

# Exploring the relationship between attentional bias, stimulus control and BMI

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## Introduction

- Attentional bias is giving preferential attention to a particular type of information (MacLeod & Mathews, 2012)
- Attentional bias toward food-related may contribute to overweight and obesity (Werthmann et al., 2007)
- Individuals with obesity show attentional bias towards high caloric food (Kemps, Tiggemann, & Hollitt, 2014)
- However, precisely how attentional bias influences real-world eating is unknown
- Stimulus control is a behavioural outcome of one's responses to food-related cues (Weingarten, 1985)
- Incentive-sensitization theory (Robinson & Berridge, 2009) suggests attentional bias drives behaviour, resulting in greater stimulus control
- Aim: examine the relationship between attentional bias and stimulus control

## Method

- 54 adults completed 14 days of EMA monitoring and two attentional bias tasks: visual probe and Stroop (Kemps et al., 2014; Nijs, Franken, & Muris, 2010)
- Stimulus control was assessed via EMA monitoring
- Participants' levels of stimulus control were expressed as AUC-ROC values across multiple domains (food availability, social setting, negative affect, etc.)
- Reaction times (ms) of cognitive tasks were matched to each participants' highest AUC-ROC value

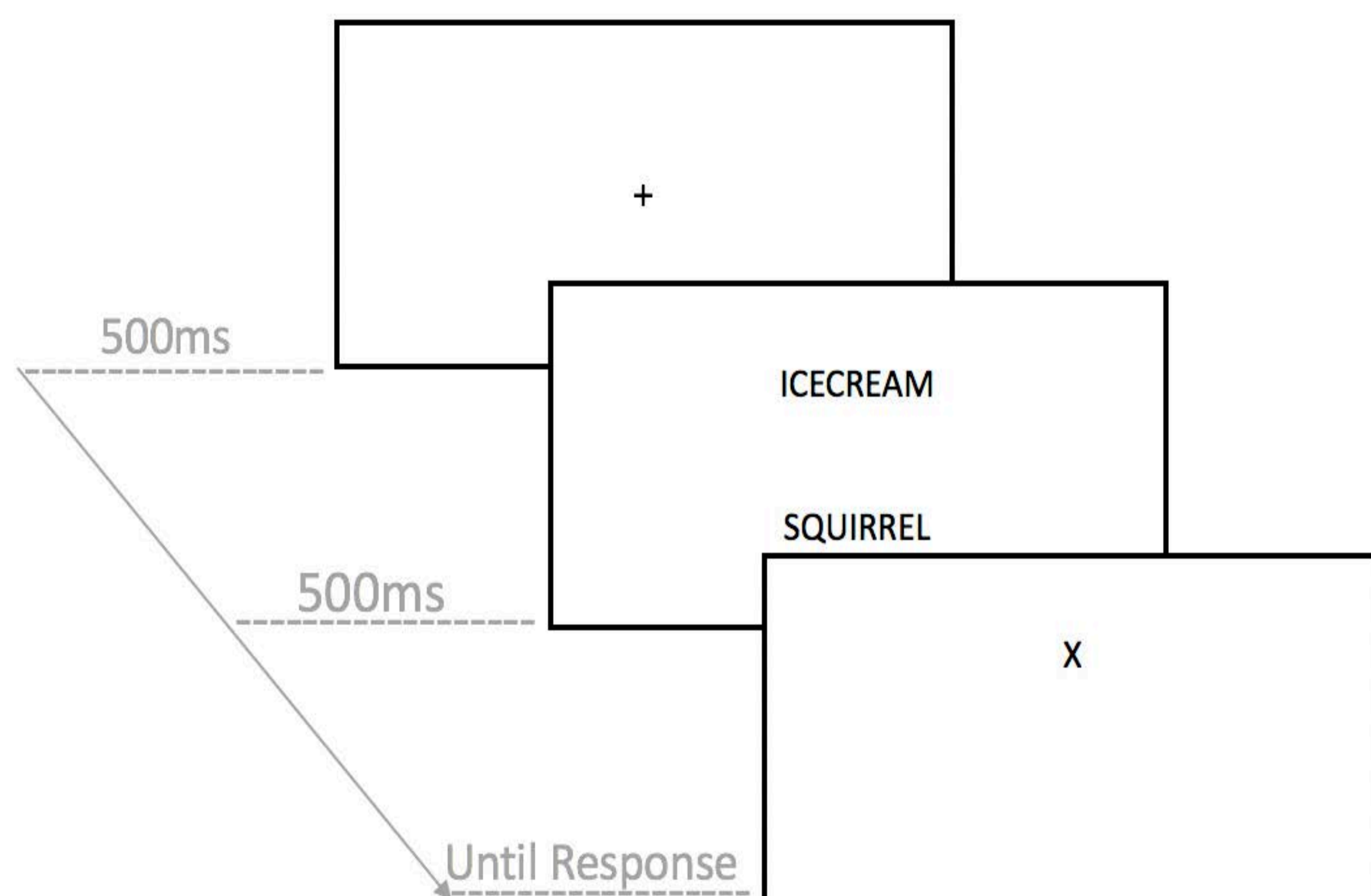


Figure 1. Visual probe task: fixation cross followed by presentation of word pair. An X replaced one of previously presented words. Participants asked to identify location of the X (Kemps et al., 2014).

## Discussion

- No relationship between stimulus control and attentional bias
- Attentional bias alone may not be the strongest predictor of real-world eating patterns
- Directions for future research:
  - Examine real-time variability of attentional bias (state vs. trait) and the effect on real-world eating behaviour
  - Examine relationship between levels of self-control exertion, impulsivity, attentional bias and real-world eating behaviour

### References:

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## Results

- Positive change scores reflect an underlying food-related attentional bias is present
- High AUC-ROC values suggest eating is motivated by food-related cues in one's environment
- To address whether attentional bias and stimulus control are related, each participants' highest AUC-ROC value (regardless of domain) was correlated to their attentional bias change scores
- AUC-ROC scores range: .60 - .95 ( $M = .71$ ,  $SD = .06$ )
- Attentional bias change scores range: -51.55 - 32.73 ( $M = -0.01$ ,  $SD = 15.19$ )
- Correlation between AUC-ROC value and attentional bias change score was small and non-significant:  $r = 0.02$ ,  $p = .871$

