Reviewer: 1

This is an interesting study and within the constraints of the method and reporting it is well developed and produced. But it feels quite narrow in terms of its wider context, though I appreciate it is an experimentally developed laboratory study. The introduction of behaviour change as a component and to build this in to the study design is laudable and in terms of the process it does produce an interesting outcome.

*We thank the reviewer for appreciating the scope and contributions of this manuscript. We recognise that the study could be better presented in terms of its wider context (for example within the literature surrounding physical activity in green spaces suggested by this reviewer; and within the context of more socio-ecological models of behaviour change as suggested by Reviewer 2). Please see our responses below which refer to these points.*

In terms of the introduction (which incorporates a very short literature review), there could be much more content on the major components referred to, namely, physical activity (PA), walking and natural environments (and by extension, associated aspects of recreation, health and wellbeing). These are only lightly referred to in passing and it would be good to see some greater depth of discussion on these, if only to contextualise the main aim, how to better persuade people to walk in natural environments. It is a relatively dis-connected exploration of greenspace and would have preferred more on the latter as a topic/literature, but again it is difficult to suggest this as a criticism, given the parameters of the study. One possible way in which this might be improved would be the inclusion of some of the visual material used in the study, if this was permissible. It’s hard for a reader to get excited about a visual experimental study, when all that are presented are text and statistical results.

*We thank the reviewer for highlighting the important omission of detail on the literature surrounding physical activity, walking, and green spaces, and their associated impacts with health and wellbeing. To address this, the introduction is now separated into sections concerning (a) the wider literature surrounding physical activity, natural environments, and health and wellbeing, and (b) physical activity behaviour change in a wider socio-ecological context (consistent with suggestions from reviewer 2), as well as within the specific context of the study. We hope that this makes for a more balanced introduction.*

*We had originally kept the leaflets used in the study for supplementary materials because of the clarity of the figures are such that the reader may have difficulty reading their content. However, in line with the reviewer’s suggestion that including this visual material would assist with the interpretation of the article, we have now included these as figures. We recognise that including these two figures effectively contributes an additional 1,000 words so we are happy to take editorial advice on the appropriateness of their inclusion.*

Methodologically the study is sound and draws from a useful panel of respondents. It wasn’t completely clear if this was a national sample and this might be clarified. Otherwise, the sampling was good and well described as were the experimental methods, while the statistical results are laid out clearly and seem to be properly interpreted and analysed (though this would not be a strength of this particular reviewer).

*We thank the reviewer for their positive appraisal of our methods and analysis. We confirm that it was a national sample from the UK and have now included this detail in the “Sample” section of the methodology: “While not a representative sample, participants were recruited from across the breadth of the United Kingdom.”*

The discussion of the limitations and the conclusions are relatively brief and might be expanded somewhat. The precise importance of the study and its wider application are quite well discussed.

*We thank the reviewer for appreciating the clarity of our discussion on implications. We recognise that the limitations discussed may be very specific to this study. Therefore, in line with the reviewer’s suggestions, we expand the limitations section to discuss the limitations of: (a) the cultural context of the study, (b) how it fits with newer (e.g. app-based) methods of tailored health communication (this is in response to comments from reviewer 2 as well), and (c) how it fits within socio-ecological frameworks of physical activity behaviours change (again this is in partial response to some of reviewer 2’s concerns).*

*In a similar way, we realise again that our conclusion section, while perhaps concise, does not generalise far beyond the context of the specific study. We have therefore added a sentence describing the usefulness of the findings as part of an ecological system of behaviour change.*

Reviewer: 2

This is a well-written paper about an experimental study of different types of brochures aimed at encouraging people to walk, taking into account their stages of change. On the positive side, the study is based on relevant health behaviour theories, and contributes to the often-mentioned but not often-applied recommendation that behaviour change interventions should be based on theory. The study is well performed and the results are correctly presented and interpreted. However, I struggle a bit with the conceptual assumptions of the paper and the way it is presented.

