HABIT – A replication of the behavioral study in Tricomi et al., (2009) (#7894)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
This pre-registration document is an amendment to the pre-registration protocol "HABIT – Replication of the behavioral study in Tricomi et al., (2009)". We will run a new version of the study in a separate group of overtrained (3 day) and undertrained (1 day) participants. The main modification of the original paradigm in this amendment is including a number of manipulations aimed to match the conditions experienced by participants in this task with those experienced inside the scanner in the original experiment. These include having participants lie in a supine position, playing fMRI sequence noise, and monitoring participants eye and head movements while requiring them to remain as still as possible. The question remains the same: testing whether overtraining instrumental responding in human participants can render the responding habitual, thereby becoming insensitive to outcome devaluation. The data will be collected at Caltech, Pasadena, CA.

3) Describe the key dependent variable(s) specifying how they will be measured.
The experimental procedure will be the same as in the pre-registered protocol "HABIT – Replication of the behavioral study in Tricomi et al., (2009)".

4) How many and which conditions will participants be assigned to?
The conditions will be the same as in the pre-registered protocol "HABIT – Replication of the behavioral study in Tricomi et al., (2009)".

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
The analysis to examine the main question will be the same as in the pre-registered protocol "HABIT – Replication of the behavioral study in Tricomi et al., (2009)".

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
We will recruit participants who report that they like to snack, have no food allergies, are not currently dieting and that are willing not to eat for 6 hours prior to each day of the experiment; not complying with these instructions will be used as an exclusion criterion. We will include the 26-item eating attitudes questionnaire (EAT-26): participants who score 20 or more will be excluded from the experiment. In the demographic questionnaire, we will ask for weight and height, to account for the participants' body mass index (BMI). Based on our initial experience with the same experimental procedure, we updated the screening procedure and manipulation checks in two ways:

First, prior to recruitment, participants will be asked to evaluate how much they like each snack option on a pleasantness scale (-5, very unpleasant; 5, very pleasant). Participants will be invited to participate only if the highest rating assigned to each of the salty and sweet options is larger than +1 on the 10 point pleasantness scale, and only if the pleasantness ratings assigned to the chosen salty and sweet options do not differ by more than 3 rating points.

Second, it is critical that the overtraining procedure is successful for both the instrumental action reinforced with the sweet snack and the instrumental action reinforced with the salty snack. The mean response rates for the instrumental action reinforced with the sweet snack and the mean response rates for the instrumental action reinforced with the salty snack should not differ by more than 2 standard deviations during the training procedure.

Finally, we will exclude participants who are not consistently maintaining attention to the stimuli presented during the task (by closing their eyes or looking away from the screen).

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We will collect data from 30 participants for each of the overtrained (3-day) group and the undertrained (1-day) group. A total of 60 participants will participate in this study.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)