our more conservative mean model estimates.

*Personality trait models - variability*

Adjusting the levels of rho for variability did not significantly change the results obtained from initial MLMR personality models for any of the taxonomic groups. Importantly, female fish remained significantly more variable than males for aggressive behaviour, regardless of the level of rho (Tables S11-S13).

*SSD and personality traits*

Adjusting the levels of rho for both means and for variability did change some effect sizes and made them more significant, but only for some traits, and only for some taxonomic groups (reptiles / amphibians, and invertebrates). However, our reptiles / amphibians taxonomic group didn’t have enough data to support meta-regression models, and our invertebrate group had significant publication bias (Table S17), so we chose to interpret and present our more conservative models that did not include **D** matrices.

**Supplementary Tables**

**Table S1. Keyword searches.** Primary and secondary keyword searches used for our literature search conducted on 11 December 2018. Keyword searches differed slightly to account for how operator terms are employed by each database. The searches were further refined by using relevant biological categories in ISI or SCOPUS.

|  |  |  |
| --- | --- | --- |
|  | ***ISI Web of Science*** | ***SCOPUS*** |
| *Primary keyword search terms* | (personalit\* OR “behavioural syndrome\*” OR “behavioral syndrome\*” OR temperament) AND (sex\*) NOT (man OR men OR woman OR women OR human) | personalit\* OR “behavioural syndrome” OR “behavioral syndrome” OR temperament AND sex AND NOT man AND NOT woman AND NOT human |
| *Secondary keyword search terms* | animal\* AND behav\* AND (bold\* OR shy\* OR neoph\* OR aggress\* OR explor\* OR hid\*) AND “sex differences” NOT man NOT woman NOT human | animal\* AND (bold\* OR shy\* OR neoph\* OR aggress\* OR explor\* OR hid\*) AND “sex differences” AND NOT man AND NOT woman AND NOT human |
| *Refined by categories* | zoology, ecology, biology, multidisciplinary sciences, evolutionary biology | agriculture & biology |

**Table S2. Score data sensitivity models.** Sensitivity contrast models for each of the taxonomic groups with score data type included as a moderator. These models compare score data to the rest of the dataset (intercept) to see if effect sizes calculated from scores are significantly different from our transformed (and normally-distributed) effect size dataset.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| Q=2723.54 | P<0.0001 |  | | | |
| F=0.25 | P=0.62 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.59 | 0.77 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.12 | -0.35, 0.11 | -1.02 | 0.31 | 426 |
| Scores | -0.06 | -0.30, 0.18 | -0.50 | 0.62 | 57 |
| ***lnCVR*** | | | | | |
| Q=3819.02 | P<0.0001 |  | | | |
| F=0.02 | P=0.88 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.12 | 50 |  |  |
| Species Name | 0.36 | 0.6 | 106 |  |  |
| Obs | 0.4 | 0.63 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.15 | -0.66, 0.36 | -0.57 | 0.57 | 426 |
| Scores | 0.02 | -0.24, 0.28 | 0.16 | 0.88 | 57 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| Q=1380.98 | P<0.0001 |  | | | |
| F=0.62 | P=0.43 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.21 | 44 |  |  |
| Species Name | 0.04 | 0.21 | 22 |  |  |
| Obs | 0.13 | 0.36 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.07 | -0.40, 0.27 | -0.4 | 0.69 | 435 |
| Scores | 0.08 | -0.12, 0.28 | 0.79 | 0.43 | 58 |
| ***lnCVR*** | | | | | |
| Q=915.16 | P<0.0001 |  | | | |
| F=1.32 | P=0.25 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.07 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.09 | 0.29 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.03 | -0.08, 0.03 | -0.98 | 0.33 | 435 |
| Scores | -0.08 | -0.22, 0.06 | -1.15 | 0.25 | 58 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| Q=2891.60 | P<0.0001 |  | | | |
| F=4.45 | P=0.04 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.73 | 0.85 | 44 |  |  |
| Species Name | 0 | 0 | 41 |  |  |
| Obs | 0.27 | 0.52 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| **Intercept** | **0.3** | **0.02, 0.57** | **2.12** | **0.03\*** | **422** |
| **Scores** | **-0.29** | **-0.57, -0.02** | **-2.11** | **0.04\*** | **61** |
| ***lnCVR*** | | | | | |
| Q=1536.77 | P<0.0001 |  | | | |
| F=1.92 | P=0.17 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.2 | 44 |  |  |
| Species Name | 0 | 0 | 41 |  |  |
| Obs | 0.09 | 0.3 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.00 | -0.08, 0.08 | 0.00 | 0.999 | 422 |
| Scores | -0.11 | -0.26, 0.05 | -1.38 | 0.17 | 61 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| Q=2190.73 | P<0.0001 |  | | | |
| F=2.64 | P=0.10 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.1 | 0.32 | 61 |  |  |
| Species Name | 0.07 | 0.26 | 45 |  |  |
| Obs | 0.16 | 0.39 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.13 | -0.21, 0.48 | 0.75 | 0.45 | 582 |
| Scores | -0.21 | -0.47, 0.04 | -1.62 | 0.10 | 92 |
| ***lnCVR*** | | | | | |
| Q=1074.89 | P<0.0001 |  | | | |
| F=0.14 | P=0.71 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 61 |  |  |
| Species Name | 0.05 | 0.23 | 45 |  |  |
| Obs | 0.03 | 0.19 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.08 | -0.20, 0.36 | 0.55 | 0.58 | 582 |
| Scores | -0.03 | -0.22, 0.15 | -0.38 | 0.71 | 92 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| Q=163.14 | P<0.0001 |  | | | |
| F=0.17 | P=0.68 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.19 | 11 |  |  |
| Species Name | 0 | 0.01 | 10 |  |  |
| Obs | 0.06 | 0.23 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.06 | -0.11, 0.23 | 0.70 | 0.49 | 92 |
| Scores | -0.42 | -0.44, 0.67 | 0.42 | 0.68 | 3 |
| ***lnCVR*** | | | | | |
| Q=77.56 | P=0.88 |  | | | |
| F=0.23 | P=0.63 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.01 | 11 |  |  |
| Species Name | 0 | 0.05 | 10 |  |  |
| Obs | 0 | 0.01 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.06 | -0.04, 0.16 | 1.15 | 0.26 | 92 |
| Scores | -0.09 | -0.46, 0.28 | -0.48 | 0.63 | 3 |

**Table S3. Exploratory analysis – mating system.** Contrast random effects meta-analysis model output for each of the five taxonomic groups comparing the mating system categories ‘monogamy’ and ‘multiple mating’ for both mean differences (SMD) and for variability (lnCVR). Intercept for these models is the category ‘monogamy’.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2799.26 | P<0.0001 |  | | | |
| F=0.17 | P=0.68 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.59 | 0.77 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.15 | -0.38, 0.09 | -1.23 | 0.22 | 375 |
| Multiple Mating | 0.08 | -0.29, 0.45 | 0.41 | 0.68 | 105 |
| ***lnCVR*** |  |  |  |  |  |
| QE=3810.15 | P<0.0001 |  |  |  |  |
| F=0.04 | P=0.84 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.12 | 50 |  |  |
| Species Name | 0.37 | 0.61 | 106 |  |  |
| Obs | 0.40 | 0.63 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.16 | -0.69, 0.37 | -0.58 | 0.56 | 375 |
| Multiple Mating | 0.05 | -0.41, 0.51 | 0.20 | 0.84 | 105 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1341.34 | P<0.0001 |  | | | |
| F=0.68 | P=0.41 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 42 |  |  |
| Species Name | 0.03 | 0.18 | 20 |  |  |
| Obs | 0.14 | 0.37 | 479 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.08 | -0.28, 0.43 | 0.42 | 0.68 | 65 |
| Multiple Mating | -0.11 | -0.38, 0.15 | -0.83 | 0.41 | 414 |
| ***lnCVR*** |  |  |  |  |  |
| QE=909.83 | P<0.0001 |  |  |  |  |
| F=0.02 | P=0.90 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.09 | 42 |  |  |
| Species Name | 0 | 0 | 20 |  |  |
| Obs | 0.09 | 0.30 | 479 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.04 | -0.18, 0.09 | -0.64 | 0.52 | 65 |
| Multiple Mating | 0.01 | -0.14, 0.15 | 0.12 | 0.90 | 414 |
| **Invertebrates** | | | | | |
| ***SMD*** | | | | | |
| QE=2771.26 | P<0.0001 |  | | | |
| F=0.00 | P=0.96 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.78 | 0.88 | 43 |  |  |
| Species Name | 0 | 0 | 35 |  |  |
| Obs | 0.30 | 0.54 | 451 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.23 | -0.43, 0.88 | 0.68 | 0.50 | 22 |
| Multiple Mating | 0.02 | -0.61, 0.64 | 0.05 | 0.96 | 368 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1391.07 | P<0.0001 |  |  |  |  |
| F=0.14 | P=0.71 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 43 |  |  |
| Species Name | 0 | 0 | 35 |  |  |
| Obs | 0.10 | 0.31 | 451 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.04 | -0.29, 0.37 | 0.26 | 0.80 | 22 |
| Multiple Mating | -0.06 | -0.40, 0.27 | -0.37 | 0.71 | 368 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2149.38 | P<0.0001 |  | | | |
| F=1.14 | P=0.29 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.10 | 0.32 | 59 |  |  |
| Species Name | 0.15 | 0.38 | 41 |  |  |
| Obs | 0.17 | 0.42 | 622 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.08 | -0.61, 0.46 | -0.28 | 0.78 | 105 |
| Multiple Mating | 0.16 | -0.13, 0.44 | 1.07 | 0.29 | 517 |
| ***lnCVR*** |  |  |  |  |  |
| QE=988.82 | P<0.0001 |  |  |  |  |
| F=0.32 | P=0.57 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 59 |  |  |
| Species Name | 0.05 | 0.22 | 41 |  |  |
| Obs | 0.03 | 0.18 | 622 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.03 | -0.27, 0.34 | 0.20 | 0.84 | 105 |
| Multiple Mating | 0.05 | -0.13, 0.23 | 0.57 | 0.57 | 517 |
| **Reptiles & Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=100.57 | P<0.0001 |  | | | |
| F=0.54 | P=0.47 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.03 | 8 |  |  |
| Species Name | 0.05 | 0.22 | 7 |  |  |
| Obs | 0.08 | 0.28 | 55 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.23 | -0.48, 0.93 | 0.65 | 0.52 | 2 |
| Multiple Mating | -0.26 | -0.99, 0.46 | -0.74 | 0.47 | 53 |
| ***lnCVR*** |  |  |  |  |  |
| QE=52.82 | P=0.48 |  |  |  |  |
| F=0.02 | P=0.89 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.06 | 8 |  |  |
| Species Name | 0 | 0 | 7 |  |  |
| Obs | 0.01 | 0.08 | 55 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.03 | -0.42, 0.37 | -0.14 | 0.89 | 2 |
| Multiple Mating | 0.03 | -0.39, 0.44 | 0.14 | 0.89 | 53 |

