Early environmental conditions do not impact associative learning in two species of skink.

DCL Comments

Major Comments

Ln 234-237: This preliminary analysis raises an interesting question. Since you see no differences in learning capacity between individuals as a function of their age at the beginning of the trials, is it possible that you’ve missed some critical early window during which they have the greatest neuroplasticity and you’re only getting them after they’ve stopped being able to learn as well? Alternatively, since age would likely be highly conflated with temperature, could this age disparity be masking the effects of developmental treatments?

Those are good points, and I agree that we could be missing the small window where animals’ learning abilities are affected by the early environment. However, subjects where young (ages included now in Suppl. Mat.), so even if we missed that window, it may not be relevant if after approx. two months after hatching individuals from all treatments can learn at the same rate. Regarding the second question, we controlled for age in our experimental design by using animals of similar age (ages included now in Suppl. Mat.).

Ln 307-312: You address this somewhat in the next paragraph, but thought I’d give you a few more examples/perspectives. Blue is frequently associated with conspicuous coloration (not necessarily for conspecific communication; more often for misdirecting or distracting predators) in lizards (and especially skinks) and is known to have extremely high UV reflectance. So they might just be naturally drawn to the blue ramp out of it looking like a beacon of light to them. Some examples for this are the blue tongue skinks (Tiliqua spp.), five-lined skinks (Plestiodon fasciatus), juvenile Gilbert’s skinks (Plestiodon gilbertii; which can have blue or red tails depending on the population), and several species of Sceloporus. Also of note, I would think that delicate skinks, with their super iridescent skin, are also highly UV reflectant. So there might be something to say about them “recognizing” the blue glow more than garden skinks do. Of course, I’d say don’t change anything you said or make this more complicated until a reviewer bitches about it.

It could be, but in that case I would expect the blue ramps to have higher reflectance in the UV spectrum, but Figure 4 in Suppl. Mat. shows no differences between red and blue.

Minor Comments

Ln 31-33: I think you should specify here that these manipulations are being done during the developmental stage. You say it in the next sentence, but some redundancy would be good.

Ln 39: Should you use “performance” here? Or something like “capacity for learning”? It depends on which type of result you’re reporting, and “performance” to me suggests that you’re comparing how well individuals performed a task at a specific point in time rather than their ability to improve their performance (learn) throughout multiple trials.

Ln 44: I’ll keep editorial changes to a minimum, but please say “Cognition is X” rather than “Cognition is defined as X”. I get too many flashbacks to bad speeches where people start with “Webster’s Dictionary defines X as…”

Ln 51: What does “adequate their behaviour” mean? Is it supposed to be “adapt their behaviour”?

Ln 66: I think it’s more appropriate to say “stressors” rather than “allostasis” here.

Ln 99-104: See comment on Ln 39 about “performance”.

Ln 114-117: Recommend citing Joss and Minard (1985) for reproductive strategies of Lampropholis.

Ln 151-153: It’s unclear from your description that the lizards themselves were housed individually in the arenas.

Ln 165: Hot treatment is 28 ± 3°C

Ln 168: Was the CORT dissolved in 70% Ethanol and 30% DMSO? I thought it was just 100% Ethanol.

Fig 1: Recommend moving just after Ln 207

Ln 209: Should be 11am-12pm, right? Military time, Pablito!

Ln 213: Editorial error I can’t ignore, sorry - “…one hour of recording and scored those trials…”

Ln 214: Recommend adding “of the 35 total trials” after “15 trials”, for redundancy’s sake.

Ln 221: Quarto is the interface, not the coding language. The actual analyses would have been performed using R itself. At least, that’s how I understand it.

Results: A lot of formatting issues from exporting from Quarto here.

Fig 2 and Fig 3: Not the biggest deal, but it did confuse me a little bit with the colors of the different treatments being red and blue and you also having comparisons for red and blue feeders. I figured it out quickly enough that it’s probably not a problem, but thought I’d let you know.

Ln 378-383: This seems to imply that temperature could induce sex-reversal in Lampropholis, too. I don’t think that’s what you’re trying to say, though, so I wanted to point it out.