Reviewer's report

Title: The SNAPSHOT study protocol: SNAcking, Physical activity, Self-regulation, and Heart rate Over Time

Version: 2  Date: 15 April 2014

Reviewer: Clemens Drenowatz

Reviewer's report:

The manuscript describes the study protocol for an examination of the association between within-person fluctuations in executive function and health behavior. This is an interesting topic but as this is a methods paper some additional information on the specific protocols is needed.

Major Essential Revisions

Background:
1. Please provide some examples of periods or situations when executive functions are most likely to be diminished. This will help readers who are less familiar with this type of research.
2. Please specify the type of sedentary behavior associated with snacking - rather than sedentary behavior, TV viewing, which is one component of sedentary behavior has been associated with poor dietary choices.

Methods/Design
3. Please specify the target sample size in Recruitment strategy.
4. How are exclusion criteria assessed? Are there any orientation sessions for interested participants or is there a hotline where questions/concerns regarding the study are addressed.
5. Please provide a timeline indicating the anticipated duration of each phase, any time lag between phases and total time of engagement for participants (preferably as a graph or table).
6. Please clarify the timeframe for the FFQ (i.e. average intake per week, per month, …)
7. Please provide additional details on anthropometric measurements (model of scale, stadiometer, clothing of participants, fasted vs. non-fasted, …).
8. Please specify whether lab measurements will be performed at similar times of the day for all participants as this could affect test performance.
9. Please specify the order of cognitive tests and how test order is determined?
10. Please provide a reference for the BRIEF-A questionnaire.
11. Please provide an anticipated time for completion for the individual tests and whether there will be any breaks (mandatory or by choice) between tests.
12. Please specify the number of weeks for the PANAS rather than a “few”
weeks.
13. Please clarify whether there will be any verbal instructions for the real-time measurement phase in addition to the booklet and how the distribution and return of the different measurement devices will take place?
14. Please provide company information on the PRO-Diary.
15. Will data collection start on the same weekday for every participant?
16. Please provide some information on the anticipated completion time for the hourly tasks during the real-time phase.
17. Please specify the recording rate for accelerometer data (1 sec, 10 sec, …)?
18. Please specify when the ActiHeart will be used for data collection, as it allows for only 4 days rather than a full week for HR-variability? What is the requested time frame for wearing it – 24 hours, waking hours, …?
19. Which days will be used for measuring GPS data (initial 5 days, last 5 days, …)?

Minor Essential Revisions
20. Please specify the time period the GT3X+ is supposed to be worn (daytime only vs. 24-hours?)

Discretionary Revisions
Abstract:
21. It may be helpful to provide an example of periods when executive functions are depleted in the abstract.
22. An estimated target size and duration for the completion of the study for participants (duration of all 3 phases) may be helpful in the abstract.
23. It may not be necessary to state that SNAPSHOT data collection is ongoing in the abstract as the focus of the manuscript is on the study protocol.

Background:
24. A reference for the definition of executive functions would be helpful (p. 4, Abstract 2, Sentence 1).
25. Please elaborate on the argument that engaging in exercise/healthy diet would negatively affect executive function. Right now this may be interpreted that it is better to not actively try to engage in such “healthy” behaviors, which is, hopefully, not what the authors intend to say.

Methods/Design:
26. Additional information on the statistical analysis regarding within person fluctuations on executive function may be helpful to more clearly distinguish the present study from previous research on this topic.

Discussion:
27. The suggestion that these findings may help with regulating marketing of snacks seems very speculative. Most likely the industry markets in these places
because of the greater susceptibility. At this stage it may be better to focus on
the major outcomes and potential insights gained rather than practical
application. Those could be addressed when results are presented.

**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.