**Table S4. Exploratory analysis - age.** Contrast random effects meta-analysis model output for each of the five taxonomic groups comparing the age categories ‘juvenile’ and ‘adult’ for both mean differences (SMD) and for variability (lnCVR). Intercept for these models is the category ‘adult’.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2803.56 | P<0.0001 |  | | | |
| F=0.01 | P=0.94 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.59 | 0.77 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.13 | -0.37, 0.10 | -1.14 | 0.26 | 326 |
| Juvenile | -0.01 | -0.20, 0.18 | -0.08 | 0.94 | 157 |
| ***lnCVR*** |  |  |  |  |  |
| QE=3790.22 | P<0.0001 |  |  |  |  |
| F=0.06 | P=0.80 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.11 | 50 |  |  |
| Species Name | 0.36 | 0.60 | 106 |  |  |
| Obs | 0.40 | 0.63 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.14 | -0.65, 0.37 | -0.53 | 0.59 | 326 |
| Juvenile | -0.03 | -0.24, 0.19 | -0.25 | 0.80 | 157 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1380.94 | P<0.0001 |  | | | |
| F=1.16 | P=0.28 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.21 | 44 |  |  |
| Species Name | 0.03 | 0.21 | 22 |  |  |
| Obs | 0.13 | 0.36 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.05 | -0.37, 0.27 | -0.30 | 0.77 | 486 |
| Juvenile | 0.26 | -0.21, 0.72 | 1.08 | 0.28 | 7 |
| ***lnCVR*** |  |  |  |  |  |
| QE=922.81 | P<0.0001 |  |  |  |  |
| F=0.13 | P=0.72 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.09 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.09 | 0.29 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.04 | -0.09, 0.02 | -1.38 | 0.17 | 486 |
| Juvenile | -0.08 | -0.49, 0.33 | -0.37 | 0.72 | 7 |
| **Invertebrates** | | | | | |
| ***SMD*** | | | | | |
| QE=2677.09 | P<0.0001 |  | | | |
| F=0.42 | P=0.51 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.90 | 0.95 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.32 | 0.56 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.30 | -0.02, 0.63 | 1.86 | 0.06 | 381 |
| Juvenile | -0.12 | -0.48, 0.24 | -0.65 | 0.51 | 41 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1459.48 | P<0.0001 |  |  |  |  |
| F=0.08 | P=0.78 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 37 |  |  |
| Species Name | 0 | 0.06 | 36 |  |  |
| Obs | 0.11 | 0.33 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.00 | -0.11, 0.10 | -0.07 | 0.94 | 381 |
| Juvenile | 0.03 | -0.19, 0.25 | 0.28 | 0.78 | 41 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2193.35 | P<0.0001 |  | | | |
| F=0.93 | P=0.34 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.10 | 0.31 | 61 |  |  |
| Species Name | 0.10 | 0.31 | 45 |  |  |
| Obs | 0.15 | 0.39 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.10 | -0.29, 0.49 | 0.51 | 0.61 | 470 |
| Juvenile | -0.09 | -0.28, 0.10 | -0.96 | 0.34 | 204 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1057.96 | P<0.0001 |  |  |  |  |
| F=2.23 | P=0.14 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.19 | 61 |  |  |
| Species Name | 0.04 | 0.19 | 45 |  |  |
| Obs | 0.03 | 0.19 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.09 | -0.15, 0.33 | 0.75 | 0.45 | 470 |
| Juvenile | -0.10 | -0.23, 0.03 | -1.49 | 0.14 | 204 |
| **Reptiles & Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=163.23 | P<0.0001 |  | | | |
| F=0.02 | P=0.88 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.19 | 11 |  |  |
| Species Name | 0 | 0.01 | 10 |  |  |
| Obs | 0.06 | 0.24 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.07 | -0.09, 0.24 | 0.87 | 0.39 | 93 |
| Juvenile | -0.05 | -0.69, 0.59 | -0.16 | 0.88 | 2 |
| ***lnCVR*** |  |  |  |  |  |
| QE=77.59 | P=0.87 |  |  |  |  |
| F=0.15 | P=0.70 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.02 | 11 |  |  |
| Species Name | 0 | 0.04 | 10 |  |  |
| Obs | 0 | 0.01 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.06 | -0.04, 0.15 | 1.14 | 0.26 | 93 |
| Juvenile | -0.08 | -0.48, 0.33 | -0.39 | 0.70 | 2 |

**Table S5. Exploratory analysis – study population.** Contrast random effects meta-analysis model output for each of the five taxonomic groups comparing the study population categories ‘wild’ and ‘lab reared’ for both mean differences (SMD) and for variability (lnCVR). Intercept for these models is the category ‘wild’.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2797.87 | P<0.0001 |  | | | |
| F=0.12 | P=0.73 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.61 | 0.78 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.16 | -0.45, 0.12 | -1.15 | 0.25 | 267 |
| Lab/Captive | -0.09 | -0.41, 0.58 | 0.35 | 0.73 | 216 |
| ***lnCVR*** |  |  |  |  |  |
| QE=3818.58 | P<0.0001 |  |  |  |  |
| F=0.52 | P=0.47 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.28 | 0.53 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.39 | 0.63 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.10 | -0.33, 0.13 | -0.87 | 0.39 | 267 |
| Lab/Captive | 0.14 | -0.24, 0.53 | 0.72 | 0.47 | 216 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1385.22 | P<0.0001 |  | | | |
| F=0.36 | P=0.55 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.21 | 44 |  |  |
| Species Name | 0.04 | 0.20 | 22 |  |  |
| Obs | 0.13 | 0.36 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.07 | -0.40, 0.26 | -0.40 | 0.69 | 190 |
| Lab/Captive | 0.05 | -0.11, 0.22 | 0.60 | 0.55 | 303 |
| ***lnCVR*** |  |  |  |  |  |
| QE=920.81 | P<0.0001 |  |  |  |  |
| F=2.39 | P=0.12 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.09 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.08 | 0.29 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| **Intercept** | **-0.09** | **-0.18, -0.01** | **-2.11** | **0.04\*** | **190** |
| Lab/Captive | 0.08 | -0.02, 0.19 | 1.55 | 0.12 | 303 |
| **Invertebrates** | | | | | |
| ***SMD*** | | | | | |
| QE=2671.64 | P<0.0001 |  | | | |
| F=0.96 | P=0.33 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.91 | 0.95 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.31 | 0.56 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.14 | -0.30, 0.59 | 0.63 | 0.53 | 177 |
| Lab/Captive | 0.32 | -0.33, 0.97 | 0.98 | 0.33 | 245 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1459.07 | P<0.0001 |  |  |  |  |
| F=0.76 | P=0.38 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.05 | 0.21 | 37 |  |  |
| Species Name | 0 | 0.01 | 36 |  |  |
| Obs | 0.11 | 0.32 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.03 | -0.10, 0.16 | 0.45 | 0.66 | 177 |
| Lab/Captive | -0.08 | -0.26, 0.10 | -0.87 | 0.38 | 245 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2192.94 | P<0.0001 |  | | | |
| F=1.99 | P=0.16 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.09 | 0.31 | 61 |  |  |
| Species Name | 0.06 | 0.24 | 45 |  |  |
| Obs | 0.16 | 0.40 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.16 | -0.17, 0.48 | 0.96 | 0.34 | 181 |
| Lab/Captive | -0.15 | -0.36, 0.06 | -1.41 | 0.16 | 493 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1069.65 | P<0.0001 |  |  |  |  |
| F=1.15 | P=0.28 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 61 |  |  |
| Species Name | 0.06 | 0.24 | 45 |  |  |
| Obs | 0.03 | 0.18 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.11 | -0.19, 0.40 | 0.70 | 0.48 | 181 |
| Lab/Captive | -0.09 | -0.25, 0.07 | -1.07 | 0.28 | 493 |
| **Reptiles & Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=162.73 | P<0.0001 |  | | | |
| F=0.10 | P=0.75 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| Obs | 0.06 | 0.24 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.08 | -0.09, 0.24 | 0.92 | 0.36 | 81 |
| Lab/Captive | -0.05 | -0.34, 0.24 | -0.32 | 0.75 | 14 |
| ***lnCVR*** |  |  |  |  |  |
| QE=77.27 | P=0.88 |  |  |  |  |
| F=0.42 | P=0.52 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.05 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| Obs | 0 | 0 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.06 | -0.04, 0.16 | 1.18 | 0.24 | 81 |
| Lab/Captive | -0.07 | -0.28, 0.14 | -0.65 | 0.52 | 14 |

**Table S6. Exploratory analysis – study environment.** Contrast random effects meta-analysis model output for each of the five taxonomic groups comparing the study environment categories ‘field’ and ‘lab’ for both mean differences (SMD) and for variability (lnCVR). Intercept for these models is the category ‘field’.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2802.22 | P<0.0001 |  | | | |
| F=0.01 | P=0.93 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.60 | 0.77 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.13 | -0.41, 0.15 | -0.92 | 0.36 | 228 |
| Lab | -0.01 | -0.37, 0.34 | -0.08 | 0.93 | 255 |
| ***lnCVR*** |  |  |  |  |  |
| QE=3810.97 | P<0.0001 |  |  |  |  |
| F=0.81 | P=0.37 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.28 | 0.53 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| Obs | 0.40 | 0.63 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.12 | -0.36, 0.12 | -1.01 | 0.31 | 228 |
| Lab | 0.15 | -0.18, 0.49 | 0.90 | 0.37 | 255 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1380.45 | P<0.0001 |  | | | |
| F=0.15 | P=0.70 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.05 | 0.22 | 44 |  |  |
| Species Name | 0.03 | 0.17 | 22 |  |  |
| Obs | 0.13 | 0.36 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.06 | -0.42, 0.29 | -0.35 | 0.73 | 68 |
| Lab | 0.06 | -0.23, 0.34 | 0.39 | 0.70 | 425 |
| ***lnCVR*** |  |  |  |  |  |
| QE=923.82 | P<0.0001 |  |  |  |  |
| F=0.56 | P=0.46 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.10 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.08 | 0.29 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.10 | -0.26, 0.06 | -1.18 | 0.24 | 68 |
| Lab | 0.07 | -0.11, 0.24 | 0.75 | 0.46 | 425 |
| **Invertebrates** | | | | | |
| ***SMD*** | | | | | |
| QE=2677.88 | P<0.0001 |  | | | |
| F=0.08 | P=0.77 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.90 | 0.95 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.32 | 0.56 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.36 | -0.19, 0.92 | 1.29 | 0.20 | 14 |
| Lab | -0.07 | -0.52, 0.39 | -0.29 | 0.77 | 408 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1458.05 | P<0.0001 |  |  |  |  |
| F=0.19 | P=0.66 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 37 |  |  |
| Species Name | 0 | 0.05 | 36 |  |  |
| Obs | 0.11 | 0.33 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.06 | -0.34, 0.22 | -0.42 | 0.67 | 14 |
| Lab | 0.06 | -0.21, 0.33 | 0.44 | 0.66 | 408 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2203.80 | P<0.0001 |  | | | |
| **F=5.09** | **P=0.02\*** |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.09 | 0.30 | 61 |  |  |
| Species Name | 0.06 | 0.24 | 45 |  |  |
| Obs | 0.16 | 0.40 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.24 | -0.10, 0.57 | 1.38 | 0.17 | 115 |
| **Lab** | **-0.30** | **-0.56, -0.04** | **-2.26** | **0.02\*** | **559** |
| ***lnCVR*** |  |  |  |  |  |
| QE=1062.34 | P<0.0001 |  |  |  |  |
| F=0.47 | P=0.49 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 61 |  |  |
| Species Name | 0.05 | 0.23 | 45 |  |  |
| Obs | 0.03 | 0.19 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.10 | -0.19, 0.40 | 0.68 | 0.49 | 115 |
| Lab | -0.07 | -0.26, 0.13 | -0.69 | 0.49 | 559 |
| **Reptiles & Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=159.25 | P<0.0001 |  | | | |
| F=2.90 | P=0.09 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.05 | 11 |  |  |
| Species Name | 0.03 | 0.17 | 10 |  |  |
| Obs | 0.06 | 0.24 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.29 | -0.77, 0.18 | -1.24 | 0.22 | 5 |
| Lab | 0.42 | -0.07, 0.91 | 1.70 | 0.09 | 90 |
| ***lnCVR*** |  |  |  |  |  |
| QE=77.55 | P=0.88 |  |  |  |  |
| F=0.23 | P=0.63 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.02 | 11 |  |  |
| Species Name | 0 | 0.05 | 10 |  |  |
| Obs | 0 | 0.01 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.01 | -0.30, 0.27 | -0.07 | 0.94 | 5 |
| Lab | 0.07 | -0.23, 0.37 | 0.48 | 0.63 | 90 |

