Author's response to reviews

Title: Expectations for methodology and translation of animal research: a survey of health care workers

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Author's response to reviews: see over
Dear Editor,

Thank you for the opportunity to revise our manuscript. We address each reviewer comment below, with our response in italic font, and changes to the manuscript in bold italic font. We believe the comments have given us the opportunity to significantly improve our manuscript.

Reviewer 1:

No major compulsory or minor essential revisions warranted. A discretionary revision suggestion which I suspect the authors have previously considered but decided against is to make explicit the implication of their research, which is merely implied in table 4 and hinted at in the discussion section. Namely, the "conditional" acceptance of AR by majorities of HCW which this study documents is a consequence of HCW ignorance about the methods quality, translational relevance to humans, and predictive value for humans of AR. The disconnect between HCW expectations about the quality of AR and its relevance to human health versus the reality reflected in the published empirical evidence is near-total. The logical conclusion is that if HCW were aware that their "conditional" support for AR was based on mistaken assumptions about its quality and human relevance they would rethink their endorsement of AR, and withdraw it. The authors, perhaps wisely, seem hesitant to to appear to insult their intended audience by baldly stating that if HCW were better informed about the realities of AR they would withdraw their "conditional" support for it.

Thank you for these comments. As the reviewer suggests, we are hesitant to be too critical of our respondents, and to make strong inferences based on our survey (given the limitations we mention in the discussion). Nevertheless, we do agree that the disconnect between the expectations and the reality is striking, and hypothesize that if HCW were better informed they would withdraw their conditional support. We have added a sentence to this effect to the conclusions section of the manuscript, as follows: “We found HCW respondents had high expectations for the methodological quality of AR, and the translation of findings from AR to human responses to drugs and disease. These expectations are far higher than the empirical data show having been achieved. This disconnect between HCW expectations of AR and the empirical reality of AR suggests that if HCW were better informed they would likely withdraw their conditional support of AR.”

Reviewer 2:

Minor essential revisions

1. Line 83 -- I think it’s more important to understand what the public perception is related to animal research.

We agree with the reviewer. We have modified this sentence as follows: “Since most AR is funded by public money through government and charitable granting agencies, it is important to know the public perception of, and the level of public support for AR.”

2. Line 88 -- I think that there are some studies (granted not many, that have looked at conditional acceptance of AR -- please see Ormandy et al Anthrozoos 26: 165-154; http://www.landfood.ubc.ca/person/elisabeth-ormandy/. Also the work of Phil Macnaghten, P. 2004.
Thank you for these references. We were not aware of these studies in the sociology literature, and they indeed are relevant to our survey results. We summarize what the references are adding to the literature, and then add a brief paragraph in our discussion to emphasize their findings.


The authors discuss that for invasive AR, their qualitative analysis from their survey [of four facebook groups: animal advocacy group, anti-vivsection group, pro-research group, and an environmental advocacy group] suggests that there is conditional acceptance based on a cost-benefit utilitarian analysis, assuming that the AR was not too cruel, invasive, painful; the study had scientific merit; and that there were not alternatives. This seemed to come down to acceptance if the AR was regulated, with respondents assuming that the regulation would ensure the study scientific merit, that there are no alternatives, that there will be much human benefit, and that there could be trust that animal welfare standards were being met.


The qualitative interviews of public groups suggested conditional acceptance of AR based on the need for cures to life-threatening diseases, and there being no alternatives. This was assumed to be the case because there was a ‘latent sense’ and ‘vague impression’ that there “must be some sort of regulations” that make the research socially responsible.

Interestingly, both this study and Ormandy’s study show that when it comes to genetically modified animals in research, public support was much lower, and based on a more deontological approach- that it is ‘wrong’ to ‘violate nature’.

Pru Hobson-West. This investigator did 50 qualitative interviews with researchers, regulators, and animal protection workers. We searched this author and could find the following series of publications:


This suggested that the 3Rs approach used in regulation of AR is symbolic of a ‘middle ground’, being a kind of ‘political animal’ that might ‘bring different sides together’ and ‘forge consensus’.


In this paper, that AR using animal models is a ‘key route’ to scientific knowledge for humans, and ‘crucial’ for medical progress, was accepted without question or references.

In interviews with 18 scientists, the discursive strategy the scientists used was found to be to stress the “unmet medical need and significant human suffering” from disease, and the “promissory discourse to
justify controversial methods.” In addition, the scientists employed ‘switching’ or ‘deflecting’ responsibility in claiming that ‘society’ gives the needed support for AR, and that regulations are “a source of protection from critique, either from the ‘general public’ or animal activists.” Indeed, regulation is a ‘legitimating framework’, allowing scientists to uphold animal welfare. The legitimacy of AR thus involves “apparent deferral of individual decisions or responsibility to an abstract entity such as ‘society’ or ‘regulation’.”

The rest of the article talks about ethics, showing that the scientists believe that “the rights of humans come above animals” because of Christian religious beliefs, human relationships, or higher human abilities/capacities.


This is a review of the book “The Sacrifice”. Interestingly, a main point made is that scientists make “the assumption that ignorance is the main source of opposition and that better understanding of ‘the facts’ will lead to greater public support for science and technology.”


