Decision letter

Wheel running induced by intermittent food schedules

Valeria E. Gutiérrez-Ferre & Ricardo Pellón

Dear Gabriel Rodríguez,

Sorry for the long delay that took to undertake this revision, thanks for your work and that of the reviewers, Valeria and Ricardo.

EDITOR

Dear Ricardo,

Thank you for submitting your manuscript "Running induced by intermittent food" for consideration for publication in Psicológica. I have received reviews of your manuscript from two experts in the topic of your study and I have read the paper myself. All three of us think that your findings and discussion have merit and may eventually be publishable in Psicológica. I would thus like to invite you to submit a new manuscript, addressing the concerns raised by the reviewers.

Thanks so much for the opportunity. I hope that we have introduced the adequate changes in the manuscript to be now more in accordance with the reviewers’ concerns and suggestions.

The reviewers, all more knowledgeable than I am concerning the topic under consideration, provide clear and seemingly appropriate suggestions below. Hence, I will not reiterate all that they have exposed. But, please, pay special attention to two of their suggestions in your review: 1) explaining to the readers the importance and the implications of classifying wheel running as either induced or not (Reviewer 1) (for example, in the Introduction, when it is mentioned that there is a debate regarding this question), and 2) addressing the points raised by Reviewer 2 relative to the Discussion.

Done. See below in the specific responses to the reviewers.

p.8. In addition to indicate that the experimental procedures are under Spanish and European directives, please indicate what Ethics Committee, or similar, approved your protocols.

Done.

p.11. As Reviewer 2 points out, the presentation of the post-hoc comparisons is incomplete. Also, in the section “Statistical Analysis” you announce some t-tests that are
omitted later in the Results section (if you include t-tests, please also include Cohen’s ds for the effect sizes).

Done, and t-tests have been added including Cohen’s ds.

p.11. The first time that the SEMs are indicated in the text (or in the figure’s caption) it should be referred to as the Standard Errors of the Mean (SEM).

Done.

I hope you will be able to deal with all these minor issues soon. I will try to offset the delay in this review (for which I apologize) in the review of your revised manuscript.

Thank you so much, we hope to have dealt with all the issues suggested for revision, and as such much hope that the manuscript is now in better position to be accepted in Psicológica.

Regards, Gabi

Best, thanks again and apologize for the delay in producing this revision, Valeria and Ricardo.

REVIEWER 1

The manuscript describes a study that systematically explores the effects of five IFI durations on wheel running, along with the effect of mass feeding vs. intermittent food. The manuscript is well written, the experiment was well planned and executed, and the data were properly analyzed.

Thanks so much!

Nevertheless, the manuscript would benefit from a discussion of the reasons behind classifying wheel running as either induced or not; why does it matter?

We have extended the Introduction to make this discussion clearer.

Minor concerns: There are a number of typos throughout the document

The document has been extensively reviewed, polished by an expert in English, and hope that all typos are corrected.

REVIEWER 2

This study by Gutierrez-Ferre and Pellon replicate and expands the knowledge on schedule-induced wheel-running in rats. The authors assessed wheel-running as an
adjunctive behavior, using different FT schedules and massed-food control condition. The results were discussed comparing to the schedule-induced polydipsia (SIP) paradigm.

Originality or theoretical relevance of the paper

The results are interesting as expand the corpus of schedule-induced adjunctive behaviors and the relationship between schedule-induced wheel-running and schedule-induced polydipsia. However, while the data provided are compelling, there are some points to review that could improve the clarity of the results in the manuscript. In the discussion, the authors should address “in detail” the comparison of their results with those obtained by similar procedures in wheel-running (for example Riley, 1985).

We think we have done. See specifically pages 15 and 17.

The discussion instead focuses on a comparison between schedule-induced polydipsia and schedule-induced running, somewhat interesting to understand the caveat on adjunctive behaviors. If the authors reconfigure the discussion to more comprehensively explain their findings and further elaborate the criteria to be considered adjunctive behavior, these data could significantly advance in the field of schedule-induced behaviors.

We think we have followed the suggestion by making clear how the results obtained fit into the 2 criteria for considering wheel running as an induced behavior (see pages 15-16 and 16-17).

A detailed review of the specific points to be addressed:

- Abstract

Introduce a sentence as background on schedule-induced behaviors or wheel-running.

We do not think that this is necessary because it will prejudice the conclusion that wheel running is a schedule-induced behavior, which is the test purpose of the investigation carried out. Furthermore, as it stands, the Abstract appears sufficiently informative.

