

Singing Your Negative Body-Related Thoughts:  
A Randomized Controlled Trial of a New Cognitive Defusion Strategy

Study Protocol and Statistical Analysis Plan

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## Study Protocol

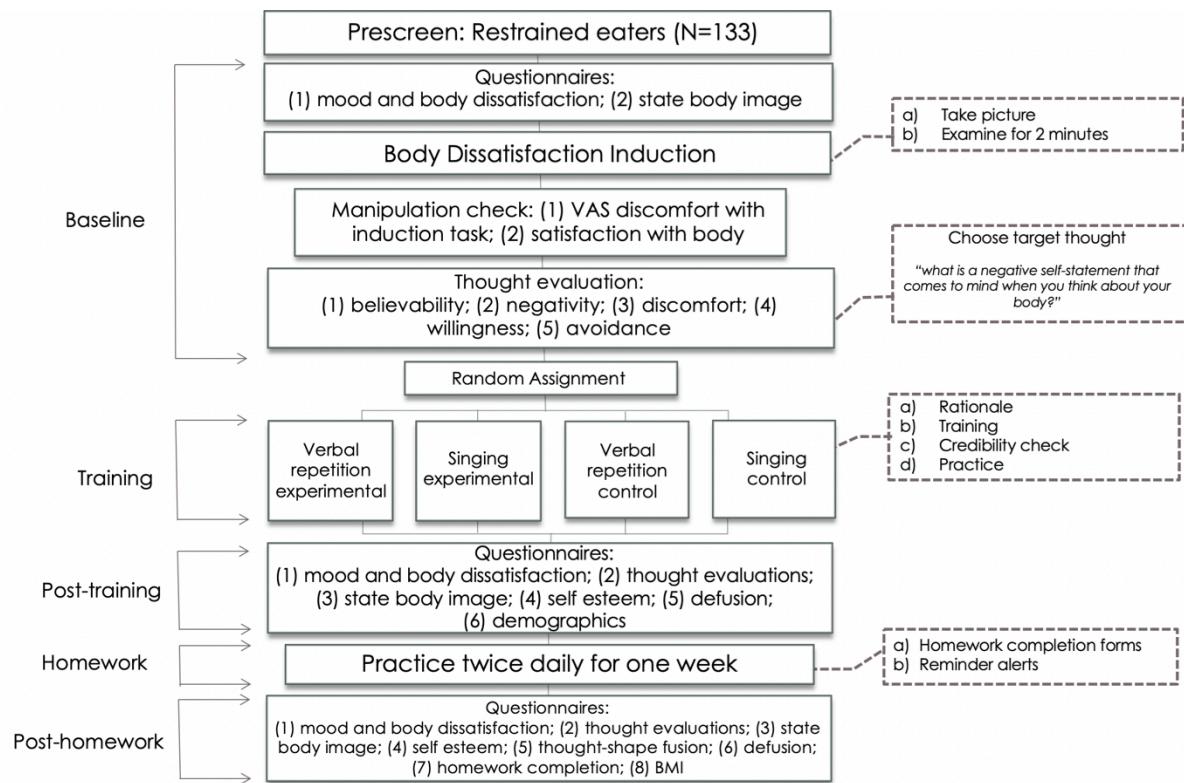
Ethics approval was received from the York University Human Participants Review Committee. Eligible participants (i.e. individuals who endorsed restrained eating attitudes and behaviours) gained access to this study through the university undergraduate research participant pool's online portal. Individuals who signed up to participate in the study made two visits to the lab at York University. The visits were one-week apart; Part 1 was approximately 60 minutes long and Part 2 was approximately 30 minutes long. After providing written informed consent, Part 1 began with participants completing the visual analogue scale for mood and body dissatisfaction (see Appendix A) and measures of state body image (BISS). Next, participants underwent a body dissatisfaction induction task whereby they were asked to evaluate, for two minutes, the photograph the researcher took of them, paying particular attention to "bothersome" parts. After the body dissatisfaction induction task, participants completed the dissatisfaction induction measure to ensure all conditions were equally activated by this task (see Appendix B). A target thought was determined by asking the participant "what is a negative self-statement that comes to mind when you think about your body?" Participants then completed the thought evaluation in response to that target thought (see Appendix C). Next, participants were randomly assigned to an experimental condition, following simple randomization procedures (computer generated randomization lists from randomizer.org; Urbaniak & Plous, 2017). The randomization schedule was generated by a researcher otherwise uninvolved in the trial. Participants were assigned to one of four conditions: (1) verbally repeating out loud negative body-related thoughts (experimental), (2) singing negative body-related thoughts (experimental), (3) verbally repeating out loud body-unrelated thoughts (control), or (4) singing body-unrelated thoughts (control). Each participant's randomized assignment was unknown to the investigator until this point in the procedure and participants were not informed of which conditions were experimental or control until the debriefing at the end of Part 2 so as to minimize demand characteristics. Participants in all conditions were then given a rationale on cognitive defusion (adapted from Masuada et al., 2004; see Appendix D), underwent a training session with a neutral word (i.e. silk), and were asked to rate the credibility of the rationale (see Appendix E).

As a training session in cognitive defusion, those in the experimental conditions repeated the technique saying or singing their negative body-related target thought. Those in the experimental verbal repetition condition repeated the thought out loud and as quickly as possible for 60 seconds. Those in the experimental singing condition sang the thought to the tune of 'twinkle, twinkle, little star' for 60 seconds. Those in the control conditions followed the same procedures for a non-body related thought (i.e. "I am talking" in the verbal repetition condition and "I am singing" in the singing condition) that should not evoke thoughts about their body. After this training, participants once again completed measures of mood and body dissatisfaction, thought appraisals (i.e. believability, negativity, discomfort, willingness, and avoidance), and state body image, as well as measures of self-esteem, cognitive defusion (CFQ) and demographics.

All participants were asked to practice their assigned strategy as homework two times per day for one week and to complete the body satisfaction measure after each practice session (see Appendix F). They returned to the lab for Part 2 exactly one week after Part 1, where they completed measures of mood and body dissatisfaction, thought appraisals, state body image,

state self-esteem, thought-shape fusion (TSF-LF), cognitive defusion, and a self-report measure of homework adherence (see Appendix G). Height and weight were measured with participants standing backwards on the scale. Finally, participants received an oral and written debriefing that outlined the purpose of the study and contact information if they have any additional questions following the study and/or the findings of the study upon completion. They were offered the opportunity to ask any questions and given a list of resources for support of students' mental health. See Figure 1 for a visual schematic of the procedure.

Figure 1  
*Visual Schematic of Procedure*



## **Statistical Analysis Plan**

A 2 (Intervention: experimental, control)  $\times$  2 (Activity: singing, verbal repetition)  $\times$  3 (Time: baseline, post-intervention, follow-up) mixed ANOVA was used for most measures, with a paired sample t-tests with a Bonferroni correction to probe significant findings. For the CFQ and SSES, a 2 (Intervention: experimental, control)  $\times$  2 (Activity: singing, verbal repetition)  $\times$  2 (Time: post-intervention, follow-up) mixed ANOVA was used with a paired sample t-tests with a Bonferroni correction for significant findings. A mediation analysis was used to examine the effects of homework compliance, indicated by the total number of seconds of defusion practiced over the course of the week, on each outcome measure. Finally, a moderation analysis was used to examine the effects of thought-shape fusion on each outcome measure.