



David Jansen &lt;david.awam.jansen@gmail.com&gt;

## A decision has been made on PONE-D-13-17133R1

PLOS ONE &lt;plosone@plos.org&gt;

Thu, Aug 22, 2013 at 4:03 PM

To: "David A.W.A.M. Jansen" &lt;david.awam.jansen@gmail.com&gt;

Ref.: Ms. No. PONE-D-13-17133R1

Meat in a carnivore's diet allows a group of captive meerkats to discriminate between the faeces of predators and non-predators  
PLOS ONE

Dear Mr. Jansen,

Thank you for your review of this manuscript. The Editor has made a decision on this paper and has asked the Author to revise the submission. You may be asked to review the revision of this paper in the future.

A copy of the decision letter can be found below.

You can also access your review comments and the decision letter by logging onto the Editorial Manager as a Reviewer.

To: \*\*\*\*\*

From: "PLOS ONE" [plosone@plos.org](mailto:plosone@plos.org)

Subject: PLOS ONE Decision: Revise [PONE-D-13-17133R1]

PONE-D-13-17133R1

Meat in a carnivore's diet allows a group of captive meerkats to discriminate between the faeces of predators and non-predators  
PLOS ONE

Dear \*\*\*\*\* ,

Thank you for submitting your manuscript to PLOS ONE. After careful consideration, we feel that it has merit, but is not suitable for publication as it currently stands. Therefore, my decision is "Major Revision."

We invite you to submit a revised version of the manuscript that addresses the points below:

Whilst I think you successfully dealt with most of the reviewers' comments, there are still some substantive issues with the paper that need resolving.

The most important issue is the statistical analysis.

1. Whilst reviewer 1 suggested non parametric statistics (Kruskall-Wallis) tests to be run on these data, you have run parametric tests. With only 6 data points in each condition it seems highly questionable as to whether these data are suitable for parametric testing. Please either report more conservative non parametric statistics (exact p-values not asymptotic ones given the small samples sizes) as initially recommended, or provide evidence that these data meet parametric assumptions (e.g. normally distributed: plots and Shapiro Wilk test of normality; no outliers)

2. If you wish to make statements about a lack of statistical power contributing to a lack of an effect, then you need to provide power analyses to support your assumption that with more trials (how many more?) you may have detected a meaningful difference (and such power calculations should be applied to all non significant results, not just those that you predicted should be significant).

In addition, please address each of the reviewer's comments on the resubmission and please pay particular attention to the following issues:

1. More care on the interpretation of your results is needed. You should not be claiming a 'clear difference' between conditions when the inferential statistics indicate there is no meaningful difference between conditions. In particular in phase 1 the inferential statistics indicate that meerkats interact with carnivore faeces more than a rubber ball: no other comparisons were statistically different and this should be accurately reflected in the discussion of these results.

2. I agree with both reviewers that a full account of the Hollen and Manser paper must be given in the introduction - this seems to be the most relevant paper to the current study so it should be fully described and careful critical evaluation of the study used to justify and provide a rationale for the current study. Why your study is different and novel compared to

previous relevant studies is vital for the reader

3. You still include unwarranted statements about the meerkats inferring the presence of predators (e.g. abstract: our results strongly suggest that these predator-naïve meerkats are might be able to infer the presence of an absent predator on the basis of a secondary cue alone). Please ensure you remove all of these from the text. Your behavioural measure of time spent investigating does not support any interpretation of the meerkats connecting this stimulus to a predator. Infact as you review in the discussion, previous studies have found the chemicals in carnivore faeces/urine to be repellent to potential prey animals, so it is hard to see how spending longer sniffing the faeces (head down, not being vigilant) is a good anti predator strategy.

We encourage you to submit your revision within forty-five days of the date of this decision.

When your files are ready, please submit your revision by logging on to <http://pone.edmgr.com/> and following the Submissions Needing Revision link. Do not submit a revised manuscript as a new submission. Before uploading, you should proofread your manuscript very closely for mistakes and grammatical errors. Should your manuscript be accepted for publication, you may not have another chance to make corrections as we do not offer pre-publication proofs.

If you would like to make changes to your financial disclosure, please include your updated statement in your cover letter.

Please also include a rebuttal letter that responds to each point brought up by the academic editor and reviewer(s). This letter should be uploaded as a Response to Reviewers file.

In addition, please provide a marked-up copy of the changes made from the previous article file as a Manuscript with Tracked Changes file. This can be done using 'track changes' in programs such as MS Word and/or highlighting any changes in the new document.