- Introduction

In the second paragraph, the authors mention "the meeting criteria to qualify for an induced behavior...". This is an important point to be considered, as the author assesses the schedule-induced wheel-running. The suggestion is to enhance this paragraph and the following ones: first, by enumerating and better specifying these criteria in comparison to SIP, and second, addressing the discussion of the results according to the criteria and goals proposed in the introduction section.

We hope to have achieved this by rephrasing the last sentence of the first paragraph of the Introduction. And then also by referring to those criteria more explicitly when describing White (1985) experiment in the second paragraph of the Introduction, and again when explicitly stating the objective of the experiment at the end of the Introduction.
• Methods

In the procedures section, the authors should explain why in the exposure to the first FT schedule lasted 20 sessions, while the remaining schedules were held over 15 sessions.

Done.

• Results

Related to the previous comment. According to the data presented, the mean of the last three sessions for each FT schedule, the authors should explain when the acquisition curve did not show any differences or might also be interesting to have a figure to show the total number of wheel turns per session over sessions within each of the four FT schedules.

It is not possible to compare acquisition of the four FT schedules because we used a within-subjects design in which transitions between schedules were counterbalanced across subjects. We were interested in measuring final levels of wheel running under each schedule to see if they differed between them and in comparison to the massed-food control, controlling potential individual differences.

The results of wheel turns are expressed per minutes, but other authors expressed it per seconds. To enhance clarity and compare with other publications, could be possible to transform data into wheel turns/sec?

It is more common in the literature to have measures of rate expressed in terms of minutes, not seconds. Publications on schedule-induced wheel running are not an exception, albeit that there are papers which report rate of responding per second. However, this is not a very important point here because the transformation is easy and no change in the pattern of results will be followed (which is the important message here), and in terms of quantitative comparisons with other publications it should be taken into account that the diameter of the wheel changes from equipment to equipment, thus turning the best unit of comparison the distance run, which is a rather gross measure and normally is not reported in the literature of schedule induction.

According to the data presented, it seems that the assessment of the wheel-running in FT15 might also be relevant. Did the authors consider fewer FT schedules from FT30?

Yes, we did consider including a FT 15 s condition but finally discarded and opted for running the extra FT 480 s. In view of the results this seems to be a better manipulation because it could be observed the start of the descending limb of the bitonic function relating amount of behavior per food occurrence as a function of inter-food interval length, thus reaching to a point in food frequency in which behavior was no longer excessive.

The post hoc comparison of the FT effects found in the results of wheel turns per food pellet (Figure 1B) are not described at any point.

Added, but surprisingly comparisons were not statistically significant.
• **Discussion**

The discussion might compare in detail, just not citing, the present results with other manuscripts about wheel running (for example Riley, 1985).

Done. See above.

The authors should explain the differences in the decrement of schedule-induced wheel turns FT180-360s compared to the maintained level of wheel turns in FT120-240s found in Riley, 1985.

Done. See above. The high levels of wheel turns reported in Riley et al. are likely due to the chamber where the rats lived, where the space was basically occupied by the wheel (see page 15 of the revised manuscript).

The authors should explain the increase in wheel turns/pellet in FT480s in the massed condition.

Done. See the last sentence of the first paragraph of page 16.

To enhance clarity, the authors should follow and address point by point the criteria to qualify for an induced behavior stated in the introduction section.

Done. See pages 15 to 17 and above.

According to previous publications, SIP could be considered as a model of compulsive behavior in rodents. The authors should also discuss the relevance of the present results concerning a compulsive or stereotyped habit in rodents.

We do not think we can say much about this with the current data. It is not an issue touched in the present investigation, and to speculate about this here will be to drive discussion in issues that are not intended.

• **Formal aspects**

The title should be more informative of the results obtained and to clarify also include “schedule” or “adjunctive”.

We have included the term “schedule” at the end of the title but we believe that the title is sufficiently informative to the proposal that running (now wheel running) can be induced by food delivery, which is the point we want to make from our results. Any other title we have played with results lengthy and not so striking.

For more clarity, the authors should be consistent when referring to wheel-running through the manuscript. Sometimes is referred to as running, others as wheel running, induced running…and the use of hyphens when appropriate.

Done. We have just used the term “wheel running” (without hyphen) throughout the manuscript.
Substitute “document” by a more appropriated word “assess” according to the main goals of the work developed (p.13).

Done.