Measuring Chocolate Craving Based on Chocolate Exposures

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Overview

- The aim of the study was to explore the effects of repeated unreinforced exposure to chocolate cues in people reporting excessive chocolate cravings.
  - 40 participants in the experimental group
    - 10 consecutive brief exposures to chocolate cues in two sessions, between 1-3 days.
  - 18 participants in the control group, received two exposures at the start and end of each session.
    - measured through subjective report and the amount of saliva secretion to chocolate cues.

Introduction

- ★ Food craving is an intense desire or longing to eat a particular food.
  - In Western cultures, the food most frequently craved is chocolate, especially among women.
  - chocolate craving is not harmful, but can be a contributing factor to weight problems.
- ★ visuo-spatial working memory based techniques reduce imagery vividness and self-reported chocolate craving in both female chocolate cravers and non-cravers.
  - Reducing chocolate craving: it is important to understand the critical cues and processes underlying the craving response to chocolate.

Introduction Cont.

- ★ non-chocolate substitutes were inadequate to satisfy their craving.
  - Depressed moods may increase chocolate cravings.
- ★ Women report having a stronger craving for chocolate during their premenstrual, suggesting a role for sex hormones.
- ★ Spanish women reported much less premenstrual chocolate craving than american women.

Introduction Cont.

- ★ Chocolate craving is triggered by classically conditioned food cues.
  - Conditioning is strongly involved in the production of food cravings
  - Repeated consumption of chocolate during the premenstrual, moods and typical feelings during this period, can become conditioned cues for the high incentive value of the sensory properties of chocolate.

Exposure-Based Therapies

- ★ Exposure-based therapies, inspired by Pavlov's Conditioning models of addiction, aim to extinguish cravings.
  - Consist of repeated exposures to drug cues while preventing drug use.
  - Has been proven successful to extinguish cravings.
- ★ In this study, chocolate cues were presented to chocolate cravers in two consecutive sessions.
  - Craving was measured by subjective report, and by saliva secretion to the chocolate cues, using the cotton roll method.

Participants

- The participants in this study were 58 female psychology students from the University of Leuven
  - Aged 20-24
  - Initially administered to 335 students

- Criterion to be considered a “chocolate craver”
  - “Bad” at postponing a chocolate craving
  - Would like to gain more control over their chocolate craving
  - Find it difficult to gain more control over their chocolate craving

Measures of Chocolate Craving: Subjective Report

- Computer-reported by participants
  - “How strong is your craving for chocolate at this moment?”
- Ratings ranged from 0 (no craving for chocolate at all) to 100 (extreme craving for chocolate).
- At the end of a trial, a craving score was calculated by using each participants four scores and finding the mean.

Measures of Chocolate Craving: Saliva Secretion

➔ A participant's amount of salivation was measured during the trial.

- Done by weighing the amount of saliva absorbed by rolls of cotton before and after it was placed in the mouth
- Participants were shown the correct methods to place the cotton rolls in their mouths and how to remove them for analysis.

The Procedure

- The experiment included two one hour sessions with a few days in between the session.

- Elements of the experiment:
  - Participants were told certain food restrictions to follow
  - The cue exposure was different for every participant
  - Mood Induction Manipulation was used as well.

Mood Induction Manipulation

- ➔ Mood manipulation was used to explore to what extent different mood contexts would play into the reduction of cravings
  - ◆ First Session
    - Half were shown part of a film that was meant to bring on negative emotion.
    - The other half were shown two clips meant to bring on positive emotions.
  - ◆ Second Session
    - All participants watched all of the film clips negative and positive, to compare mood effects on cravings

Mood Induction Manipulation cont.

- All aspects of differing moods were counterbalanced among participants to see full effects
- Emotional changes were measured using the PANAS Scales
- However, the authors did not find the intended effects that the mood manipulations were supposed to bring so they do not consider this a factor when discussing results.

Session 1

- Before beginning all participants filled out an informed consent
- All participants had a baseline saliva secretion
- First exposure to the chocolate was the chocolate bar on a plate, out of sight
- Timing for first procedure
- All cravings were measured by the online scale
- The second exposure
- The last trial
- There were altogether 10 trials of presenting the chocolate to the participant

Session 2

- Session 2 was done in the same way that session 1 was
- 10 different trials were the chocolate was presented
- The difference in this session was the participants were presented with both the negative and the positive movie clips
- The last exposure trial lasted 2 minutes instead of 10

Control Group

- The control group was treated the same way as the participants
- The only difference between the groups is that the control group only received exposure at the beginning and the end of the sessions
- The cravings were measured in the same way as they were for the other sessions just without chocolate

Data Analysis

- ANOVA was performed on the amount of saliva secreted
- The three trials that were included were
  - The baseline
  - The mean of S1, S2, and S3 since those were the ones who were exposed to the chocolate, this excluded the control group because they were not exposed to chocolate
- ANOVA was run on the online craving scores with three trial
  - C1
  - The mean of the C2, C3, and C4 since they were the ones to be exposed to the chocolate, excluding the control group because they were not exposed to chocolate
  - The last exposure trial C5
- These ANOVAs were compared to check for effects of exposure between and within the sessions of the groups.