**Table S7. Exploratory analysis – study type.** Contrast random effects meta-analysis model output for each of the five taxonomic groups comparing the study type categories ‘observation’ and ‘experimental’ for both mean differences (SMD) and for variability (lnCVR). Intercept for these models is the category ‘experimental’. Note: there were no effect sizes for the ‘observation’ category for Invertebrates.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2739.86 | P<0.0001 |  | | | |
| F=1.31 | P=0.25 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.59 | 0.77 | 50 |  |  |
| Species Name | 0 | 0.02 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.04 | -0.32, 0.25 | -0.26 | 0.80 | 290 |
| Observation | -0.28 | -0.75, 0.25 | -1.15 | 0.25 | 193 |
| ***lnCVR*** |  |  |  |  |  |
| QE=3808.66 | P<0.0001 |  |  |  |  |
| F=1.61 | P=0.21 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.27 | 0.52 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.39 | 0.63 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.03 | -0.19, 0.26 | 0.29 | 0.77 | 290 |
| Observation | -0.24 | -0.62, 0.13 | -1.27 | 0.21 | 193 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1357.26 | P<0.0001 |  | | | |
| F=1.38 | P=0.24 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 44 |  |  |
| Species Name | 0.05 | 0.23 | 22 |  |  |
| Obs | 0.13 | 0.37 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.07 | -0.43, 0.28 | -0.41 | 0.69 | 435 |
| Observation | 0.19 | -0.13, 0.51 | 0.24 | 0.24 | 58 |
| ***lnCVR*** |  |  |  |  |  |
| QE=924.05 | P<0.0001 |  |  |  |  |
| F=0.01 | P=0.92 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.10 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.08 | 0.29 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | -0.04 | -0.10, 0.02 | -1.31 | 0.19 | 435 |
| Observation | -0.01 | -0.20, 0.18 | -0.10 | 0.92 | 58 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2188.07 | P<0.0001 |  | | | |
| **F=7.91** | **P=0.005\*\*** |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.10 | 0.32 | 61 |  |  |
| Species Name | 0.02 | 0.13 | 45 |  |  |
| Obs | 0.16 | 0.39 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.00 | -0.21, 0.22 | 0.04 | 0.97 | 580 |
| **Observation** | **0.38** | **0.12, 0.64** | **2.81** | **0.005\*\*** | **94** |
| ***lnCVR*** |  |  |  |  |  |
| QE=1069.55 | P<0.0001 |  |  |  |  |
| F=0.35 | P=0.55 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 61 |  |  |
| Species Name | 0.05 | 0.22 | 45 |  |  |
| Obs | 0.03 | 0.19 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.05 | -0.23, 0.33 | 0.36 | 0.72 | 580 |
| Observation | 0.06 | -0.14, 0.26 | 0.59 | 0.55 | 94 |
| **Reptiles & Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=159.25 | P<0.0001 |  | | | |
| F=2.90 | P=0.09 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.05 | 11 |  |  |
| Species Name | 0.03 | 0.17 | 10 |  |  |
| Obs | 0.06 | 0.24 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.13 | -0.09, 0.34 | 1.14 | 0.26 | 90 |
| Observation | -0.42 | -0.91, 0.07 | -1.70 | 0.09 | 5 |
| ***lnCVR*** |  |  |  |  |  |
| QE=77.55 | P=0.88 |  |  |  |  |
| F=0.23 | P=0.63 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0.02 | 11 |  |  |
| Species Name | 0 | 0.05 | 10 |  |  |
| Obs | 0 | 0.01 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* | *k* |
| Intercept | 0.06 | -0.05, 0.17 | 1.15 | 0.26 | 90 |
| Observation | 0.07 | -0.37, 0.23 | -0.48 | 0.63 | 5 |

**Table S8. Dependency matrix models.** Intercept-only meta-analysis models for each of the taxonomic groups with the inclusion of our dependency (**D)** matrix (*r* = 0.3) as a random effect (replacing *obs*). These sensitivity models check whether correlations between personality traits measured on the same individuals, and on the same trait types in the same study, significantly change the interpretation of our models. The R package *oRchard* was used to obtain prediction intervals reported here for each of the models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| Q=2804.93 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.58 | 0.76 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.3 | 0.17 | 0.41 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.13 | -0.36, 0.10 | -1.14 | -1.85, 1.58 | 0.25 |
| ***lnCVR*** | | | | | |
| Q=3820.60 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.29 | 0.54 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.3 | 0.46 | 0.68 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.06 | -0.26, 0.14 | -0.60 | -1.78, 1.66 | 0.55 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| Q=1385.84 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 44 |  |  |
| Species Name | 0.04 | 0.20 | 22 |  |  |
| **D** matrix r=0.3 | 0.15 | 0.39 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.02 | -0.34, 0.30 | -0.12 | -1.00, 0.96 | 0.91 |
| ***lnCVR*** | | | | | |
| Q=924.06 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| **D** matrix r=0.3 | 0.09 | 0.31 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.03 | -0.09, 0.02 | -1.21 | -0.63, 0.56 | 0.23 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| Q=2678.23 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.91 | 0.96 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| **D** matrix r=0.3 | 0.35 | 0.59 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.30 | -0.03, 0.63 | 1.77 | -1.93, 2.53 | 0.08 |
| ***lnCVR*** | | | | | |
| Q=1459.70 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.19 | 37 |  |  |
| Species Name | 0 | 0.06 | 36 |  |  |
| **D** matrix r=0.3 | 0.12 | 0.35 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.00 | -0.12, 0.11 | -0.08 | -0.80, 0.79 | 0.94 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| Q=2218.15 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.07 | 0.26 | 61 |  |  |
| Species Name | 0.10 | 0.31 | 45 |  |  |
| **D** matrix r=0.3 | 0.18 | 0.42 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.32, 0.46 | 0.35 | -1.15, 1.29 | 0.73 |
| ***lnCVR*** | | | | | |
| Q=1074.96 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 61 |  |  |
| Species Name | 0.03 | 0.17 | 45 |  |  |
| **D** matrix r=0.3 | 0.04 | 0.20 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.06 | -0.16, 0.28 | 0.56 | -0.59, 0.72 | 0.58 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| Q=163.37 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.3 | 0.06 | 0.24 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.08, 0.23 | 0.91 | -0.53, 0.68 | 0.36 |
| ***lnCVR*** | | | | | |
| Q=77.72 | P=0.89 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 11 |  |  |
| Species Name | 0 | 0.03 | 10 |  |  |
| **D** matrix r=0.3 | 0 | 0.06 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.05 | -0.04, 0.14 | 1.11 | -0.10, 0.20 | 0.27 |

**Table S9. Dependency matrix models.** Intercept-only meta-analysis models for each of the taxonomic groups with the inclusion of our dependency (**D)** matrix (*r* = 0.5) as a random effect (replacing *obs*). These sensitivity models check whether correlations between personality traits measured on the same individuals, and on the same trait types in the same study, significantly change the interpretation of our models. The R package *oRchard* was used to obtain prediction intervals reported here for each of the models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| Q=2804.93 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.55 | 0.74 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.5 | 0.19 | 0.44 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.13 | -0.36, 0.10 | -1.13 | -1.84, 1.58 | 0.26 |
| ***lnCVR*** | | | | | |
| Q=3820.60 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.24 | 0.48 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.5 | 0.59 | 0.77 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.06 | -0.26, 0.13 | -0.63 | -1.86, 1.73 | 0.53 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| Q=1385.84 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 44 |  |  |
| Species Name | 0.03 | 0.19 | 22 |  |  |
| **D** matrix r=0.5 | 0.17 | 0.42 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.00 | -0.30, 0.30 | 0.02 | -1.00, 1.01 | 0.99 |
| ***lnCVR*** | | | | | |
| Q=924.06 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| **D** matrix r=0.5 | 0.09 | 0.31 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.03 | -0.09, 0.03 | -1.08 | -0.64, 0.58 | 0.28 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| Q=2678.23 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.92 | 0.96 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| **D** matrix r=0.5 | 0.42 | 0.64 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.30 | -0.04, 0.64 | 1.75 | -1.99, 2.59 | 0.08 |
| ***lnCVR*** | | | | | |
| Q=1459.70 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 37 |  |  |
| Species Name | 0 | 0.07 | 36 |  |  |
| **D** matrix r=0.5 | 0.14 | 0.38 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.01 | -0.12, 0.11 | -0.10 | -0.84, 0.83 | 0.92 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| Q=2218.15 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.05 | 0.23 | 61 |  |  |
| Species Name | 0.10 | 0.31 | 45 |  |  |
| **D** matrix r=0.5 | 0.21 | 0.46 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.32, 0.45 | 0.34 | -1.17, 1.31 | 0.74 |
| ***lnCVR*** | | | | | |
| Q=1074.96 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.16 | 61 |  |  |
| Species Name | 0.02 | 0.15 | 45 |  |  |
| **D** matrix r=0.5 | 0.04 | 0.21 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.06 | -0.14, 0.26 | 0.57 | -0.57, 0.69 | 0.57 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| Q=163.37 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.5 | 0.06 | 0.24 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.09, 0.23 | 0.89 | -0.53, 0.68 | 0.38 |
| ***lnCVR*** | | | | | |
| Q=77.72 | P=0.89 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 11 |  |  |
| Species Name | 0 | 0.02 | 10 |  |  |
| **D** matrix r=0.5 | 0.01 | 0.09 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.05 | -0.04, 0.14 | 1.06 | -0.16, 0.35 | 0.29 |