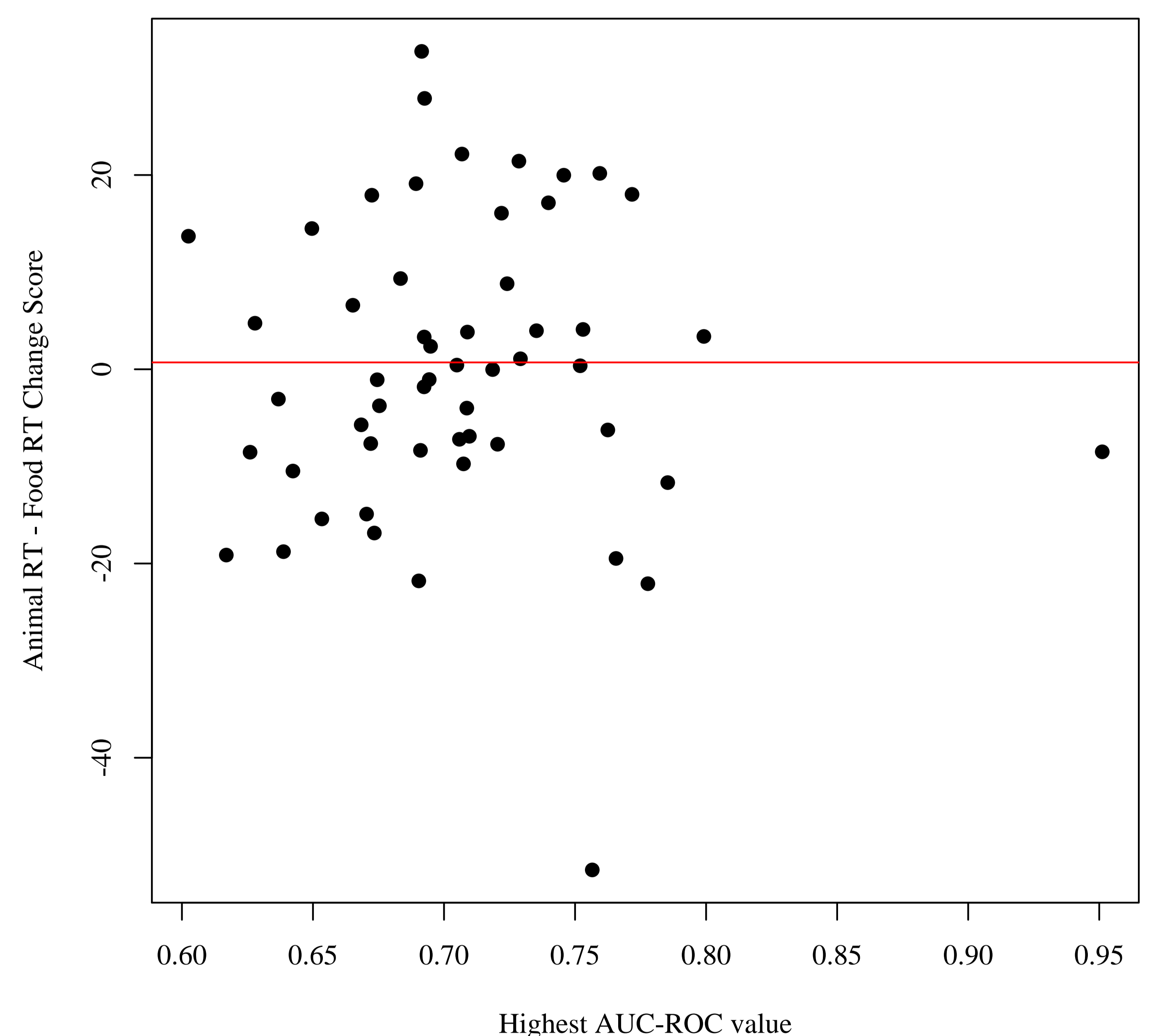