If you choose not to submit a revision, please notify us.

Yours sincerely,

Katie Elizabeth Slocombe, Ph.D  
Academic Editor  
PLOS ONE

[Note: HTML markup is below. Please do not edit.]

Reviewers' comments:

Reviewer's Responses to Questions

### Comments to the Author

1. If the authors have adequately addressed your comments raised in a previous round of review and you feel that this manuscript is now acceptable for publication, you may indicate that here to bypass this form and submit your "Accept" recommendation.

Reviewer #2: (No Response)

Reviewer #1: (No Response)

---

Please explain (optional).

Reviewer #2: The changes and additional changes made by the authors do improve the manuscript, but there are still some issues (see detailed comments below).

Reviewer #1: (No Response)

---

2. Is the manuscript technically sound, and do the data support the conclusions?

The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #2: Partly

Reviewer #1: Yes

---

Please explain (optional).

Reviewer #2: Although the overall test is significant, the post hoc test between predation and herbivores does not indicate a significant difference. Despite this the authors emphasize several times that this is a major effect. The authors should consider rewriting these sessions and place more emphasize on the phase 2 and 3 experiments.

Reviewer #1: Results far more convincing now that the analyses have been changed. There are still some parts of the discussion which need rephrasing so that the data fully support the conclusions - please see comments below.

---

3. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #2: Yes

Reviewer #1: Yes

---

Please explain (optional).

Reviewer #2: The new analysis is a improvement and a fast improvement to the previous analysis. The authors do however need to acknowledge that the revised analysis affects the results and thereby the discussion of these results (see above and detailed comments below).

What also remains a point of discussion is the validity of the rubber ball as control. Although I can understand the argument that the ball is a novel object and therefore controls for the fact that "meerkat response was a response to our experimental stimuli and not to any novel stimuli", it remains a issue that the inspection of a ball may be driven by different factors as the inspection of a feaces. The novel rubber ball may only be inspected because it is novel or unexpected, feaces potentially is rather inspected to establish the presents of predators. It that sense the rubber ball can be used as a control for the argument against the fact that meerkats inspect any new object, but for statistical comparison it may not be the appropriate control.

Reviewer #1: Results far more convincing now that the analyses have been changed.

---

4. Does the manuscript adhere to standards in this field for data availability?

Authors must follow field-specific standards for data deposition in publicly available resources and should include accession numbers in the manuscript when relevant. The manuscript should explain what steps have been taken to make data available, particularly in cases where the data cannot be publicly deposited.

Reviewer #2: No

Reviewer #1: No

---

Please explain (optional).

Reviewer #2: (No Response)

Reviewer #1: The manuscript should explain the steps taken to make the data available.

5. Is the manuscript presented in an intelligible fashion and written in standard English?

*PLOS ONE* does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors below.

Reviewer #2: Yes

Reviewer #1: No

6. Additional Comments to the Author (optional)

Please offer any additional comments here, including concerns about [dual publication](#) or [research or publication ethics](#).

Reviewer #2: L22 consider removing for (in front of longer).

L61-65 "Tests demonstrating positive responses to stimuli representing predators are largely restricted to herbivorous prey species (see [19] for a review); those results, however, could also be explained by prey being risk averse to 'different' (carnivore) rather than 'similar' (herbivore). In our experiment, here, we conducted trials on meerkats (*Suricata suricatta*), a social carnivore who itself is preyed upon."

Although meerkats are classified as carnivores they are more insectivores and with the diet of meerkats in the present study (L94-96) one could still argue that discrimination by meerkats is based on familiarity versus different.

67-73 As indicated in the 1st review the authors are critical towards the work done by Hollen and Manser, but , but fail to provide details of the potential concessions and constraints. The response of the authors to this point does not take the problem away. I did not read the current paper as an attack on the work by Hollen and Manser, but it is currently unclear what the "number of concessions in their experimental design that make their conclusion tentative" are. I think it would be helpful to the reader if the "critique" was a bit more elaborated. That way the reader can also better conclude if the present study avoids these concessions.

L102-109 I think this paragraph is more suitable for the discussion than for the methods part.

L106 "This meant that although our procedure sacrificed testing multiple groups it allowed us to have high confidence that our predictor variable was responsible for observed differences in behaviour."

I don't think this is necessarily true and the use of only 1 group makes it hard to generalize the results. If the same results were shown using multiple groups, one could argue that despite variables that differ between group the predation prediction variable was responsible for the observed difference in behavior. The authors acknowledge this in L108-109, but then one can question if results that cannot be generalizing to at least the species level are suitable for publication in a general journal as PLoS ONE.