**Table S10. Dependency matrix models.** Intercept-only meta-analysis models for each of the taxonomic groups with the inclusion of our dependency (**D)** matrix (*r* = 0.8) as a random effect (replacing *obs*). These sensitivity models check whether correlations between personality traits measured on the same individuals, and on the same trait types in the same study, significantly change the interpretation of our models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| Q=2804.93 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.45 | 0.67 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| **D** matrix r=0.8 | 0.27 | 0.52 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.12 | -0.34, 0.97 | -1.09 | -1.80, 1.55 | 0.27 |
| ***lnCVR*** | | | | | |
| Q=3820.60 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.8 | 1.26 | 1.12 | 483 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.05 | -0.23, 0.13 | -0.54 | -2.26, 2.16 | 0.59 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| Q=1385.84 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.1 | 44 |  |  |
| Species Name | 0.02 | 0.13 | 22 |  |  |
| **D** matrix r=0.8 | 0.26 | 0.51 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.05 | -0.19, 0.28 | 0.41 | -1.02, 1.12 | 0.68 |
| ***lnCVR*** | | | | | |
| Q=924.06 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| **D** matrix r=0.8 | 0.09 | 0.31 | 493 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.03 | -0.09, 0.03 | -0.98 | -0.64, 0.57 | 0.33 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| Q=2678.23 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.9 | 0.95 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| **D** matrix r=0.8 | 0.77 | 0.88 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.31 | -0.05, 0.67 | 1.69 | -2.26, 2.87 | 0.09 |
| ***lnCVR*** | | | | | |
| Q=1459.70 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.11 | 37 |  |  |
| Species Name | 0.01 | 0.08 | 36 |  |  |
| **D** matrix r=0.8 | 0.24 | 0.49 | 422 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.00 | -0.13, 0.13 | -0.01 | -1.00, 1.00 | 0.99 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| Q=2218.15 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.15 | 61 |  |  |
| Species Name | 0.08 | 0.29 | 45 |  |  |
| **D** matrix r=0.8 | 0.32 | 0.56 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.30, 0.43 | 0.36 | -1.26, 1.39 | 0.72 |
| ***lnCVR*** | | | | | |
| Q=1074.96 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.15 | 61 |  |  |
| Species Name | 0.12 | 0.13 | 45 |  |  |
| **D** matrix r=0.8 | 0.04 | 0.21 | 674 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.05 | -0.12, 0.23 | 0.59 | -0.54, 0.65 | 0.55 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| Q=163.37 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 11 |  |  |
| Species Name | 0 | 0.01 | 10 |  |  |
| **D** matrix r=0.8 | 0.05 | 0.23 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.09, 0.23 | 0.84 | -0.54, 0.67 | 0.40 |
| ***lnCVR*** | | | | | |
| Q=77.72 | P=0.89 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 11 |  |  |
| Species Name | 0 | 0.03 | 10 |  |  |
| **D** matrix r=0.8 | 0.01 | 0.11 | 95 |  |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.05 | -0.05, 0.14 | 0.98 | -0.20, 0.30 | 0.33 |

**Table S11. Dependency matrix models.** Multi-level meta-regression models for each of the taxonomic groups with personality trait type as a moderator and the inclusion of our **D** matrix (*r* = 0.3) as a random effect (replacing *obs*). These sensitivity models check whether correlations between personality traits measured on the same individuals, or on the same trait types within the same study, significantly change the interpretation of our models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2670.89 | P<0.0001 |  | | | |
| **F=2.63** | **P=0.02\*** |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.62 | 0.79 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.3 | 0.15 | 0.39 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.14 | -0.46, 0.18 | -0.87 | -1.90, 1.62 | 0.39 |
| Aggression | -0.10 | -0.41, 0.20 | -0.66 | -1.86, 1.66 | 0.51 |
| Boldness | -0.19 | -0.44, 0.07 | -1.43 | -1.94, 1.56 | 0.15 |
| Exploration | 0.05 | -0.22, 0.33 | 0.39 | -1.70, 1.81 | 0.70 |
| **Sociality** | **-0.66** | **-1.17, -0.15** | **-2.56** | **-2.47, 1.14** | **0.01\*** |
| ***lnCVR*** |  |  |  |  |  |
| QE=3711.80 | P<0.0001 |  |  |  |  |
| F=0.37 | P=0.87 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.3 | 0.55 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.3 | 0.46 | 0.68 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.05 | -0.40, 0.31 | -0.18 | -1.80, 1.71 | 0.80 |
| Aggression | -0.07 | -0.44, 0.30 | -0.19 | -1.83, 1.69 | 0.70 |
| Boldness | -0.03 | -0.28, 0.22 | -0.13 | -1.77, 1.71 | 0.81 |
| Exploration | -0.17 | -0.45, 0.11 | -0.14 | -1.91, 1.58 | 0.24 |
| Sociality | 0.14 | -0.44, 0.73 | 0.30 | -1.68, 1.96 | 0.63 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1347.79 | P<0.0001 |  | | | |
| F=1.13 | P=0.34 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.14 | 44 |  |  |
| Species Name | 0.09 | 0.31 | 22 |  |  |
| **D** matrix r=0.3 | 0.15 | 0.39 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.10 | -0.59, 0.39 | -0.40 | -1.23, 1.03 | 0.69 |
| Aggression | -0.04 | -0.50, 0.43 | -0.15 | -1.15, 1.08 | 0.88 |
| Boldness | -0.11 | -0.58, 0.35 | -0.47 | -1.23, 1.01 | 0.64 |
| Exploration | -0.04 | -0.52, 0.44 | -0.16 | -1.16, 1.08 | 0.87 |
| Sociality | -0.36 | -0.87, 0.15 | -1.39 | -1.50, 0.78 | 0.17 |
| ***lnCVR*** |  |  |  |  |  |
| QE=915.16 | P<0.0001 |  |  |  |  |
| F=1.07 | P=0.38 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| **D** matrix r=0.3 | 0.09 | 0.30 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.02 | -0.16, 0.12 | -0.29 | -0.63, 0.59 | 0.77 |
| **Aggression** | **-0.13** | **-0.24, -0.01** | **-2.15** | **-0.74, 0.48** | **0.03\*** |
| Boldness | 0.00 | -0.09, 0.08 | -0.08 | -0.61, 0.60 | 0.94 |
| Exploration | -0.03 | -0.16, 0.09 | -0.52 | -0.64, 0.58 | 0.61 |
| Sociality | 0.06 | -0.14, 0.25 | 0.57 | -0.57, 0.68 | 0.57 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| QE=2657.20 | P<0.0001 |  | | | |
| F=1.14 | P=0.34 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.92 | 0.96 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| **D** matrix r=0.3 | 0.35 | 0.59 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| **Activity** | **0.40** | **0.01, 0.79** | **2.01** | **-1.85, 2.64** | **0.05\*** |
| Aggression | 0.29 | -0.46, 1.05 | 0.77 | -2.05, 2.63 | 0.44 |
| Boldness | 0.26 | -0.11, 0.64 | 1.38 | -1.98, 2.51 | 0.17 |
| Exploration | 0.06 | -0.42, 0.55 | 0.26 | -2.20, 2.33 | 0.79 |
| Sociality | 0.38 | -0.43, 1.18 | 0.92 | -1.98, 2.74 | 0.36 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1427.81 | P<0.0001 |  |  |  |  |
| F=0.74 | P=0.59 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.19 | 37 |  |  |
| Species Name | 0 | 0.04 | 36 |  |  |
| **D** matrix r=0.3 | 0.12 | 0.35 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.06 | -0.20, 0.09 | -0.77 | -0.85, 0.73 | 0.44 |
| Aggression | 0.17 | -0.13, 0.46 | 1.13 | -0.66, 1.00 | 0.26 |
| Boldness | -0.03 | -0.16, 0.10 | -0.49 | -0.82, 0.76 | 0.62 |
| Exploration | 0.05 | -0.16, 0.26 | 0.44 | -0.76, 0.85 | 0.66 |
| Sociality | 0.25 | -0.20, 0.70 | 1.08 | -0.65, 1.15 | 0.28 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2158.51 | P<0.0001 |  | | | |
| F=0.95 | P=0.45 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.09 | 0.29 | 61 |  |  |
| Species Name | 0.09 | 0.30 | 45 |  |  |
| **D** matrix r=0.3 | 0.18 | 0.42 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.17 | -0.60, 0.27 | -0.74 | -1.38, 1.05 | 0.46 |
| Aggression | 0.09 | -0.34, 0.52 | 0.41 | -1.10, 1.31 | 0.68 |
| Boldness | 0.12 | -0.27, 0.51 | 0.60 | -1.05, 1.35 | 0.55 |
| Exploration | 0.02 | -0.39, 0.43 | 0.10 | -1.56, 1.25 | 0.92 |
| Sociality | 0.08 | -0.35, 0.52 | 0.37 | -1.12, 1.30 | 0.71 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1044.60 | P<0.0001 |  |  |  |  |
| F=0.39 | P=0.86 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 61 |  |  |
| Species Name | 0.03 | 0.16 | 45 |  |  |
| **D** matrix r=0.3 | 0.04 | 0.20 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.11 | -0.14, 0.36 | 0.84 | -0.56, 0.77 | 0.40 |
| Aggression | 0.09 | -0.16, 0.35 | 0.73 | -0.57, 0.76 | 0.47 |
| Boldness | 0.06 | -0.16, 0.28 | 0.52 | -0.59, 0.71 | 0.60 |
| Exploration | 0.02 | -0.21, 0.26 | 0.20 | -0.64, 0.68 | 0.85 |
| Sociality | 0.02 | -0.23, 0.28 | 0.19 | -0.64, 0.69 | 0.85 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=151.82 | P<0.0001 |  | | | |
| F=1.27 | P=0.28 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.12 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.3 | 0.06 | 0.25 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.06 | -0.47, 0.36 | -0.28 | -0.75, 0.63 | 0.78 |
| Aggression | -0.07 | -0.32, 0.19 | -0.52 | -0.67, 0.54 | 0.60 |
| Boldness | 0.12 | -0.10, 0.34 | 1.06 | -0.47, 0.71 | 0.29 |
| **Exploration** | **0.26** | **0.05, 0.47** | **2.42** | **-0.33, 0.84** | **0.02\*** |
| Sociality | -0.05 | -0.61, 0.51 | -0.18 | -0.84, 0.74 | 0.88 |
| ***lnCVR*** |  |  |  |  |  |
| QE=73.79 | P=0.89 |  |  |  |  |
| F=1.31 | P=0.27 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.3 | 0 | 0 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.11 | -0.51, 0.29 | -0.53 | -0.67, 0.46 | 0.60 |
| Aggression | 0.33 | -0.05, 0.72 | 1.73 | -0.22, 0.89 | 0.09 |
| Boldness | 0.10 | -0.13, 0.33 | 0.83 | -0.36, 0.56 | 0.41 |
| Exploration | -0.10 | -0.35, 0.14 | -0.84 | -0.57, 0.36 | 0.40 |
| Sociality | -0.12 | -0.76, 0.52 | -0.38 | -0.87, 0.63 | 0.70 |