This paper discusses that public opinion is claimed as useful by both sides of the AR debate. The reason it is used is to convey rationality, moral legitimacy, and democratic legitimacy. There is a ‘battle for legitimacy.’ Thus, we “must try to determine whose arguments to trust, including whose account of ‘the public’ to believe.”


The paper discusses that laboratory animals function as “the ultimate ‘other’”, left out of the moral universe; children are taught to see some animals in this way, and biology students have to learn to see some animals in this way. It also points out that “lab animals have come to represent scientific endeavor and medical progress... icons of the laboratory in western culture.”

We believe we can synthesize some of these points into an added paragraph [new third paragraph in the discussion] to the manuscript.

“Some qualitative research also suggests there is conditional public acceptance of AR based on a utilitarian analysis of costs (to animals) and benefits (to humans).[56,57] This conditional acceptance is usually based on the assumption that regulation has assured AR is to high animal welfare standards, of high scientific validity and merit (i.e., high quality research, leading to human benefit and cures), and that there are not alternative research methods.[56-58] Scientists understand this role of regulation as leading to societal acceptance of AR, and see regulation as legitimating AR practice.[58-60] However, our survey suggests that this trust in regulation may be misplaced, because regulation does not result in AR that meets HCW expectations for animal welfare, methodological quality, human benefit, or rates of translation to human medicine and cures (Table 4). Moreover, these studies showed that the public is far less accepting of the use of genetically modified animals in research, based on a deontological approach where this AR is seen as ‘wrong’. [56, 57] We did not ask
about the common use of genetically modified animals in AR, and therefore may have underestimated HCW expectations of AR.”


3. I found the writing to be a bit tedious. I wondered whether the results could be presented in a table that compared the difference between the pediatricians and the nurses, as reading the results it was very repetitive.

We present the results of both pediatricians and nurses/RTs in the Tables 1, 2, and 3. In these tables, in the footnotes, we state where there were statistically significant differences between the two groups. However, we agree that this was not marked so as to be easily seen. To make this clearer, in the footnotes, we have written the questions where there was a difference, in addition to having the superscript ‘a’ for statistically significant differences.

We prefer to present the results of the pediatricians, and the nurses/RTs separately in the Results text, as presenting them together we think will make it more cumbersome. By making the differences in the tables more easily seen, we think the readers will be able to compare responses as they are reading each section of the Results text section.

4. Line 191 -- seems like a large disagreement to me – too large to be termed "only"

We agree. We have removed the word ‘only’ from that sentence.

5. Line 196 -- demographics in a table please

We have moved the demographics of both pediatricians and nurses/RTs into the new Table 1. Thus, we have removed most of the text describing the demographics.

Discretionary revisions

1. line 53 -- some argue that death is not a harm. I'm pleased to see that it is labelled early death, but this may raise questions, as in EU for example, killing animals by approved method is not included in the legislation, because death is not necessarily seen as a harm.

This is a very interesting point. However, we prefer not to expand on this point because to do the debate and controversy justice would require much space, and thus we think it beyond the scope of this paper. As the reviewer is suggesting, Peter Singer has argued that death may not be a harm if the subject has no concept of the future, and thus no future oriented desires and preferences. This is unlikely the case in mammals and birds; these animals have been found to have future oriented preferences (for example, hiding food for future consumption, planning for future needs, etc.). A review of this literature we believe is beyond the scope of our study. In addition, even if non-human animals’ future oriented
preferences may not be as complex as ‘paradigm’ humans, they are certainly as complex as those of many humans (e.g., those with severe brain damage from congenital or acquired causes); thus, death is as much a harm to the non-human animals as to these humans. This argument from species overlap (also, unfortunately, called the argument from marginal cases) would also require much space to adequately discuss. Finally, even if death was not a harm, and we accepted this for the humans with similar mental capacity for future preferences and goals, the other harms would remain; we mentioned early death as only one of the potential harms of AR.

2. Line 76 “only up to 8%” it would be better to say “less than 8%”

We have changed the wording to “only up to ≤8%”

3. line 112 how many pilot studies?

We have clarified this by removing the word “including”; all the pilot tests are listed in the sentence. “Face and content validation were done by pilot testing of the survey, including by non-medical, university-educated lay people (n=9), pediatricians (n=2), pediatric intensive care nurses (n=2), and an ethics professor (n=1).”

4. line 126 Could the questions be included in an appendix?

All the questions are provided in the Tables, and thus we do not think an appendix is needed. We have clarified that there were no other questions in the text of the methods section, just before the ethics statement, as follows: “All the questions are shown in the Tables 1, 2, 3, and 4.”

5. line 141 more details of the review -- review ID

We have added this to the text as follows: “The study was approved by the health research ethics board 2 of our university (study ID Pro00039590) and return of a survey was considered consent to participate.”

6. Line 169 complicated sentence please revise

We have improved the wording of this sentence to make it less complex, as follows: “Only a minority of respondents agreed Most respondents did not agree that failed animal models of a disease should continue to be used (30% 71%), or that stressed animals should be used (37% 63%).” We have done this when the similar data are given for the Nurses/RTs, as follows: “Only a minority of respondents agreed Most respondents did not agree that failed animal models of a disease should continue to be used (27% 73%), or that stressed animals should be used (19% 81%).”

Thank you again for this opportunity to revise our manuscript and address the reviewer concerns.

Sincerely,

Ari Joffe, for the co-authors