L111-120 Authors may consider moving part of this paragraph to the discussion.

L145-147 Provide details of the brand.

L179-182 One of the main messages of this paper is that meerkats can discriminate between predator and herbivore faeces, but this difference is not significant. The significant effect could very well be driven by the wrong choice of control. Although the authors attempt to justify the choice for the rubber ball I am not convinced this is the appropriate control.

L209-210 Based on the phase 1 experiment the results of the present study (no sig. difference between predator and herbivore) do not confirm the finding of Hollen and Manser. The results of the 2nd phase potentially do, although strictly speaking this is caused by differences in the diet of the predator. Do add to the strength of the findings authors should consider to add some test similar to the ones done on results of phase 3 (L199-203) for the phase 2 results.

L230-231 "The meerkats did, however, show a clear distinction between the carnivore and the herbivore faeces" But again the difference between predator and herbivore faeces in phase 1 is not significant. One can always argue that it may be due to small sample sizes (L232), but then every non significant result with a trend could be argued to confirm ideas. If sample size is the likely restricting factors authors should have increased sample size or control for possible cause of the additional variation.

Reviewer #1: Although much improved, there are still parts of the manuscript with wordy and confusing sentences, plus some additional concerns. Please see comments below for more details.

17-19: sentence confusing.

165: change "a social carnivore who itself is" to "social carnivores which are also".

67-78: You need to make it clear how your study differs from that of Hollen and Manser. Though I appreciate you do not wish to seem critical, you need to make your paper self-explanatory without readers having to read another paper to understand it. Identifying limitations of other studies is part of how research moves forwards, and Hollen and Manser are more likely appreciate specific examples of how their study is limited than vague statements about "a number of concessions" and "several compromises". Likewise, lines 77-78: "while applying a procedure that held constant the variables and attempted to address some of the other issues highlighted" are very vague: what variables and issues are you referring to? This needs to be addressed so readers can understand precisely how your study differs from that of Hollen and Manser.

72-73: This criticism can also be applied to your data as herbivore faeces were presented first.

77: what earlier study?

81-82: I don't think you've done this - you have investigated whether discrimination could be based on some property of fresh faeces which differs between herbivores and carnivores, not how meercats discriminate between faeces.

83-84: change to "real-world meaningful problems"

104: change to "unknown to or untested by researchers"

106: change "testing multiple groups" to "generalisability"

134-153: Make the number of times each sample is presented more explicit - it seems to always be 3 times but this is not clear. Do the "n"s refer to the number of individuals that samples came from, rather than the number of samples?

151-153: State if these are the same dogs as in phase 2

200: give F value

219-222: Make it clearer what the primary differences between fresh and old faeces are (presumably smell?)

229-230: clunky sentence.

237-239: clunky sentence

242: "single" - is the cat unmarried? "a cat" is sufficient. "some evidence of gross defensive behaviour changes" - some and gross seem to contradict one another - rephrase.

248-250: I am confused by the use of "very rapidly learned" - how is learning possible in the context of your experiment if the meerkats are not exposed to the actual predator - what are they learning? You state "all the behavioural responses to the introduction of alien objects": you only present inspection time, so you cannot claim to show all behavioural responses. "behaved in ways consistent with showing an adaptive response" must be supported with a statement about how the wild meerkats also showed increased inspection of predator faeces, and some information about why this is adaptive.

263-265: I'm unsure about this - why would greater inspection time correlate with a greater perceived level of danger? Surely rapid identification of danger and fleeing is more appropriate?

272-273: I can't find your predictions in the intro / methods - you need to make these more explicit.

282-285: add at end of sentence "as there own faeces should be more similar to predator faeces".

289: change "it" to "this".

300: change "ms" to "manuscript"

Figure titles: surprising that 95% CI exclude 2 of 6 observations for a number of conditions. Are you sure these are not the

standard deviations, as presented in the results section?

---

7. If you would like your identity to be revealed to the authors, please include your name here (optional).

Your name and review will not be published with the manuscript.

Reviewer #2: (No Response)

Reviewer #1: (No Response)

[NOTE: If reviewer comments were submitted as an attachment file, they will be attached to this email and accessible via the submission site. Please log into your account, locate the manuscript record, and check for the action link "View Attachments". If this link does not appear, there are no attachment files to be viewed.]

Kind regards,

Louise Franklin  
Staff EO  
PLOS ONE