**Table S12. Dependency matrix models.** Multi-level meta-regression models for each of the taxonomic groups with personality trait type as a moderator and the inclusion of our **D** matrix (*r* = 0.5) as a random effect (replacing *obs*). These sensitivity models check whether correlations between personality traits measured on the same individuals, or on the same trait types within the same study, significantly change the interpretation of our models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2670.89 | P<0.0001 |  | | | |
| **F=2.30** | **P=0.04\*** |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.59 | 0.77 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.5 | 0.18 | 0.42 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.13 | -0.46, 0.20 | -0.78 | -1.89, 1.62 | 0.44 |
| Aggression | -0.08 | -0.40, 0.24 | -0.50 | -1.83, 1.67 | 0.62 |
| Boldness | -0.19 | -0.45, 0.07 | -1.45 | -1.93, 1.55 | 0.15 |
| Exploration | 0.04 | -0.23, 0.31 | 0.30 | -1.70, 1.79 | 0.76 |
| **Sociality** | **-0.64** | **-1.18, -0.11** | **-2.38** | **-2.45, 1.16** | **0.02\*** |
| ***lnCVR*** |  |  |  |  |  |
| QE=3711.80 | P<0.0001 |  |  |  |  |
| F=0.25 | P=0.94 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.24 | 0.49 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.5 | 0.60 | 0.77 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.12 | -0.51, 0.27 | -0.58 | -1.96, 1.72 | 0.56 |
| Aggression | -0.06 | -0.46, 0.34 | -0.31 | -1.90, 1.78 | 0.76 |
| Boldness | -0.04 | -0.29, 0.22 | -0.29 | -1.85, 1.78 | 0.77 |
| Exploration | -0.12 | -0.41, 0.17 | -0.84 | -1.95, 1.70 | 0.40 |
| Sociality | 0.14 | -0.49, 0.78 | 0.44 | -1.76, 2.05 | 0.66 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1347.79 | P<0.0001 |  | | | |
| F=0.90 | P=0.48 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.12 | 44 |  |  |
| Species Name | 0.09 | 0.30 | 22 |  |  |
| **D** matrix r=0.5 | 0.18 | 0.42 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.06 | -0.54, 0.43 | -0.23 | -1.20, 1.10 | 0.82 |
| Aggression | -0.01 | -0.47, 0.44 | -0.06 | -1.15, 1.12 | 0.95 |
| Boldness | -0.08 | -0.54, 0.37 | -0.36 | -1.22, 1.05 | 0.72 |
| Exploration | -0.04 | -0.51, 0.44 | -0.14 | -1.18, 1.11 | 0.89 |
| Sociality | -0.33 | -0.85, 0.18 | -1.27 | -1.49, 0.83 | 0.20 |
| ***lnCVR*** |  |  |  |  |  |
| QE=915.16 | P<0.0001 |  |  |  |  |
| F=1.00 | P=0.42 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| **D** matrix r=0.5 | 0.10 | 0.31 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.03 | -0.18, 0.12 | -0.37 | -0.66, 0.60 | 0.71 |
| **Aggression** | **-0.13** | **-0.25, -0.01** | **-2.05** | **-0.75, 0.50** | **0.04\*** |
| Boldness | 0.01 | -0.09, 0.10 | 0.15 | -0.61, 0.63 | 0.88 |
| Exploration | -0.04 | -0.18, 0.10 | -0.55 | -0.66, 0.59 | 0.58 |
| Sociality | 0.06 | -0.15, 0.27 | 0.56 | -0.59, 0.70 | 0.57 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| QE=2657.20 | P<0.0001 |  | | | |
| F=1.15 | P=0.33 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.91 | 0.96 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| **D** matrix r=0.5 | 0.42 | 0.65 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| **Activity** | **0.45** | **0.04, 0.85** | **2.17** | **-1.86, 2.75** | **0.03\*** |
| Aggression | 0.26 | -0.54, 1.06 | 0.65 | -2.15, 2.67 | 0.65 |
| Boldness | 0.23 | -0.15, 0.62 | 1.19 | -2.07, 2.54 | 0.23 |
| Exploration | 0.09 | -0.43, 0.60 | 0.33 | -2.24, 2.41 | 0.74 |
| Sociality | 0.36 | -0.48, 1.21 | 0.84 | -2.06, 2.79 | 0.40 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1427.81 | P<0.0001 |  |  |  |  |
| F=0.59 | P=0.71 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 37 |  |  |
| Species Name | 0 | 0.05 | 36 |  |  |
| **D** matrix r=0.5 | 0.14 | 0.38 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.06 | -0.21, 0.10 | -0.72 | -0.89, 0.78 | 0.47 |
| Aggression | 0.17 | -0.15, 0.49 | 1.04 | -0.71, 1.05 | 0.30 |
| Boldness | -0.03 | -0.17, 0.11 | -0.40 | -0.86, 0.81 | 0.69 |
| Exploration | 0.04 | -0.19, 0.27 | 0.36 | -0.81, 0.90 | 0.72 |
| Sociality | 0.23 | -0.25, 0.72 | 0.95 | -0.72, 1.19 | 0.34 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2158.51 | P<0.0001 |  | | | |
| F=0.86 | P=0.51 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.06 | 0.25 | 61 |  |  |
| Species Name | 0.09 | 0.29 | 45 |  |  |
| **D** matrix r=0.5 | 0.21 | 0.46 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.17 | -0.60, 0.27 | -0.76 | -1.42, 1.09 | 0.45 |
| Aggression | 0.11 | -0.32, 0.53 | 0.49 | -1.15, 1.40 | 0.62 |
| Boldness | 0.10 | -0.28, 0.48 | 0.53 | -1.13, 1.34 | 0.59 |
| Exploration | 0.01 | -0.39, 0.42 | 0.06 | -1.23, 1.26 | 0.95 |
| Sociality | 0.11 | -0.33, 0.54 | 0.48 | -1.15, 1.36 | 0.63 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1044.60 | P<0.0001 |  |  |  |  |
| F=0.49 | P=0.78 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.16 | 61 |  |  |
| Species Name | 0.02 | 0.14 | 45 |  |  |
| **D** matrix r=0.5 | 0.05 | 0.21 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.11 | -0.12, 0.34 | 0.93 | -0.52, 0.74 | 0.35 |
| Aggression | 0.09 | -0.14, 0.32 | 0.75 | -0.55, 0.72 | 0.46 |
| Boldness | 0.06 | -0.13, 0.25 | 0.59 | -0.56, 0.68 | 0.56 |
| Exploration | 0.01 | -0.20, 0.22 | 0.12 | -0.61, 0.64 | 0.90 |
| Sociality | 0.00 | -0.23, 0.23 | 0.00 | -0.63, 0.63 | 0.9987 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=151.82 | P<0.0001 |  | | | |
| F=1.25 | P=0.29 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.12 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.5 | 0.06 | 0.25 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.07 | -0.49, 0.36 | -0.31 | -0.80, 0.63 | 0.76 |
| Aggression | -0.07 | -0.33, 0.19 | -0.53 | -0.68, 0.54 | 0.60 |
| Boldness | 0.12 | -0.11, 0.35 | 1.02 | -0.48, 0.72 | 0.31 |
| **Exploration** | **0.26** | **0.04, 0.48** | **2.38** | **-0.33, 0.85** | **0.02\*** |
| Sociality | -0.05 | -0.62, 0.74 | -0.17 | -0.84, 0.74 | 0.87 |
| ***lnCVR*** |  |  |  |  |  |
| QE=73.79 | P=0.89 |  |  |  |  |
| F=1.27 | P=0.29 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.5 | 0 | 0.06 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.11 | -0.51, 0.30 | -0.53 | -0.68, 0.47 | 0.60 |
| Aggression | 0.33 | -0.05, 0.71 | 1.72 | -0.23, 0.89 | 0.09 |
| Boldness | 0.10 | -0.14, 0.33 | 0.82 | -0.38, 0.58 | 0.41 |
| Exploration | -0.10 | -0.35, 0.14 | -0.83 | -0.58, 0.38 | 0.41 |
| Sociality | -0.12 | -0.76, 0.53 | -0.36 | -0.88, 0.65 | 0.72 |

**Table S13. Dependency matrix models.** Multi-level meta-regression models for each of the taxonomic groups with personality trait type as a moderator and the inclusion of our **D** matrix (*r* = 0.8) as a random effect (replacing *obs*). These sensitivity models check whether correlations between personality traits measured on the same individuals, or on the same trait types within the same study, significantly change the interpretation of our models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2670.89 | P<0.0001 |  | | | |
| F=2.19 | P=0.05 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.52 | 0.72 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.8 | 0.23 | 0.48 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.11 | -0.47, 0.25 | -0.60 | -1.85, 1.63 | 0.55 |
| Aggression | -0.05 | -0.39, 0.30 | -0.26 | -1.78, 1.69 | 0.79 |
| Boldness | -0.20 | -0.45, 0.06 | -1.51 | -1.92, 1.53 | 0.13 |
| Exploration | 0.03 | -0.24, 0.30 | 0.24 | -1.69, 1.76 | 0.81 |
| **Sociality** | **-0.60** | **-1.18, -0.02** | **-2.02** | **-2.40, 1.20** | **0.04\*** |
| ***lnCVR*** |  |  |  |  |  |
| QE=3711.80 | P<0.0001 |  |  |  |  |
| F=0.20 | P=0.96 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| **D** matrix r=0.8 | 1.27 | 1.13 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.24 | -0.73, 0.26 | -0.94 | -2.51, 2.04 | 0.35 |
| Aggression | -0.01 | -0.47, 0.45 | -0.04 | -2.27, 2.26 | 0.97 |
| Boldness | -0.03 | -0.27, 0.21 | -0.24 | -2.26, 2.20 | 0.81 |
| Exploration | -0.04 | -0.34, 0.26 | -0.25 | -2.28, 2.20 | 0.80 |
| Sociality | 0.08 | -0.63, 0.79 | 0.22 | -2.25, 2.41 | 0.82 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1347.79 | P<0.0001 |  | | | |
| F=0.59 | P=0.71 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0.06 | 0.24 | 22 |  |  |
| **D** matrix r=0.8 | 0.26 | 0.51 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.07 | -0.36, 0.50 | 0.31 | -1.12, 1.26 | 0.75 |
| Aggression | 0.05 | -0.35, 0.45 | 0.25 | -1.12, 1.23 | 0.80 |
| Boldness | -0.02 | -0.42, 0.37 | -0.12 | -1.20, 1.15 | 0.90 |
| Exploration | -0.01 | -0.43, 0.42 | -0.04 | -1.19, 1.17 | 0.97 |
| Sociality | -0.21 | -0.69, 0.26 | -0.87 | -1.41, 0.99 | 0.38 |
| ***lnCVR*** |  |  |  |  |  |
| QE=915.16 | P<0.0001 |  |  |  |  |
| F=1.04 | P=0.39 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0 | 0 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| **D** matrix r=0.8 | 0.1 | 0.31 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.06 | -0.22, 0.11 | -0.71 | -0.69, 0.57 | 0.48 |
| **Aggression** | **-0.13** | **-0.26, 0.00** | **-1.95** | **-0.76, 0.50** | **0.05\*** |
| Boldness | 0.02 | -0.08, 0.12 | 0.46 | -0.60, 0.64 | 0.65 |
| Exploration | -0.04 | -0.19, 0.11 | -0.57 | -0.67, 0.59 | 0.57 |
| Sociality | 0.06 | -0.16, 0.28 | 0.55 | -0.59, 0.71 | 0.58 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| QE=2657.20 | P<0.0001 |  | | | |
| F=1.44 | P=0.21 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.88 | 0.94 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| **D** matrix r=0.8 | 0.78 | 0.89 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| **Activity** | **0.56** | **0.12, 1.00** | **2.50** | **-2.01, 3.13** | **0.01\*** |
| Aggression | 0.22 | -0.71, 1.15 | 0.46 | -2.48, 2.92 | 0.65 |
| Boldness | 0.17 | -0.25, 0.59 | 0.79 | -2.40, 2.74 | 0.43 |
| Exploration | 0.10 | -0.52, 0.72 | 0.31 | -2.51, 2.71 | 0.76 |
| Sociality | 0.35 | -0.60, 1.31 | 0.72 | -2.35, 3.06 | 0.47 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1427.81 | P<0.0001 |  |  |  |  |
| F=0.37 | P=0.87 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.1 | 37 |  |  |
| Species Name | 0.01 | 0.08 | 36 |  |  |
| **D** matrix r=0.8 | 0.24 | 0.49 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.04 | -0.21, 0.13 | -0.47 | -1.06, 0.97 | 0.64 |
| Aggression | 0.16 | -0.22, 0.54 | 0.85 | -0.91, 1.23 | 0.40 |
| Boldness | -0.01 | -0.18, 0.16 | -0.14 | -1.03, 1.00 | 0.89 |
| Exploration | 0.07 | -0.21, 0.35 | 0.47 | -0.97, 1.11 | 0.64 |
| Sociality | 0.23 | -0.33, 0.79 | 0.79 | -0.92, 1.37 | 0.43 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2158.51 | P<0.0001 |  | | | |
| F=1.01 | P=0.41 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.16 | 61 |  |  |
| Species Name | 0.06 | 0.24 | 45 |  |  |
| **D** matrix r=0.8 | 0.32 | 0.57 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.18 | -0.59, 0.22 | -0.90 | -1.50, 1.13 | 0.37 |
| Aggression | 0.16 | -0.23, 0.56 | 0.80 | -1.15, 1.47 | 0.42 |
| Boldness | 0.08 | -0.25, 0.41 | 0.48 | -1.22, 1.38 | 0.63 |
| Exploration | 0.01 | -0.35, 0.37 | 0.06 | -1.29, 1.31 | 0.95 |
| Sociality | 0.18 | -0.22, 0.58 | 0.87 | -1.14, 1.49 | 0.38 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1044.60 | P<0.0001 |  |  |  |  |
| F=0.64 | P=0.67 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.15 | 61 |  |  |
| Species Name | 0.01 | 0.1 | 45 |  |  |
| **D** matrix r=0.8 | 0.05 | 0.22 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.11 | -0.09, 0.31 | 1.09 | -0.48, 0.70 | 0.28 |
| Aggression | 0.08 | -0.12, 0.28 | 0.76 | -0.51, 0.67 | 0.45 |
| Boldness | 0.06 | -0.10, 0.21 | 0.71 | -0.52, 0.63 | 0.48 |
| Exploration | 0.00 | -0.17, 0.18 | 0.03 | -0.58, 0.58 | 0.98 |
| Sociality | -0.03 | -0.24, 0.18 | -0.29 | -0.62, 0.56 | 0.77 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=151.82 | P<0.0001 |  | | | |
| F=1.20 | P=0.32 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.13 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.8 | 0.06 | 0.25 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.07 | -0.50, 0.36 | -0.34 | -0.77, 0.62 | 0.73 |
| Aggression | -0.08 | -0.34, 0.19 | -0.57 | -0.69, 0.53 | 0.57 |
| Boldness | 0.12 | -0.12, 0.36 | 0.97 | -0.48, 0.72 | 0.33 |
| **Exploration** | **0.26** | **0.04, 0.49** | **2.32** | **-0.33, 0.86** | **0.02\*** |
| Sociality | -0.04 | -0.62, 0.53 | -0.15 | -0.84, 0.75 | 0.88 |
| ***lnCVR*** |  |  |  |  |  |
| QE=73.79 | P=0.89 |  |  |  |  |
| F=1.19 | P=0.32 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.19 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| **D** matrix r=0.8 | 0 | 0 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.11 | -0.52, 0.30 | -0.53 | -0.71, 0.49 | 0.60 |
| Aggression | 0.32 | -0.05, 0.70 | 1.71 | -0.25, 0.90 | 0.09 |
| Boldness | 0.10 | -0.14, 0.33 | 0.80 | -0.40, 0.59 | 0.42 |
| Exploration | -0.10 | -0.35, 0.15 | -0.81 | -0.60, 0.40 | 0.42 |
| Sociality | -0.11 | -0.76, 0.54 | -0.33 | -0.89, 0.67 | 0.74 |

