

The authors provide interesting discussion on interplay between the availability of social resources, or social capital, and aging of an animal. They argue that social capital could be one of the key factors explaining the fitness and the life trajectory of individuals, and even decide inter-specific variation in longevity.

I have a series of questions and comments I feel that the authors should address prior to the publication. Overall, the discussion seems clear to me, but still, I have some difficulty in understanding it (probably because I am not that familiar with the topic of aging).

The key role of social relationships in ageing

L27-36: I thought that you should also mention that social capital could have a negative impact on animals' fitness sometime, as it is one of the main topics in "Future perspective" section (please also see my comments on it).

Social capital changes with chronological age

L55-56: It may be better to include a summary of the following three examples, like "...with chronological age, where older individuals play an important role for mediating social resources (or social capitals) to group members,"

Biological age changes with social capital

Longevity is not necessarily related to senescence, because it is also possible that socially isolated individuals have the higher mortality simply because of the larger predation risks or lower feeding efficiency, not because of the accelerated aging. How have these confounding effects been considered in the previous studies (for example study in L89)?

Future perspectives

L106-108: I don't understand why the fact that social capital reverses the biological age connects to the discussion that social capital is modifiable. I thought it was a matter of course that social capital is flexible, because social relationships is usually dynamic and fluid at some extent. Would you please give an explanation

L110: "biological age" instead of "age"?

L142–165: Although (2) is more focused on genetics, I felt (1) and (2) are basically discussing

on the same topic, i.e., the evolutionary relationships between sociality and longevity. Please consider combining these two into one section, otherwise please try to avoid redundancy.

L166 - 194: (3) should be mentioned prior to (1) and (2) (or even in the “The key role of social relationships in ageing” section), because the knowledge and definition on the social capital is quite fundamental, while the discussion on evolution and genetics is rather practical. For example, you cannot conduct inter-specific comparison on the relationships between longevity and social capital, if you don’t have enough information on the social capital itself, no?

L176-178: “positive to negative social capital”: change to “positive to negative consequences”.

Box1

L223-224: Does “pervasive effect” mean positive impact? Sorry, I am not familiar with this term.

L224-225: I don’t really understand what “inflammation” refers to, and how it relates to the social capital. Please add explanations.

L231: Perhaps “feedback” instead of “retroaction”

L232-236: I am not sure the examples shown in the first two sentences could be used as an evidence of social capital-fitness autoregulation. “Autoregulation” implies that the fitness (or maybe stress level in this context) maintains a stable state through controlling the level of social capital, but I felt that these examples do not say that. Would you please give more detailed explanation?