

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Evaluating factors influencing the delivery and outcomes of an incentive-based behaviour change strategy targeting child obesity: Protocol for a qualitative process and impact evaluation
<b>AUTHORS</b>	Enright, Gemma; Gyani, Alex; Raadsma, Simon; Allman-Farinelli, Margaret; Rissel, Chris; Innes-Hughes, Christine; Lukeis, Sarah; Rodgers, Anthony; Redfern, Julie

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Heewon Lee Gray Teachers College Columbia University
<b>REVIEW RETURNED</b>	31-May-2016

<b>GENERAL COMMENTS</b>	<p>The manuscript describes process evaluation that will be or already conducted (which is not clear from the paper) and a RCT's impact evaluation with qualitative research methods. Process evaluation, especially using qualitative research methods such as focus group and interviews as described in this manuscript, provides valuable information and rich contextual knowledge on intervention study. More studies are needed examining how intervention programs are implemented as designed, and it is highly recommended to use more systematic process evaluation frameworks in process evaluation research. However, this manuscript needs to be much more clearly organized and to describe aims clearly. Overall, the structure of the manuscript needs a major revision before any further review process is considered.</p> <p>Some detailed comments are described below.</p> <p>The rationale of the study is well-written, and qualitative data provide in-depth information about context and intervention implementation. However, currently, the aims are not clear on whether this study is about planning a process evaluation and how it is related to impact evaluation, or about something already happened. In addition, the title is a bit confusing and does not reflect the aim of the study well.</p> <p>Page 2, line 16-17: please consider re-wording "evaluation is to evaluate" such as "to determine". Line 23-24: please clarify "mixed methods qualitative analysis", either "mixed methods" which include both qualitative and quantitative, or use "qualitative analysis" by itself if that is what the authors intended.</p> <p>Page 3, line 14-15: again, "mixed methods qualitative design" does not make sense. Please use either "mixed methods design" or "qualitative design".</p>
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	<p>Page 4, line 18-19: please consider re-word “preventive measures”. Not sure what the authors meant to say.</p> <p>Page 6, line 38-57: the aim and specific aims are unclear, again, and the title does not match with what the study entails. Suggest revising the aims.</p> <p>Page 7, line 16-17: Setting – please use past tense for all sentences that describe something already happened. “was” instead of “will be”. The timeline of the study in this manuscript is very unclear and confusing. If this is all about planning the process evaluation and making a protocol, please explicitly indicate that in the aims.</p> <p>A major revision and re-submission is recommended for further review.</p> <p>Thank you for the opportunity to review this manuscript.</p>
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<b>REVIEWER</b>	Paula Watson Senior Lecturer in Exercise and Health Psychology, Liverpool John Moores University, England
<b>REVIEW RETURNED</b>	07-Jun-2016