**Table S14.** Intercept-only random effects meta-analysis model output for each of the five taxonomic groups comparing males and females for mean differences (SMD) and for variability (lnCVR). Table also shows *I*2 measures of heterogeneity for each of the random effects included in the models. *Q* scores are another test of heterogeneity, but here we only report *I*2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| Q=2804.93 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.59 | 0.77 | 0.73 | 0.63, 0.80 | 50 |
| Species Name | 0 | 0.01 | 0 | 0, 0 | 106 |
| Obs | 0.16 | 0.40 |  |  | 483 |
| Phylo |  |  | 0 | 0, 0 |  |
| Total |  |  | 0.93 | 0.90, 0.95 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.14 | -0.36, 0.09 | -1.17 | -1.82, 1.57 | 0.24 |
| ***lnCVR*** |  |  |  |  |  |
| Q=3820.60 | P<0.0001 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.01 | 0.12 | 0.02 | 0.01, 0.02 | 50 |
| Species Name | 0.36 | 0.60 | 0.44 | 0.37, 0.51 | 106 |
| Obs | 0.40 | 0.63 |  |  | 483 |
| Phylo |  |  | 0.47 | 0.39, 0.54 |  |
| Total |  |  | 0.94 | 0.94, 0.95 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.14 | -0.65, 0.37 | -0.56 | -1.94, 1.64 | 0.58 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| Q=1385.84 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.04 | 0.21 | 0.14 | 0.09, 0.19 | 44 |
| Species Name | 0.04 | 0.20 | 0.13 | 0.07, 0.20 | 22 |
| Obs | 0.13 | 0.36 |  |  | 493 |
| Phylo |  |  | 0.19 | 0.11, 0.29 |  |
| Total |  |  | 0.70 | 0.66, 0.73 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.04 | -0.35, 0.28 | -0.24 | -1.00, 0.93 | 0.81 |
| ***lnCVR*** |  |  |  |  |  |
| Q=924.06 | P<0.0001 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.01 | 0.09 | 0.04 | 0.03, 0.06 | 44 |
| Species Name | 0.00 | 0.00 | 0 | 0, 0 | 22 |
| Obs | 0.08 | 0.29 |  |  | 493 |
| Phylo |  |  | 0 | 0, 0 |  |
| Total |  |  | 0.49 | 0.46, 0.52 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | -0.04 | -0.09, 0.01 | -1.44 | -0.64, 0.56 | 0.15 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| Q=2678.23 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.90 | 0.95 | 0.70 | 0.60, 0.79 | 37 |
| Species Name | 0 | 0 | 0 | 0, 0 | 36 |
| Obs | 0.31 | 0.56 |  |  | 422 |
| Phylo |  |  | 0 | 0, 0 |  |
| Total |  |  | 0.96 | 0.94, 0.97 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.30 | -0.02, 0.62 | 1.82 | -1.89, 2.48 | 0.07 |
| ***lnCVR*** |  |  |  |  |  |
| Q=1459.70 | P<0.0001 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.04 | 0.20 | 0.20 | 0.13, 0.28 | 37 |
| Species Name | 0 | 0.06 | 0.02 | 0.01, 0.02 | 36 |
| Obs | 0.11 | 0.33 |  |  | 422 |
| Phylo |  |  | 0.02 | 0.01, 0.03 |  |
| Total |  |  | 0.76 | 0.74, 0.79 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.00 | -0.11, 0.10 | -0.04 | -0.77, 0.76 | 0.97 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| Q=2218.15 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.10 | 0.31 | 0.23 | 0.16, 0.29 | 61 |
| Species Name | 0.08 | 0.29 | 0.19 | 0.13, 0.26 | 45 |
| Obs | 0.16 | 0.39 |  |  | 674 |
| Phylo |  |  | 0.24 | 0.16, 0.33 |  |
| Total |  |  | 0.78 | 0.75, 0.81 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.08 | -0.28, 0.45 | 0.44 | -1.10, 1.27 | 0.66 |
| ***lnCVR*** |  |  |  |  |  |
| Q=1074.96 | P<0.0001 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.03 | 0.18 | 0.17 | 0.12, 0.22 | 61 |
| Species Name | 0.05 | 0.22 | 0.25 | 0.18, 0.34 | 45 |
| Obs | 0.03 | 0.19 |  |  | 674 |
| Phylo |  |  | 0.43 | 0.31, 0.53 |  |
| Total |  |  | 0.60 | 0.55, 0.65 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.20, 0.34 | 0.51 | -0.64, 0.79 | 0.61 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| Q=163.37 | P<0.0001 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0.03 | 0.17 | 0.15 | 0.06, 0.28 | 11 |
| Species Name | 0 | 0.01 | 0 | 0, 0 | 10 |
| Obs | 0.05 | 0.23 |  |  | 95 |
| Phylo |  |  | 0 | 0, 0 |  |
| Total |  |  | 0.45 | 0.36, 0.54 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.07 | -0.08, 0.22 | 0.94 | -0.52, 0.67 | 0.35 |
| ***lnCVR*** |  |  |  |  |  |
| Q=77.72 | P=0.89 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *I2* | *95% CIs* | *n* |
| Study ID | 0 | 0.02 | 0 | 0, 0 | 11 |
| Species Name | 0 | 0.02 | 0 | 0, 0.01 | 10 |
| Obs | 0 | 0 |  |  | 95 |
| Phylo |  |  | 0.65 | 0.34, 0.87 |  |
| Total |  |  | 0.01 | 0.00, 0.01 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
|  | 0.05 | -0.04, 0.14 | 1.13 | -0.06, 0.15 | 0.26 |

