Comments on Methodological and Reporting Quality in Laboratory Studies of Human Eating Behavior

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In a recent research report (Robinson et al., 2018) we examined the methodological and reporting quality of laboratory-based studies of human eating behaviour. Overall, we found that both the methodological and reporting quality of studies was sub-optimal. Based on our findings, we also made recommendations about how to address these issues including the likely need for design and reporting guidelines for laboratory studies of eating behaviour. Hetherington and Rolls (2018), Buckland and Dalton (2018), Stubbs and Finlayson (2018), Best, Barsalou and Papies (2018) and Meule (2018) expanded on our recommendations and added some of their own in response to our paper.

Across these commentaries there was consensus that laboratory (and field) studies of human eating behavior would benefit from improved methodological and reporting quality. The authors were also in general agreement that the introduction of design and reporting guidelines would be timely. However, a number of important features of studies that we did not fully address in our report were highlighted, including (but not limited to) the need to consider food liking (Buckland & Dalton, 2018), the level of experimental control (Stubbs and Finlayson, 2018), experimental context (Best et al., 2018) and the properties of test foods (Hetherington & Rolls, 2018) when designing and reporting studies. These valuable observations extend the limited number of factors we were able to investigate in our report. Moreover, the range of factors that have been identified thus far confirms that the development of design and reporting guidelines will require greater collaboration and consensus among researchers.

Statistical considerations were also discussed. Studies of eating behaviour can be both time and resource intensive, so the recommendations from Best, Barsalou and Papies (2018) for researchers to consider sequential hypothesis testing when designing studies is very relevant. Hetherington and Rolls (2018) highlight the importance of reporting findings in a meaningful way (e.g. difference in kcals). We agree with this point, with the caveat that it is also important to report findings in a way that permits others to replicate and/or compare findings to other studies (e.g. the inclusion of a measure of effect size). Hetherington and Rolls (2018) also argue that secondary ‘exploratory’ analyses are valuable and can provide new insights, even if underpowered. Whilst we agree with this consideration in principle, there will of course be instances in which exploratory analyses may yield unreliable findings that prompt investigators to focus their time and resources in pursuing a false finding. Consideration of the level of statistical power of exploratory analyses and accounting for multiple significance testing partially mitigate these concerns. Likewise, we agree with Hetherington and Rolls (2018) that it is important that exploratory analyses are labelled as such, as ensuring that a clear distinction is made between pre-specified hypothesis testing and exploratory post-hoc data analysis ensures that the evidential value of both types of approach is retained (Chambers, Feredoes, Muthukumaraswamy & Etchells, 2014).

Although there was consensus that design and reporting guidelines would improve research in the field, commenters emphasized the importance of ensuring that guidelines can be used flexibly (where appropriate) and do not prematurely stifle innovation (Hetherington and Rolls, 2018). For example, Meule (2018) noted that dependent on the research hypothesis being tested, it is not always appropriate to standardize appetite prior to a laboratory session and, for example, if a researcher is investigating whether naturally occurring fluctuations in appetite moderate the effect of an experimental manipulation, standardization of appetite would be self-defeating. We considered this issue when we categorized whether a reviewed study had reported an attempt to standardize appetite (or if it was clear why standardization had not been attempted), but our finding that only around 30% of studies provided information about standardization is a cause of concern.

Finally, commentaries also noted that methodological concerns in this field are not new. Yet, by demonstrating that suboptimal methodological and reporting practices are still very common, this suggests that it is important to raise awareness of these issues among the research community, and to think about changes that might improve the situation – such as specific reporting guidelines. We agree with Stubbs and Finlayson (2018) that considering how to make best use of existing reporting guidelines for clinical trials (e.g. CONSORT) to inform specific design and reporting guidelines for the laboratory study of human eating behaviour would be a valuable first step. We believe that a consensus-driven set of design and reporting guidelines for the study of human eating behaviour would benefit researchers who design and report such studies, as well as helping reviewers and editors who assess those studies.

References

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