*We thank the reviewer for recognising the theoretical bases of the paper and asserting the accuracy of the methods and results. We hope we have sufficiently addressed the reviewer’s concerns regarding conceptual assumptions and presentation in our responses below.*

1. The paper seems to suggest that brochures are an adequate if not the only way to change behaviour, and that it suffices to improve brochures to be successful in changing behaviour (although, admittedly, in the discussion the authors acknowledge among the limitations that change maintenance is not addressed). This reflects a very limited view of health education as focusing on individual determinants of health behaviour which neglects important developments in health promotion over the past decades. The authors seem to only be aware of socio-cognitive models as a basis for health behaviour change and disregard socio-ecological interventions, the settings approach, or more recent stratgies such as nudging. And even within the social-cognitive approach the use of brochures seems a bit "old style" in times when wearables and tailored messages are abound. If anything, the authors should clearly position their intervention within the broader, contemporary approaches to promoting health, justify the choice for working with brochures, and acknowledge the limitations.

*We thank the reviewer for these insights into the paper’s relevance as part of broader and contemporary approaches to behaviour change. The reviewer is correct that the paper reads as though it is assumed that simple editing of these materials is sufficient for physical activity behaviour change. Of course we never intended this to be the case. We have therefore thoroughly edited the introduction to include a discussion of more ecological models of public health behaviour change and place-based approaches to public health more generally. We hope this places the relevance of this particular study in the appropriate context.*

*In light of the reviewer’s comments on brochures being a bit “old style” we now, in this edited introduction, situate brochures as simply a salient example of media that could be better optimised to facilitate health behaviour change, and point at the outset to the fact that the findings have application well beyond brochures, and that these are just one illustrative example. Furthermore, in the limitations, we discuss the findings in the context of tailored health communication in newer technologies and restate the importance of individual-level behaviour change as a key component of socio-ecological models of active living:*

*“We also recognise that tailored communication messages are already ubiquitous in mobile health applications, but applications like these are typically geared towards populations already motivated to change their behaviour (Bardus et al. 2016), and in any case we contend that there is still good evidence to suggest that greenspace interventions fail to make the best use of potentially persuasive physical activity behaviour change messages (Roberts et al. 2016).*

*Lastly, our findings cannot be seen in isolation from the wider socio-ecological systems that influence physical activity (Sallis and Owen 2015). If the ultimate public health goal is reducing physical inactivity, then policy-level initiatives such as improving accessibility or safety of walking settings may be most effective (Panter et al. 2019). Nonetheless, intervening without understanding behavioural complexities and motivations of individuals would ignore a key part of these complex socio-ecological systems and potentially undermine interventions (Rhodes et al. 2019), so explorations like those in the present study remain worthwhile endeavours.”*

2. The need to base interventions on theoretical models is important, but is not an original idea in itself. There should be more reference to the existing literature highlighting this need in the introduction part, and the discussion should highlight what the study adds to this literature.

*The reviewer is correct in highlighting the fact that basing interventions on established theories and the mechanisms of change these theories propose, is not a new idea. We have now added some sentences and appropriate citations in the introduction which reflect this:*

*“Basing the design of promotional materials on health behaviour change theory is not a new idea (Bandura 1977; Carver and Scheier 1982) but is imperative for transparency and understanding of how this material produces changes in behaviour (Abraham and Michie 2008).”*

*In the summary of findings in the discussion (before we explore specific recommendations for walkers and non-walkers), we briefly mention the importance of basing any brochure design on theoretical underpinnings and explain that this study adds to this literature by emphasising that designers need to be flexible to their choice of theory when designing messages for distinct target audiences:*

*“This study further justifies the need for behaviour change theory when designing recreational walking brochures, and indeed physical activity interventions more generally (Rhodes et al. 2019). However, this study also demonstrates that brochure authors (or intervention designers) need to be flexible with their approach to selecting theories (Peters and Crutzen 2017), as the kinds of persuasive messages (and underlying behaviour change techniques) that successfully strengthen intentions for one audience, may not work for a different audience.”*