**Table S15.** Multi-level meta-regression model output for each of the five taxonomic groups with personality trait type as a moderator variable. Here we compare mean differences (SMD) and variability (lnCVR) between males and females for each of the five personality trait types. *F* scores are tests of how well the moderator, trait type, explains variance.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2670.89 | P<0.0001 |  | | | |
| F=3.76 | P=0.002 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.59 | 0.77 | 50 |  |  |
| Species Name | 0 | 0.01 | 106 |  |  |
| Obs | 0.16 | 0.40 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.14 | -0.43, 0.15 | -0.93 | -1.90, 1.62 | 0.35 |
| Aggression | -0.14 | -0.43, 0.14 | -0.97 | -1.90, 1.62 | 0.33 |
| Boldness | -0.19 | -0.44, 0.06 | -1.50 | -1.95, 1.56 | 0.13 |
| Exploration | 0.09 | -0.18, 0.36 | 0.66 | -1.67, 1.85 | 0.51 |
| **Sociality** | **-0.68** | **-1.16, -0.21** | **-2.81** | **-2.48, 1.12** | **0.005\*\*** |
| ***lnCVR*** |  |  |  |  |  |
| QE=3711.80 | P<0.0001 |  |  |  |  |
| F=1.17 | P=0.32 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.31 | 0.55 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| Obs | 0.39 | 0.62 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.05 | -0.24, 0.34 | 0.36 | -1.61, 1.71 | 0.72 |
| Aggression | -0.07 | -0.39, 0.25 | -0.41 | -1.74, 1.60 | 0.68 |
| Boldness | -0.01 | -0.23, 0.22 | -0.04 | -1.66, 1.65 | 0.97 |
| Exploration | -0.25 | -0.50, 0.01 | -1.92 | -1.91, 1.41 | 0.06 |
| Sociality | 0.14 | -0.38, 0.66 | 0.53 | -1.58, 1.86 | 0.60 |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1347.79 | P<0.0001 |  | | | |
| F=1.80 | P=0.11 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 44 |  |  |
| Species Name | 0.10 | 0.32 | 22 |  |  |
| Obs | 0.13 | 0.37 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.16 | -0.65, 0.33 | -0.63 | -1.28, 0.97 | 0.53 |
| Aggression | -0.05 | -0.52, 0.42 | -0.22 | -1.17, 1.06 | 0.83 |
| Boldness | -0.16 | -0.63, 0.32 | -0.65 | -1.27, 0.96 | 0.52 |
| Exploration | -0.05 | -0.54, 0.44 | -0.20 | -1.17, 1.07 | 0.84 |
| Sociality | -0.40 | -1.53, 0.73 | -1.55 | -1.53, 0.73 | 0.12 |
| ***lnCVR*** |  |  |  |  |  |
| QE=915.16 | P<0.0001 |  |  |  |  |
| F=1.14 | P=0.34 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.10 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.08 | 0.29 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.03 | -0.16, 0.09 | -0.49 | -0.65, 0.58 | 0.63 |
| **Aggression** | **-0.13** | **-0.25, -0.01** | **-2.10** | **-0.74, 0.49** | **0.04\*** |
| Boldness | -0.02 | -0.11, 0.06 | -0.54 | -0.63, 0.59 | 0.59 |
| Exploration | -0.03 | -0.65, 0.58 | -0.50 | -0.65, 0.58 | 0.62 |
| Sociality | 0.07 | -0.56, 0.69 | 0.72 | -0.56, 0.69 | 0.47 |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| QE=2657.20 | P<0.0001 |  | | | |
| F=1.46 | P=0.02 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.92 | 0.96 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.32 | 0.56 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.33 | -0.04, 0.70 | 1.77 | -1.89, 2.55 | 0.08 |
| Aggression | 0.35 | -0.36, 1.06 | 0.97 | -1.95, 2.65 | 0.33 |
| Boldness | 0.31 | -0.05, 0.67 | 1.70 | -1.91, 2.53 | 0.09 |
| Exploration | 0.00 | -0.44, 0.45 | 0.02 | -2.23, 2.37 | 0.98 |
| Sociality | 0.39 | -0.38, 1.16 | 1.00 | -1.93, 2.71 | 0.32 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1427.81 | P<0.0001 |  |  |  |  |
| F=1.03 | P=0.40 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.09 | 0.30 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.06 | -0.19, 0.08 | -0.83 | -0.82, 0.70 | 0.40 |
| Aggression | 0.17 | -0.10, 0.43 | 1.22 | -0.63, 0.96 | 0.22 |
| Boldness | -0.04 | -0.15, 0.08 | -0.61 | -0.79, 0.72 | 0.55 |
| Exploration | 0.07 | -0.12, 0.26 | 0.73 | -0.70, 0.84 | 0.47 |
| Sociality | 0.27 | -0.14, 0.68 | 1.29 | -0.59, 1.12 | 0.20 |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2158.51 | P<0.0001 |  | | | |
| F=1.40 | P=0.22 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.13 | 0.36 | 61 |  |  |
| Species Name | 0.07 | 0.26 | 45 |  |  |
| Obs | 0.15 | 0.39 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.17 | -0.56, 0.23 | -0.84 | -1.38, 1.05 | 0.40 |
| Aggression | 0.10 | -0.27, 0.48 | 0.55 | -1.10, 1.31 | 0.59 |
| Boldness | 0.15 | -0.20, 0.50 | 0.85 | -1.05, 1.35 | 0.39 |
| Exploration | 0.05 | -0.31, 0.41 | 0.26 | -1.56, 1.25 | 0.79 |
| Sociality | 0.09 | -0.29, 0.47 | 0.46 | -1.12, 1.30 | 0.64 |
| ***lnCVR*** |  |  |  |  |  |
| QE=1044.60 | P<0.0001 |  |  |  |  |
| F=0.26 | P=0.93 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.18 | 61 |  |  |
| Species Name | 0 | 0 | 45 |  |  |
| Obs | 0.09 | 0.30 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | 0.10 | -0.20, 0.41 | 0.67 | -0.64, 0.85 | 0.50 |
| Aggression | 0.11 | -0.20, 0.42 | 0.69 | -0.64, 0.85 | 0.49 |
| Boldness | 0.06 | -0.22, 0.34 | 0.43 | -0.67, 0.79 | 0.67 |
| Exploration | 0.04 | -0.25, 0.34 | 0.28 | -0.69, 0.78 | 0.78 |
| Sociality | 0.06 | -0.25, 0.37 | 0.39 | -0.68, 0.80 | 0.70 |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=151.82 | P<0.0001 |  | | | |
| F=1.29 | P=0.28 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.02 | 0.13 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| Obs | 0.06 | 0.24 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.05 | -0.45, 0.36 | -0.23 | -0.72, 0.63 | 0.82 |
| Aggression | -0.07 | -0.32, 0.19 | -0.52 | -0.66, 0.53 | 0.60 |
| Boldness | 0.12 | -0.09, 0.33 | 1.11 | -0.46, 0.70 | 0.27 |
| **Exploration** | **0.25** | **0.05, 0.45** | **2.44** | **-0.33, 0.83** | **0.02\*** |
| Sociality | -0.05 | -0.60, 0.50 | -0.18 | -0.82, 0.73 | 0.86 |
| ***lnCVR*** |  |  |  |  |  |
| QE=73.79 | P=0.89 |  |  |  |  |
| F=1.31 | P=0.27 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| Obs | 0 | 0 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *Prediction Interval* | *p-value* |
| Activity | -0.11 | -0.51, 0.29 | -0.53 | -0.67, 0.46 | 0.60 |
| Aggression | 0.33 | -0.05, 0.72 | 1.73 | -0.22, 0.89 | 0.09 |
| Boldness | 0.10 | -0.13, 0.33 | 0.83 | -0.36, 0.56 | 0.41 |
| Exploration | -0.10 | -0.35, 0.14 | -0.84 | -0.57, 0.36 | 0.40 |
| Sociality | -0.12 | -0.76, 0.52 | -0.38 | -0.87, 0.63 | 0.70 |

**Table S16.** Subset meta-analysis models for each of the taxonomic groups /personality trait types where we could include sexual size dimorphism (SSD) as a moderator.There were not enough data to run models for the trait type Sociality, or for any trait for Reptiles/ Amphibians. Intercept shows mean difference between males and females when SSD is 0 (no sexual size dimorphism), with the slope for SSD showing the mean difference when males become larger than females (positive SSD).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Activity*** |  |  |  |  |
| **Inverts** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE = 1069.50 | P<0.0001 |  |  |  |
| F=0.67 | P=0.41 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 2.23 | 1.49 | 18 |  |
| Species Name | 0 | 0.01 | 16 |  |
| Obs | 0.15 | 0.39 | 165 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.31 | -0.42, 1.04 | 0.83 | 0.38 |
| SSD | -0.66 | -2.26, 0.93 | -0.82 | 0.70 |
| ***lnCVR*** |  |  |  |  |
| QE = 475.98 | P = 0.12 |  |  |  |
| F = 0.45 | P = 0.50 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.12 | 0.35 | 18 |  |
| Species Name | 0 | 0 | 16 |  |
| Obs | 0.05 | 0.23 | 165 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.04 | -0.25, 0.17 | -0.36 | 0.72 |
| SSD | 0.27 | -0.53, 1.07 | 0.67 | 0.50 |
| **Mammals** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE = 321.40 | P<0.0001 |  |  |  |
| F=5.46 | P=0.02 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.10 | 0.32 | 14 |  |
| Species Name | 2.13 | 1.46 | 12 |  |
| Obs | 0.21 | 0.45 | 84 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.44 | -1.74, 2.62 | 0.40 | 0.69 |
| **SSD** | **-2.16** | **-3.99, -0.32** | **-2.34** | **0.02\*** |
| ***lnCVR*** |  |  |  |  |
| QE = 146.26 | P <0.0001 |  |  |  |
| F = 5.46 | P = 0.02 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.03 | 0.32 | 14 |  |
| Species Name | 2.13 | 1.46 | 12 |  |
| Obs | 0.21 | 0.45 | 84 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.05 | -0.15, 0.25 | 0.52 | 0.60 |
| SSD | 0.13 | -0.56, 0.81 | 0.36 | 0.72 |
| ***Aggression*** |  |  |  |  |
| **Fish** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=334.17 | P<0.0001 |  |  |  |
| F=0.23 | P=0.63 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.02 | 0.14 | 16 |  |
| Species Name | 0.33 | 0.58 | 13 |  |
| Obs | 0.17 | 0.41 | 93 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.16 | -0.96, 0.63 | -0.41 | 0.68 |
| SSD | 0.27 | -0.84, 1.37 | 0.48 | 0.63 |
| ***lnCVR*** |  |  |  |  |
| QE=68.27 | P=0.96 |  |  |  |
| F=0.15 | P=0.70 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.02 | 0.15 | 16 |  |
| Species Name | 0 | 0 | 13 |  |
| Obs | 0 | 0 | 93 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| **Intercept** | **-0.12** | **-0.23, 0.00** | **-1.95** | **0.05\*** |
| SSD | -0.13 | -0.81, 0.55 | -0.39 | 0.70 |
| **Mammals** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=313.78 | P<0.0001 |  |  |  |
| F=3.92 | P=0.05 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0 | 0 | 15 |  |
| Species Name | 0.69 | 0.83 | 13 |  |
| Obs | 0.14 | 0.38 | 85 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.09 | -1.29, 1.10 | -0.16 | 0.88 |
| **SSD** | **1.36** | **-0.01, 2.73** | **1.98** | **0.05\*** |
| ***lnCVR*** |  |  |  |  |
| QE=201.50 | P<0.0001 |  |  |  |
| F=0.01 | P=0.94 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.18 | 0.42 | 15 |  |
| Species Name | 0 | 0.01 | 13 |  |
| Obs | 0.15 | 0.39 | 85 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.09 | -0.21, 0.39 | 0.59 | 0.56 |
| SSD | -0.05 | -1.43, 1.33 | -0.07 | 0.94 |
| ***Boldness*** |  |  |  |  |
| **Birds** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=1592.83 | P<0.0001 |  |  |  |
| F=0.15 | P=0.70 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 1.82 | 1.35 | 21 |  |
| Species Name | 0 | 0.01 | 78 |  |
| Obs | 0.11 | 0.33 | 233 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.27 | -0.87, 0.33 | -0.88 | 0.38 |
| SSD | -0.23 | -1.45, 0.98 | -0.38 | 0.70 |
| ***lnCVR*** |  |  |  |  |
| QE=256.10 | P=0.12 |  |  |  |
| F=0.59 | P=0.44 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0 | 0 | 21 |  |
| Species Name | 0 | 0.06 | 78 |  |
| Obs | 0 | 0 | 233 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.03 | -0.04, 0.11 | 0.89 | 0.37 |
| SSD | 0.11 | -0.16, 0.37 | 0.77 | 0.44 |
| **Fish** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=614.58 | P<0.0001 |  |  |  |
| F=1.07 | P=0.30 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.02 | 0.13 | 23 |  |
| Species Name | 0.03 | 0.16 | 12 |  |
| Obs | 0.06 | 0.24 | 172 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.04 | -0.33, 0.25 | -0.28 | 0.78 |
| SSD | 0.10 | -0.31, 0.52 | 0.49 | 0.63 |
| ***lnCVR*** |  |  |  |  |
| QE=307.62 | P<0.0001 |  |  |  |
| F=0.24 | P=0.63 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.18 | 0.42 | 23 |  |
| Species Name | 0 | 0.01 | 12 |  |
| Obs | 0.15 | 0.39 | 172 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.09 | -0.21, 0.39 | 0.59 | 0.56 |
| SSD | -0.05 | -1.43, 1.33 | -0.07 | 0.94 |
| **Inverts** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=923.09 | P<0.0001 |  |  |  |
| F=0.46 | P=0.50 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.90 | 0.31 | 22 |  |
| Species Name | 0 | 0 | 22 |  |
| Obs | 0.32 | 0.56 | 161 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.18 | -0.03, 0.38 | 1.68 | 0.09 |
| SSD | 0.28 | -0.54, 1.10 | 0.68 | 0.50 |
| ***lnCVR*** |  |  |  |  |
| QE=561.57 | P<0.0001 |  |  |  |
| F=0.00 | P=0.95 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.03 | 0.16 | 22 |  |
| Species Name | 0 | 0.01 | 22 |  |
| Obs | 0.10 | 0.32 | 161 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.04 | -0.16, 0.09 | -0.58 | 0.56 |
| SSD | 0.02 | -0.47, 0.51 | 0.07 | 0.95 |
| **Mammals** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=402.76 | P<0.0001 |  |  |  |
| F=0.92 | P=0.34 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.02 | 0.16 | 26 |  |
| Species Name | 0 | 0.05 | 26 |  |
| Obs | 0.15 | 0.39 | 163 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.09 | -0.09, 0.27 | 0.96 | 0.34 |
| SSD | -0.16 | -0.50, 0.17 | -0.96 | 0.34 |
| ***lnCVR*** |  |  |  |  |
| QE=175.27 | P<0.0001 |  |  |  |
| F=0.88 | P=0.35 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0 | 0.03 | 26 |  |
| Species Name | 0 | 0 | 26 |  |
| Obs | 0.02 | 0.14 | 163 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.07 | -0.03, 0.16 | 1.37 | 0.16 |
| SSD | 0.08 | -0.09, 0.25 | 0.94 | 0.35 |
| ***Exploration*** |  |  |  |  |
| **Mammals** |  |  |  |  |
| ***SMD*** |  |  |  |  |
| QE=658.46 | P<0.0001 |  |  |  |
| F=0.04 | P=0.85 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.05 | 0.22 | 19 |  |
| Species Name | 0 | 0 | 16 |  |
| Obs | 0.13 | 0.36 | 213 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | 0.00 | -0.18, 0.18 | -0.02 | 0.99 |
| SSD | -0.05 | -0.60, 0.50 | -0.19 | 0.85 |
| ***lnCVR*** |  |  |  |  |
| QE=361.16 | P<0.0001 |  |  |  |
| F=0.27 | P=0.61 |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |
| Study ID | 0.02 | 0.14 | 19 |  |
| Species Name | 0.03 | 0.16 | 16 |  |
| Obs | 0.03 | 0.18 | 213 |  |
| *Model* | *Estimate* | *95% CIs* | *t-score* | *p-value* |
| Intercept | -0.06 | -0.36, 0.24 | -0.40 | 0.69 |
| SSD | 0.13 | -0.37, 0.64 | 0.52 | 0.61 |