<b>GENERAL COMMENTS</b>	<p><b>GENERAL COMMENTS</b></p> <p>This article describes the process evaluation of an RCT comparing childhood obesity treatment with and without an additional goal setting/reward element. The process evaluation adds value to the study and will provide insights to help with the interpretation of the RCT results. There are some strengths to the study, such as collecting data from multiple stakeholders and attempting to sample a broad range of families from the intervention.</p> <p>However as a protocol paper the article lacks important detail in a number of areas. It is not clear how the planned data collection and analysis will address the research aims. Therefore further detail is needed about the research methods and the link between the research aims, planned data collection and analysis needs to be made clearer (see comments below). You might wish also to check terminology with regards to “process evaluation” and “impact evaluation”.</p> <p>Further rationale is needed for the intervention. The theoretical underpinning for the use of incentives needs to be made clear and the literature review needs to make reference to the potential negative effects of offering incentives (considering complexities of incentive type, methods of administration and the way they are received by the participant).</p> <p><b>SPECIFIC COMMENTS</b> (line numbers refer to those provided on the authors’ manuscript)</p> <p>Page / line</p> <p><b>STRENGTHS AND LIMITATIONS</b></p> <p>3 / line 6 “Multi-method” would be a more appropriate term for multiple qualitative methods. “Mixed-method” tends to refer to the combined use of quantitative and qualitative approaches.</p>
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	<p>3 / lines 8-9 Why do we need new theories? There is extensive research to guide practitioners on goal-setting and the (in)appropriate use of rewards in behaviour change (e.g. see the Self-Determination Theory literature). Instead of focussing on generating new theory, I would highlight the potential for qualitative research to add to our understanding of existing theory.</p> <p><b>INTRODUCTION</b></p> <p>4 / line 14 References here are dated. The authors might wish to incorporate some of the following papers for more recent discussion of the translation of evidence to practice in child weight management:</p> <p>Epstein LH, Wrotniak BH. Future directions for pediatric obesity treatment. <i>Obesity</i> 2010;18(Supplement 1):S8 - S12.</p> <p>Klesges LM, Williams NA, Davis KS, et al. External validity reporting in behavioral treatment of childhood obesity. <i>Am J Prev Med</i> 2012;42(2):185-92.</p> <p>Watson PM, Dugdill L, Murphy R, et al. Moving forward in childhood obesity treatment: A call for translational research. <i>Health Educ J</i> 2013;72(2):230-9.</p> <p>Watson, P. M., Dugdill, L., Pickering, K., Owen, S., Hargreaves, J., Staniford, L., Murphy, R., Knowles, Z. &amp; Cable, T. (2015). Service evaluation of the GOALS family-based childhood obesity treatment intervention during the first three years of implementation. <i>BMJ Open</i>, 5, e006519 DOI: 10.1136/bmjopen-2014-006519.</p> <p>4 / line 17-18 Please be more specific and provide references – which “psychological and behavioural theory and research” are you referring to?</p> <p>4 / line 16 -5 / line 17 This discussion makes no reference to the large body of literature that demonstrates the “undermining” effect of incentives on long-term behaviour change and autonomous motivation (see Moller et al. (2012) Financial motivation undermines maintenance in an intensive diet and activity intervention, <i>Journal of Obesity</i>, doi:10.1155/2012/740519). Further evidence/rationale is needed to clarify which types of incentives might be facilitative for behaviour change (for children) and what the psychological underpinning for this is. i.e. consideration needs to be given to how incentives are used to ensure autonomy is supported.</p> <p>5 / lines 13-17 The rationale here is not clear. If there is no systematic review, it seems it would make sense to start with a systematic review – why did your team decide to proceed straight to an intervention study?</p> <p>6 / lines 22-23 I’m not clear why you have chosen retrospective qualitative data collection to determine whether the intervention was delivered as intended? A more appropriate approach to measuring intervention fidelity would be to collect a mixture of quantitative and qualitative data during the intervention (e.g. observations, delivery logs, interviews with interventionists).</p> <p>6 / lines 24-25 What you describe here sounds like process evaluation (what factors influenced whether an intervention worked) rather than impact evaluation (whether an intervention worked). I realise there will be some impact evaluation involved (i.e. perceived outcomes for the families), but I would perhaps revisit the terminology to clarify your intentions.</p> <p><b>METHODS</b></p>
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	<p>7 / lines 8-9 Why was the process evaluation not included in the original trial protocol that was published? It seems perhaps this is a retrospective qualitative study rather than an embedded process evaluation (process evaluation should be incorporated from the start)?</p> <p>13-14 Sentence that starts “The community programme leaders” (last line of page 13) is not clear – needs rewording.</p> <p>14, table 2 It might be useful to map the behaviour change techniques onto Michie et al.’s (2013) BCT taxonomy</p> <p>15-16, table 3 Further detail is needed about your research methods. At present, it is not clear from these methods how you are going to address your three research aims. For example, it would be useful to include more detail about the topics/questions that will be addressed within the surveys/focus groups/interviews.</p> <p>Research aim 2 (and the description in the previous section named “impact evaluation”, pages 12-13) leads the reader to believe there is going to be a quantitative analysis that will extract what characteristics predict intervention outcomes. Is this not the case?</p> <p>16, line 2 What is meant by “standard methodology”? Further detail needed</p> <p>Pages 16-17 Data analysis section is very general. Further detail is needed about what analysis will be conducted to answer each of the research aims (this is not clear at the moment).</p> <p><b>DISCUSSION</b></p> <p>Page 18 Discussion is very general and a little repetitive. Could be improved by more specifically stating the aim, strengths/limitations and potential outcomes of this process evaluation.</p>
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### VERSION 1 – AUTHOR RESPONSE

#### REVIEWER 1:

1. Aims are not clear on whether this study is about planning a process evaluation and how it is related to impact evaluation, or about something already happened.

Response: This paper is a plan for a process and impact investigation that will commence after the six-month follow assessments in an existing trial. We have clarified the aims (page 8, line 4-20) and stating the time frames more explicitly (table 1, page 11-12).

2. Title is a bit confusing and does not reflect the aim of the study well.

Response: We have updated the title to better reflect our aims

From: “Barriers and enablers to the delivery and impact of an incentive-based behaviour change strategy targeting child obesity: Protocol for a process evaluation

To: “Evaluating factors influencing the delivery and outcomes of an incentive-based behaviour change strategy targeting child obesity: Protocol for a qualitative process and impact evaluation”.

3. Page 2, line 16-17: please consider re-wording “evaluation is to evaluate” such as “to determine”.

Response: We have changed the word “evaluate” to “determine” (now page 2, line 6)

4. Line 23-24: please clarify “mixed methods qualitative analysis”, either “mixed methods” which include both qualitative and quantitative, or use “qualitative analysis” by itself if that is what the

authors intended.

