Reviewer's report

Title: Do habits consistently override intentions? Pitting unhealthy snacking habits against snack-avoidance intentions

Version: 2 Date: 5 January 2015

Reviewer: Emily Kothe

Reviewer's report:

This manuscript considers the relationship between intention, habit, and behaviour in the context of unhealthy snacking. It continues a substantial body of research from members of the research team that considers the relationship between these variables.

I agree with the authors assessment that the current body of research within this domain has tended to investigate the intention X habit interaction in the context of behaviours in which intention and habit are likely to have a substantial degree of concordance (I note that this is also the case of many studies that have investigated any moderators of the intention-behaviour relationship), and so investigation of the intention to avoid unhealthy snacking, unhealthy snacking habits, and unhealthy snacking intake is an worthwhile addition to the literature.

Major essential revisions:

1. However, while I agree with the authors statement in the introduction that unhealthy eating is “a setting in which habits (for unhealthy snacking) could reasonably be expected to be incongruent with intentions (to avoid eating unhealthy snacks)” (Line 124-126), I am not confident that this expectation is well supported by the data presented. Indeed the statement in the discussion “The significant, albeit small, negative correlation between intention and habit suggests that at least some participants had both snacking habits and intentions to avoid snacking.” (Line 369 – 371) appears to recognise a major issue here (i.e. that although it is assumed that habits and intention conflict within this sample this assumption is not empirically tested). In the absence of evidence of intention-habit conflict the critique of past research made in the introduction: “Forecasts of behaviour where habit is strong and intentions are weak, and vice versa, thus lack ecological validity” could equally apply to this area of research. While this assumption is certainly more justified in this context than in some others where intention-habit interactions have previously been studied, given that a major rationale for this study was the need to investigate conflicting habits and intention, I believe that this issue warrants further consideration within this manuscript (either in the analyses or on the discussion).

2. In a number of places within the manuscript that authors appear to imply a three-way interaction between intention, habit, and self-control:

Line 344-347 “These findings undermine the hypothesis that habits will always
moderate the intention-behaviour relationship by showing that, where intention is accompanied by self-control, habitual action can be prevented."

377-381 “People with snacking habits and intentions to avoid snacking may be better able to inhibit their habitual tendencies on occasions where their intentions are particularly salient and self-regulatory capacity is strong, and less able where self-regulatory capacity is diminished (e.g. availability of attention and memory resources) or other goals are prioritised."

The authors should explicitly mention this possibility and make reference to other models that include all three variables (e.g. the Temporal Self-Regulation Theory) as well as associated empirical literature (some of which has investigated snacking behaviour) in order to provide more context to this part of the discussion.

Minor essential revisions:

1. The authors should be cautious in interpreting main effects within regression models once an interaction term has been added. The interpretation of significant direct effects within regression models that include interaction terms has been the subject of substantial concern within statistical literature. For example, in evaluating the use of interaction models, Brambor et. al. (2006) note that the interpretation of constitutive terms (in this case intention and habit) as unconditional marginal effects is a major error within the interpretation of regression models that include interaction terms. They write: “Scholars should refrain from interpreting the constitutive elements of interaction terms as unconditional or average effects—they are not... the coefficient on the constitutive term X must not be interpreted as the average effect of a change in X on Y as it can in a linear-additive regression model [emphasis in original]” (p.71).

In discussing the manner in which these effects can be interpreted Barbour et. al. note that “absent any knowledge about the distribution of condition Z, the only clear way to gauge the average effect of X on Y is to run an unconditional model in which X is not included in a multiplicative interaction term.” (Brambor, et al., 2006, p. 72). As such, researchers who require an estimate of the average effect of intention and habit on behaviour should ensure that they interpret the coefficients from the step of the regression model that does not include the interaction term (i.e. Step 2). In light of these issues I would suggest that the authors remove the in-text reporting of beta-weights for intention and habit within Step 3 (of course this data should remain in Table 2).

2. Line 316 – 317 “making estimates of behaviour where habit is strong and intention lack validity (Gardner, 2014).” – missing word?

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare that I have no competing interests’