**Table S17. Publication bias.** Sensitivity meta-regression models for each of the taxonomic groups with personality and precision both included as moderator terms. Including precision in our full trait models allows us to look for evidence of publication bias (as indicated when the slope for precision is significant). See Methods section for calculation of precision.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Birds** | | | | | |
| ***SMD*** | | | | | |
| QE=2670.88 | P<0.0001 |  | | | |
| F=3.20 | P=0.004 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.65 | 0.81 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| Obs | 0.14 | 0.38 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | -0.20 | -0.54, 0.14 | -1.16 | 0.25 |  |
| Aggression | -0.21 | -0.56, 0.14 | -1.19 | 0.23 |  |
| Boldness | -0.26 | -0.57, 0.05 | -1.16 | 0.11 |  |
| Exploration | 0.03 | -0.29, 0.35 | 0.18 | 0.86 |  |
| **Sociality** | **-0.74** | **-1.25, -0.24** | **-2.88** | **0.004\*\*** |  |
| Precision | 0.01 | -0.02, 0.05 | 0.69 | 0.49 |  |
| ***lnCVR*** |  |  |  |  |  |
| QE=3683.35 | P<0.0001 |  |  |  |  |
| F=0.99 | P=0.43 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.31 | 0.56 | 50 |  |  |
| Species Name | 0 | 0 | 106 |  |  |
| Obs | 0.39 | 0.62 | 483 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | 0.04 | -0.29, 0.36 | 0.21 | 0.83 |  |
| Aggression | -0.09 | -0.43, 0.26 | -0.48 | 0.63 |  |
| Boldness | -0.03 | -0.30, 0.25 | -0.18 | 0.86 |  |
| Exploration | -0.27 | -0.58, 0.04 | -1.73 | 0.08 |  |
| Sociality | 0.12 | -0.42, 0.66 | 0.44 | 0.66 |  |
| Precision | 0.00 | -0.03, 0.04 | 0.26 | 0.80 |  |
| **Fish** | | | | | |
| ***SMD*** | | | | | |
| QE=1342.38 | P<0.0001 |  | | | |
| F=1.56 | P=0.16 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.17 | 44 |  |  |
| Species Name | 0.11 | 0.32 | 22 |  |  |
| Obs | 0.13 | 0.37 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | -0.23 | -0.79, 0.33 | -0.81 | 0.42 |  |
| Aggression | -0.11 | -0.63, 0.41 | -0.43 | 0.67 |  |
| Boldness | -0.22 | -0.76, 0.31 | -0.82 | 0.41 |  |
| Exploration | -0.11 | -0.64, 0.42 | -0.40 | 0.69 |  |
| Sociality | -0.47 | -1.03, 0.09 | -1.64 | 0.10 |  |
| Precision | 0.02 | -0.05, 0.08 | 0.55 | 0.58 |  |
| ***lnCVR*** |  |  |  |  |  |
| QE=912.54 | P<0.0001 |  |  |  |  |
| F=0.98 | P=0.44 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.01 | 0.10 | 44 |  |  |
| Species Name | 0 | 0 | 22 |  |  |
| Obs | 0.08 | 0.29 | 493 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | -0.07 | -0.26, 0.13 | -0.67 | 0.50 |  |
| Aggression | -0.15 | -0.32, 0.01 | -1.83 | 0.07 |  |
| Boldness | -0.06 | -0.22, 0.11 | -0.67 | 0.50 |  |
| Exploration | -0.06 | -0.22, 0.11 | -0.68 | 0.50 |  |
| Sociality | 0.03 | -0.19, 0.26 | 0.29 | 0.77 |  |
| Precision | 0.01 | -0.03, 0.05 | 0.46 | 0.65 |  |
| **Inverts** | | | | | |
| ***SMD*** | | | | | |
| QE=2656.83 | P<0.0001 |  | | | |
| F=2.58 | P=0.02 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.87 | 0.93 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.32 | 0.57 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| **Activity** | **0.62** | **0.21, 1.03** | **2.95** | **0.003\*\*** |  |
| Aggression | 0.66 | -0.08, 1.39 | 1.76 | 0.08 |  |
| **Boldness** | **0.63** | **0.22, 1.05** | **2.99** | **0.003\*\*** |  |
| Exploration | 0.33 | -0.17, 0.82 | 1.30 | 0.19 |  |
| Sociality | 0.75 | -0.06, 1.56 | 1.83 | 0.07 |  |
| **Precision** | **-0.08** | **-0.13, -0.02** | **-2.84** | **0.005\*\*** |  |
| ***lnCVR*** |  |  |  |  |  |
| QE=1427.27 | P<0.0001 |  |  |  |  |
| F=0.87 | P=0.52 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.19 | 37 |  |  |
| Species Name | 0 | 0 | 36 |  |  |
| Obs | 0.11 | 0.33 | 422 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | -0.07 | -0.23, 0.09 | -0.84 | 0.40 |  |
| Aggression | 0.16 | -0.13, 0.44 | 0.19 | 0.85 |  |
| Boldness | -0.05 | -0.21, 0.11 | -0.30 | 0.76 |  |
| Exploration | 0.06 | -0.16, 0.27 | 0.56 | 0.58 |  |
| Sociality | 0.26 | -0.17, 0.68 | 1.41 | 0.16 |  |
| Precision | 0.00 | -0.02, 0.03 | -0.03 | 0.97 |  |
| **Mammals** | | | | | |
| ***SMD*** | | | | | |
| QE=2147.01 | P<0.0001 |  | | | |
| F=1.36 | P=0.23 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.13 | 0.36 | 61 |  |  |
| Species Name | 0.05 | 0.23 | 45 |  |  |
| Obs | 0.15 | 0.39 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | -0.05 | -0.47, 0.37 | -0.24 | 0.81 |  |
| Aggression | 0.23 | -0.18, 0.64 | 1.10 | 0.27 |  |
| Boldness | 0.27 | -0.12, 0.65 | 1.37 | 0.17 |  |
| Exploration | 0.17 | -0.23, 0.56 | 0.82 | 0.41 |  |
| Sociality | 0.22 | -0.20, 0.63 | 1.02 | 0.31 |  |
| Precision | -0.03 | -0.09, 0.03 | -1.04 | 0.30 |  |
| ***lnCVR*** |  |  |  |  |  |
| QE=1039.19 | P<0.0001 |  |  |  |  |
| F=0.26 | P=0.95 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.19 | 61 |  |  |
| Species Name | 0.04 | 0.21 | 45 |  |  |
| Obs | 0.04 | 0.19 | 674 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | 0.08 | -0.23, 0.39 | 0.48 | 0.63 |  |
| Aggression | 0.08 | -0.23, 0.39 | 0.51 | 0.61 |  |
| Boldness | 0.03 | -0.26, 0.32 | 0.21 | 0.83 |  |
| Exploration | 0.01 | -0.29, 0.31 | 0.09 | 0.93 |  |
| Sociality | 0.03 | -0.28, 0.34 | 0.20 | 0.84 |  |
| Precision | 0.01 | -0.02, 0.03 | 0.51 | 0.61 |  |
| **Reptiles / Amphibians** | | | | | |
| ***SMD*** | | | | | |
| QE=149.09 | P<0.0001 |  | | | |
| F=1.14 | P=0.35 |  | | | |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.03 | 0.16 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| Obs | 0.05 | 0.23 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | 0.66 | -0.43, 1.74 | 1.20 | 0.23 |  |
| Aggression | 0.80 | -0.51, 2.11 | 1.21 | 0.23 |  |
| Boldness | 0.78 | -0.19, 1.76 | 1.60 | 0.11 |  |
| Exploration | 0.87 | -0.06, 1.79 | 1.86 | 0.07 |  |
| Sociality | 0.60 | -0.45, 1.66 | 1.14 | 0.26 |  |
| Precision | -0.23 | -0.56, 0.10 | -1.40 | 0.17 |  |
| ***lnCVR*** |  |  |  |  |  |
| QE=73.63 | P=0.88 |  |  |  |  |
| F=1.10 | P=0.37 |  |  |  |  |
| *Variance* | *Estimate* | *SQRT* | *n* |  |  |
| Study ID | 0.04 | 0.20 | 11 |  |  |
| Species Name | 0 | 0 | 10 |  |  |
| Obs | 0 | 0 | 95 |  |  |
| *Personality Trait* | *Estimate* | *95% CIs* | *t-score* | *p-value* |  |
| Activity | -0.14 | -0.76, 0.49 | -0.43 | 0.67 |  |
| Aggression | 0.32 | -0.19, 0.82 | 1.24 | 0.22 |  |
| Boldness | 0.07 | -0.42, 0.56 | 0.28 | 0.78 |  |
| Exploration | -0.13 | -0.55, 0.30 | -0.59 | 0.56 |  |
| Sociality | -0.14 | -0.85, 0.56 | -0.40 | 0.69 |  |
| Precision | 0.01 | -0.12, 0.14 | 0.12 | 0.90 |  |