Andrew Zito

Paul Naamon

Death

7 October 2014

Aging and Intelligence

Klarsfeld and Revah do not, in fact, claim that the most intelligent species live the longest. They state this initially in order to examine the validity of such a hypothesis, but eventually reject it: "However, the general significance of this fact [the positive correlation between brain size and longevity] is doubtful. In fact, in mammals as a whole, the relative size of the spleen or the liver is just as well, if not better, correlated to longevity!" (56) First I will discuss the reasoning in favor of the hypothesis in question. Because Klarsfeld and Revah present little besides the above quotation in terms of reasoning for rejection of the hypothesis, I will attempt to evaluate the argument and elaborate upon some of its flaws.

Why do Klarsfeld and Revah initially consider the possibility of brain mass and intelligence contributing to longevity? Their reasoning lies within their discussion of allometric equations. These equations attempt to relate longevity to physiological characteristics such as body mass. (54) Specifically, Klarsfeld and Revah examine an equation that relates longevity to brain mass, body mass, oxygen consumption rate, and body temperature. The statistical data, they say, shows that brain mass actually has more of an effect on longevity than does body mass. (56) Thus the question arises – do more intelligent species live the longest?

It seems likely, they decide, that rather than decreasing the rate of aging, brain size reduces the initial or basal mortality rate. (56) For example, being smarter may give an organism advantages like the ability to better fight off or avoid predators, or the ability to better locate and

store food. In general, "increased cognitive and motor capacities… would seem to enable a species to better control any given environment." (56) This means that environmental factors (such as predators and food shortage) are less likely to kill intelligent species. However, as Klarsfeld and Revah note, this is not the same as intelligence reducing the effects of aging.

I will take them at their word that an equation which takes into account brain mass can more accurately predict the lifespans of mammals than one which does not (a claim which would require much research to validate independently). However, the matter becomes somewhat more complex if we examine the claim (which it is important to remember that the authors do not seem to *actually* be making) that intelligence increases longevity. First and foremost we must remember that defining intelligence is not easy. It becomes simpler when considering non-human animals, who lack much of the complexity of humans; yet still this is no easy matter. Are dogs smarter than cats just because they are more trainable? If so, why do they (on average) have shorter lifespans? In order to support the hypothesis that more intelligent animals live longer, we would have to assume that cats are more intelligent than dogs. While this is in itself not an unreasonable claim to make, it must be supported by an external theory of intelligence which stands on its own merits, rather than motivated by a desire to support the original hypothesis. This is just one example of the kind of arbitrary assumptions of intelligence that we would have to make in order to support that claim that more intelligent species live longer.

It is also important to remember that all of these correlations (brain mass to longevity, intelligence to longevity, brain mass to intelligence) are only even remotely plausible when we consider only mammals. Even granting that these correlation hold for mammals alone, the other classes of animals provide a plethora of counterexamples. For example, consider the lobster – it is itself hardly much larger than a human brain, yet it is considered potentially immortal.

Moreover, it is hard to make any sort of reasonable argument for the intelligence of lobsters. There are other animals who are either small brained and/or unintelligent yet long-lived. For example: snapping turtles (57 years), box turtles (123 years), tree frogs (14 years, longer than a capybara, a platypus, a rabbit, and other larger animals) – the list goes on. (Life Spans)

The correlation between brain mass and intelligence is less clearly disproved, in part due to the aforementioned difficulty in defining intelligence. However, animals with small brains are often considered more intelligent than some larger-brained animals. For example, humans – our brains are on average several thousand grams lighter than elephant brains. (Rousseeuw) While elephants are considered some of the most intelligent non-human animals, it seems unlikely that they are several thousand times more intelligent than we are.

Overall, Klarsfeld and Revah are correct in their skepticism concerning the correlation of brain mass and longevity. As they point out, even among mammals this correlation is of doubtful significance. However, they fail to take into account the important distinction between intelligence and brain mass that would lend depth and clarity to their discussion.

Works Cited

All numbered parenthetical citations are to Klarsfeld and Revah

Klarsfeld, André, and Frédéric Revah. *The Biology of Death: Origins of Mortality*. Ithaca: Comstock Pub. Associtates, 2004. Print.

"Life Spans." *Dr. Bob's All Creatures Pet Health Site*. All Creatures Veterinary Hospital in Vallejo, California, 22 June 2012. Web. 07 Oct. 2014.

Rousseeuw, P.J. & Leroy, A.M. (1987) Robust Regression and Outlier Detection. Wiley, p. 57.