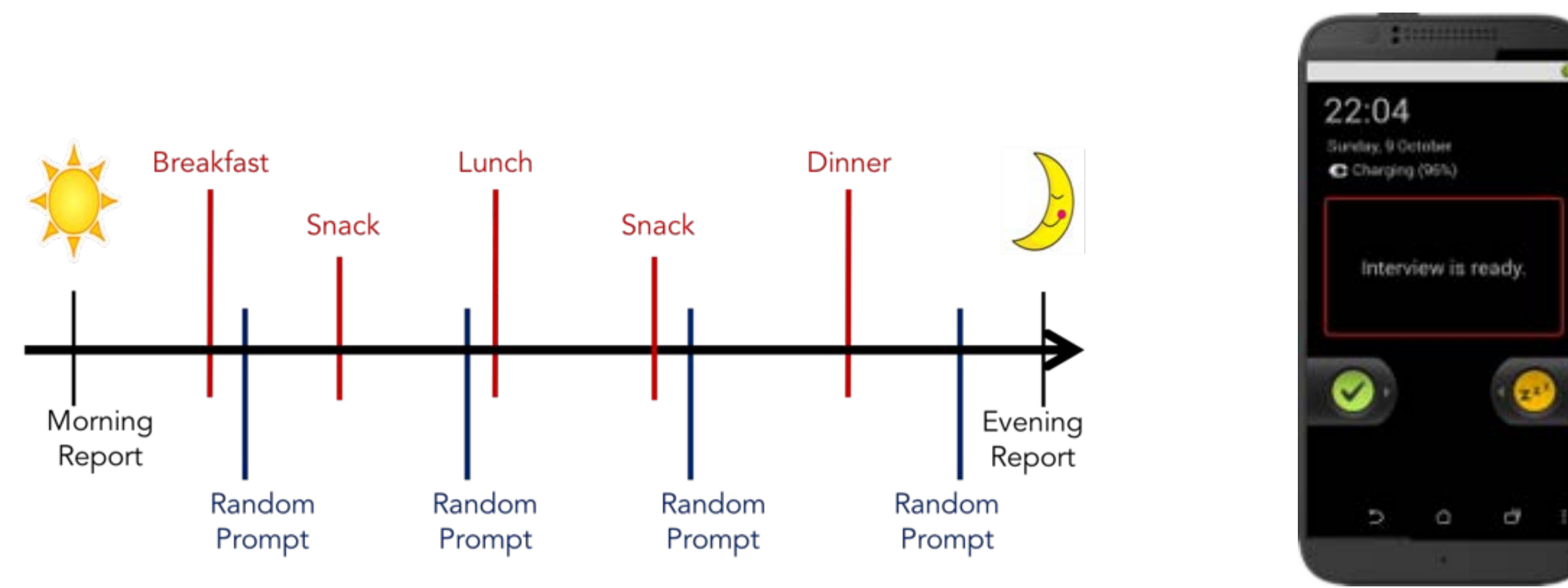


