



11th October 2022

Dear PNAS Editors,

We are writing regarding the PNAS article by Margaret S. Livingstone entitled “Triggers for Mother Love”, published in PNAS on the 19th of September 2022. We were extremely disappointed and saddened that such an article could be published this year, particularly as this was chosen by PNAS as an Inaugural Article for a member elected to the NAS, a prestigious position of influence, and an opportunity for PNAS to laud the best of our science.

After decades of philosophical discussion (Singer, 1975; Andrews, 2020) and rigorous scientific research (e.g., Singh, 2012), we believe that our scientific community – including the journals supporting our work – should know better than to publish a study that upholds such unethical practices.

As a group of scientists, including primatologists with more than 100 years of cumulative research experience with both wild and captive primates, we believe the time for this unethical treatment of nonhuman animals for research is over. High impact journals, like PNAS, have a responsibility not only to the researchers who publish with them, but also to the nonhuman animal subjects who we rely on for our studies. Indeed, Livingstone noted in this article that “it is clear when monkeys are distressed: They vocalize, pace, and act aggressive”. We have decades of research on the importance of the mother-infant bond (Hrdy, 1999), including work highlighting its particular importance in primates (Broad et al., 2006). There is an entire field of primate thanatology that explores the psychological significance of the impact of death (Anderson et al., 2018). Wild observations have shown us that primates mourn their dead social partners (Gonçalves and Carvalho, 2019), and that mothers form long-lasting attachments to their offspring, even after their death; sometimes even carrying inanimate objects, apparently in place of a dead infant (Soldati et al., 2022).

Clearly, we have evidence of the importance of maternal bonding for mothers and offspring. Experiments like this one do not add any meaningful contribution to our knowledge of primate or human behaviour. This study is obviously outdated. The most recent article cited by the authors is 10 years old and more than half of the cited literature is over 50 years old. Many of these same studies, uncritically presented by Livingstone, have been condemned by philosophers for decades due to their unethical treatment of animals and lack of contribution to scientific knowledge (Singer, 1975).

We understand that this study exploited the permanent separation of mothers and infants undertaken for a separate study. We feel strongly that there is no lesser obligation to consider the ethical impact of our work when it is derived from pre-existing data or opportunities. We were disturbed to discover that in 2022 a University ethics committee approved any experiments that required isolation of pregnant mothers and maternal separation so soon after birth. We understand that rules and regulations vary substantially between institutions and countries. But we ask that you, as a journal, do better. Human

experiments universally require consent from subjects. We cannot ask monkeys for consent, but we can stop using, publishing, and in this case actively promoting cruel methods that knowingly cause extreme distress. "Doing science to promote welfare becomes a moral obligation. It is what we owe the animals who live with us, given our autonomy violations in the past" (Andrews, 2020).

We ask that PNAS retract Professor Livingstone's article "Triggers for Mother Love" due to the unethical practices and research standards it promotes and its failure to advance scientific knowledge.

Sincerely,



Catherine Hobaiter Ph.D.
Reader in Origins of Mind
University of St Andrews
clh42@st-andrews.ac.uk



Gal Badihi
MSc in Psychology and Neuroscience
University of St Andrews

on behalf of the Wild Minds Lab and the undersigned

References

- Anderson, J.R., Biro, D., & Pettitt, P. (2018) Evolutionary thanatology. *Philosophical Transactions of the Royal Society, B*. 373: 20170262
- Andrews, K. (2020). Ethical Implications of Animal Personhood and the Role for Science. *Etica & Politica/Ethics & Politics*.
- Broad, K.D., Curley, J.P., & Keverne, E.B. (2006). Mother-infant bonding and the evolution of mammalian social relationships. *Philosophical Transactions of the Royal Society, B*. 361: 2199-2214.
- Gonçalves, A., & Carvalho, S. (2019). Death among primates: a critical review of non-human primate interactions towards their dead and dying. *Biological Reviews*, 94(4), 1502-1529.
- Hrdy, S. (1999). *Mother nature: a history of mothers, infants, and natural selection*. NY Pantheon Books.
- Singer, P. (1975). *Animal liberation. Towards an end to man's inhumanity to animals*. Granada Publishing Ltd.
- Singh, J. (2012). The national centre for the replacement, refinement, and reduction of animals in research. *Journal of Pharmacology and Pharmacotherapeutics*, 3(1), 87-89.
- Soldati, A., Fedurek, P., Crockford, C., Adué, S., Akankwasa, J. W., Asimwe, C., ... & Hobaiter, C. (2022). Dead-infant carrying by chimpanzee mothers in the Budongo Forest. *Primates*, 63(5), 497-508.