Response: This research is all qualitative. We have amended the wording to “qualitative analysis” (now page 2, line 9) and throughout the document where “mixed methods had originally been referred to).

5. Page 3, line 14-15: again, “mixed methods qualitative design” does not make sense. Please use either “mixed methods design” or “qualitative design”.

Response: We have changed “mixed methods” to “qualitative design” (page 3, line 6), “qualitative analysis” (page 18, line 3), and “qualitative evaluation” (page 22, line 16).

6. Page 4, line 18-19: please consider re-word “preventive measures”. Not sure what the authors meant to say.

Response: We have amended the wording to use the term “prevention of” (now page 4, line 18).

7. Page 6, line 38-57: the aim and specific aims are unclear, again, and the title does not match with what the study entails. Suggest revising the aims.

Response: We have clarified the overall aims and each of the three sub-aims. We have included the words “impact evaluation” in the title and re-worded to reflect the aims of the study (page 8, line 4-20).

8. Page 7, line 16-17: Setting – please use past tense for all sentences that describe something already happened. “was” instead of “will be”. The timeline of the study in this manuscript is very unclear and confusing. If this is all about planning the process evaluation and making a protocol, please explicitly indicate that in the aims.

Response: We have amended the tense to be consistent (now page 9, lines 1-6). We have clarified the time frame in Table 1 (Table 1 Evaluation plan – page 11/12).

REVIEWER 2:

#### STRENGTHS AND LIMITATIONS

1. 3 / line 6 “Multi-method” would be a more appropriate term for multiple qualitative methods. “Mixed-method” tends to refer to the combined use of quantitative and qualitative approaches.

Response: We have changed “mixed methods” to “qualitative analysis” (page 2, line 9), “qualitative design” (page 3, line 6), “qualitative analysis” (page 18, line 3), and “qualitative evaluation” (page 22, line 16).

2. 3 / lines 8-9 Why do we need new theories? There is extensive research to guide practitioners on goal-setting and the (in)appropriate use of rewards in behaviour change (e.g. see the Self-Determination Theory literature). Instead of focusing on generating new theory, I would highlight the potential for qualitative research to add to our understanding of existing theory.

Response: We have included a sentence to acknowledge that a qualitative analysis approach grounded in the data (i.e. following a Grounded Theory approach) can add value by supporting existing theory, as well as allow the potential for new theories to emerge (page 3, line 9-12).

#### INTRODUCTION

3. 4 / line 14 References here are dated. The authors might wish to incorporate some of the following papers for more recent discussion of the translation of evidence to practice in child weight management:

Epstein LH, Wrotniak BH. Future directions for pediatric obesity treatment. *Obesity* 2010;18(Supplement 1):S8 - S12.

Klesges LM, Williams NA, Davis KS, et al. External validity reporting in behavioral treatment of childhood obesity. *Am J Prev Med* 2012;42(2):185-92.

Watson PM, Dugdill L, Murphy R, et al. Moving forward in childhood obesity treatment: A call for translational research. *Health Educ J* 2013;72(2):230-9.

Watson, P. M., Dugdill, L., Pickering, K., Owen, S., Hargreaves, J., Staniford, L., Murphy, R., Knowles, Z. & Cable, T. (2015). Service evaluation of the GOALS family-based childhood obesity treatment intervention during the first three years of implementation. *BMJ Open*, 5, e006519 DOI: 10.1136/bmjopen-2014-006519.

Response: We have re-written several paragraphs in the background section outlining the problem and rationale for this research – i.e. that there is a lack of effectiveness trials to inform implementation and translation of research into community programs We have incorporated two of the suggested references: Epstein & Wrotniak (2010), and Watson et al (2013) (page 5, line 1-3).

4. 4 / line 17-18 Please be more specific and provide references – which “psychological and behavioural theory and research” are you referring to?

Response: We have added a reference to Operant Conditioning (Skinner, 1938) (page 5, line 6-7).

5. 4 / line 16 -5 / line 17 This discussion makes no reference to the large body of literature that demonstrates the “undermining” effect of incentives on long-term behaviour change and autonomous motivation (see Moller et al. (2012) Financial motivation undermines maintenance in an intensive diet and activity intervention, *Journal of Obesity*, doi:10.1155/2012/740519). Further evidence/rationale is needed to clarify which types of incentives might be facilitative for behaviour change (for children) and what the psychological underpinning for this is. i.e. consideration needs to be given to how incentives are used to ensure autonomy is supported.

Response: We have added paragraphs on considerations for the impact of incentives, including the disadvantages of using extrinsic rewards (page 5, line 12-21, and page 7, line 4-9).

6. 5 / lines 13-17 The rationale here is not clear. If there is no systematic review, it seems it would make sense to start with a systematic review – why did your team decide to proceed straight to an intervention study?