Results: Online Craving Scores

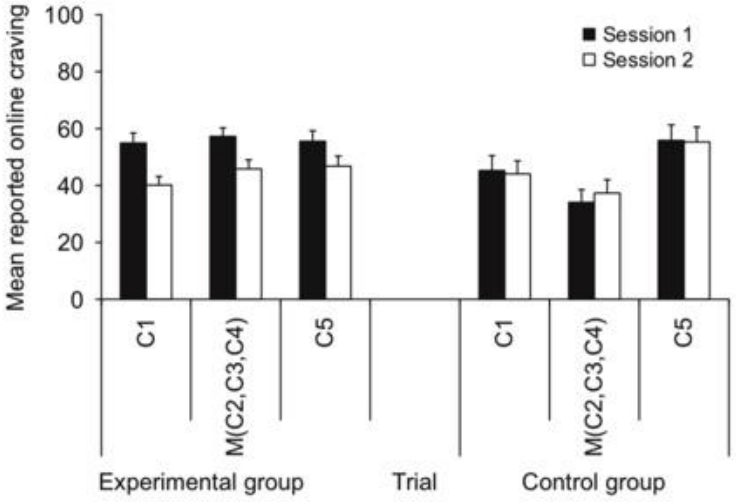


Fig. 1. Mean chocolate craving scores on the online scale ranging from 0 (*no craving for chocolate at all*) to 100 (*extreme craving for chocolate*) (+SE) for the experimental and control group, by session and trial, with C1 = first online craving measure; *M*(C2,C3,C4) = the mean of the trials C2, C3 and C4; C5 = last online craving measurement.

Results: Amount of Salivation

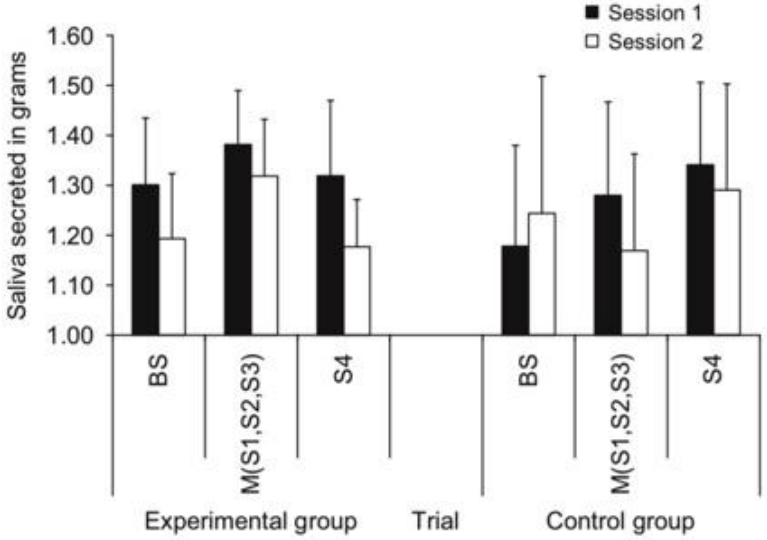


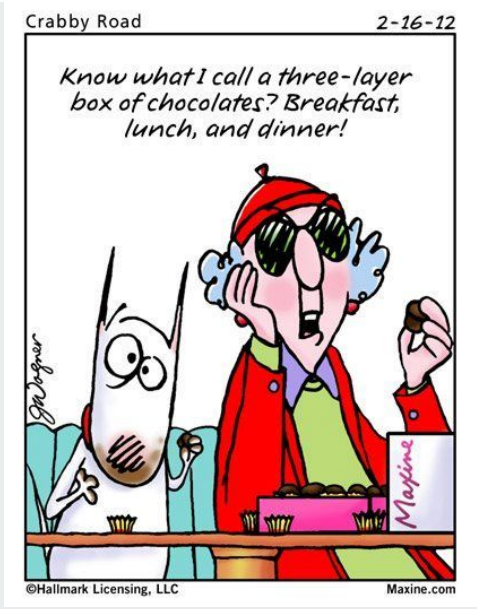
Fig. 2. Mean amount of saliva secreted in grams (+SE) for the experimental and control group, by session and trial, with BS = baseline saliva; *M*(S1,S2,S3) = the mean of the trials S1, S2 and S3; S4 = last salivation measurement.

Ending Discussion

- During the experiment, the participants were constantly exposed to their favorite type of chocolate during two back-to-back sessions
- What was measured?
- The experimental group
- The control group

Ending Discussion Continued...

- What did the exposure do?
- Negative effects at the end of session 1
    - Participants expected chocolate
    - Cravings increased during within-sessions
- Conclusion?
    - Learning theory can help change health-related behaviors



Citations

Gucht, D. V., Vansteenwegen, D., Beckers, T., Hermans, D., Baeyens, F., & Bergh, O. V. D. (2008). Repeated cue exposure effects on subjective and physiological indices of chocolate craving. *Appetite*, *50*(1), 19–24. doi: 10.1016/j.appet.2007.05.003