Response: We completed a narrative (non-systematic review) of evidence and concluded that there were potential indications of effectiveness that would best be answered by a clinical trial. Once there are numerous published RCTs (including ours) then a systematic review would be ideal for pooling results. We have acknowledged this is a sentence in the manuscript (page 6, line 14-17).

7. 6 / lines 22-23 I’m not clear why you have chosen retrospective qualitative data collection to determine whether the intervention was delivered as intended? A more appropriate approach to measuring intervention fidelity would be to collect a mixture of quantitative and qualitative data during the intervention (e.g. observations, delivery logs, interviews with interventionists).

Response: We distributed a survey during the six-month follow-up assessments in the trial and therefore at the time participants were being measured. We will also be reviewing project management documents used during the trial such as decision logs, implementation and mitigation plans, site monitoring logs, and meeting notes, and we have added this detail in the manuscript (page 4, line 4-6; page 11/12 Table 1; page 18/19 Table 3; page 21/ line 9-11). The retrospective nature of the data collection refers to focus groups and interviews with families and stakeholders, which are necessarily after the trial so as to capture their reflections on how the trial was run, whether incentives are an acceptable approach, and the longer term impacts on people's lives.

8. 6 / lines 24-25 What you describe here sounds like process evaluation (what factors influenced whether an intervention worked) rather than impact evaluation (whether an intervention worked). I realise there will be some impact evaluation involved (i.e. perceived outcomes for the families), but I would perhaps revisit the terminology to clarify your intentions.

Response: We have clarified what is meant by "process" and impact in the process evaluation plan, which links the three levels of evaluation to the three aims (Table 1 page 11/12; and aims page 8, line 4-20).

## METHODS

9. 7 / lines 8-9 Why was the process evaluation not included in the original trial protocol that was published? It seems perhaps this is a retrospective qualitative study rather than an embedded process evaluation (process evaluation should be incorporated from the start)?

Response: The process evaluation is always something that we intended to do. During the trial we made careful logs to document site visits, issues encountered and mitigations suggested and implemented throughout the project. These materials will be used in the analysis, along with qualitative data generated from focus groups, interviews and a survey. This is mentioned briefly in our published protocol, and is referenced in the manuscript (page 9, line 1).

10. 13-14 Sentence that starts "The community programme leaders" (last line of page 13) is not clear – needs rewording.

Response: We have re-termed "program staff" to "community program leaders" to be consistent (page 16, lines 7 and 12).

11. 14, table 2 It might be useful to map the behaviour change techniques onto Michie et al.'s (2013) BCT taxonomy

Response: We have mapped the behaviour change interventions used in the trial onto the BCT taxonomy as suggested, and this will be used to guide analyses (Table 2. page 17/18; and for further detail page 16, line 24-25 and page 17, line 1-16).

12. 15-16, table 3 Further detail is needed about your research methods. At present, it is not clear from these methods how you are going to address your three research aims. For example, it would be useful to include more detail about the topics/questions that will be addressed within the surveys/focus groups/interviews.

Response: We have included further detail from the discussion guides that will be used in the focus groups and interviews (for the process evaluation page 13, line 24-25 and page 14, line 1-10. For the impact evaluation page 15, line 11-25). This detail relates specifically to the aims and how we will be addressing each of them.

13. Research aim 2 (and the description in the previous section named “impact evaluation”, pages 12-13) leads the reader to believe there is going to be a quantitative analysis that will extract what characteristics predict intervention outcomes. Is this not the case?

Response: This research will not include quantitative analysis. The focus groups, interviews and the survey will all be coded and a narrative synthesis produced. We have clarified terms such as “impact” and “mixed methods” in previous responses to the reviewers (see points 4 and 5 for reviewer 1, and points 1 and 8 for reviewer 2).

14. 16, line 2 What is meant by “standard methodology”? Further detail needed

Response: We have removed the reference to “standard methodology” and replaced with a short description of the semi-structured approach that the focus groups and interviews will follow (page 19, line 2-4).

15. Pages 16-17 Data analysis section is very general. Further detail is needed about what analysis will be conducted to answer each of the research aims (this is not clear at the moment).

Response: We have added several sentences to the data analysis section, referring back to the specific aims, the logic model and evaluation components to be focused on when coding the three levels of evaluation (process, impact and deconstruction). (page 21, line 4-24 and page 22, line 1-4).

## DISCUSSION

16. Page 18 Discussion is very general and a little repetitive. Could be improved by more specifically stating the aim, strengths/limitations and potential outcomes of this process evaluation.

Response: We have reworked the discussion section to more specifically refer back to the aims and outcomes of the research. Additional strengths (e.g. using the BCT taxonomy have been added to the Strengths section at the beginning of the manuscript (page 3, line 16-20).