Figure 2. Correlation between attentional bias change score and participants' highest AUC (regardless of stimulus control domain)

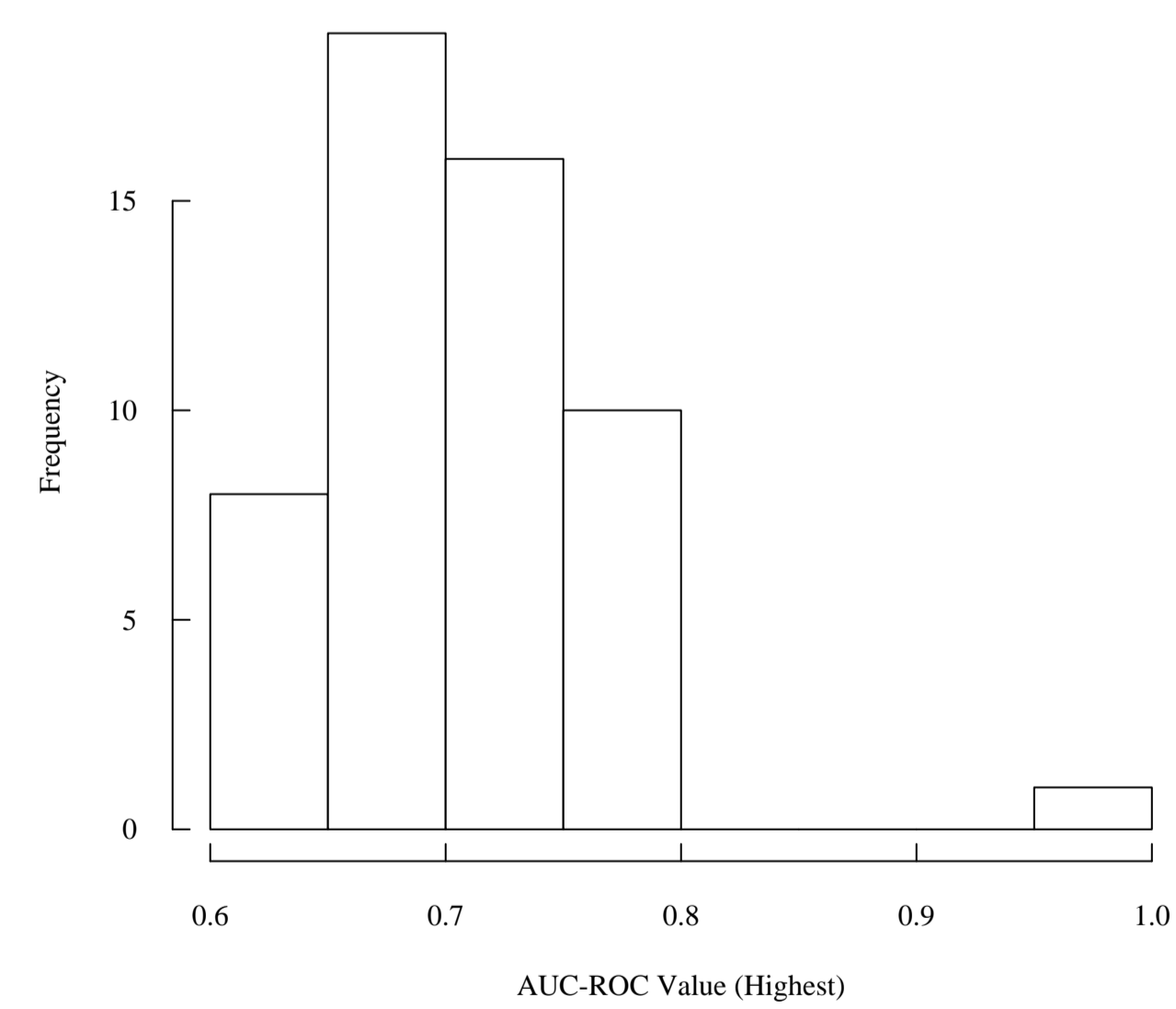


Things I thought about including, but didn't 😊

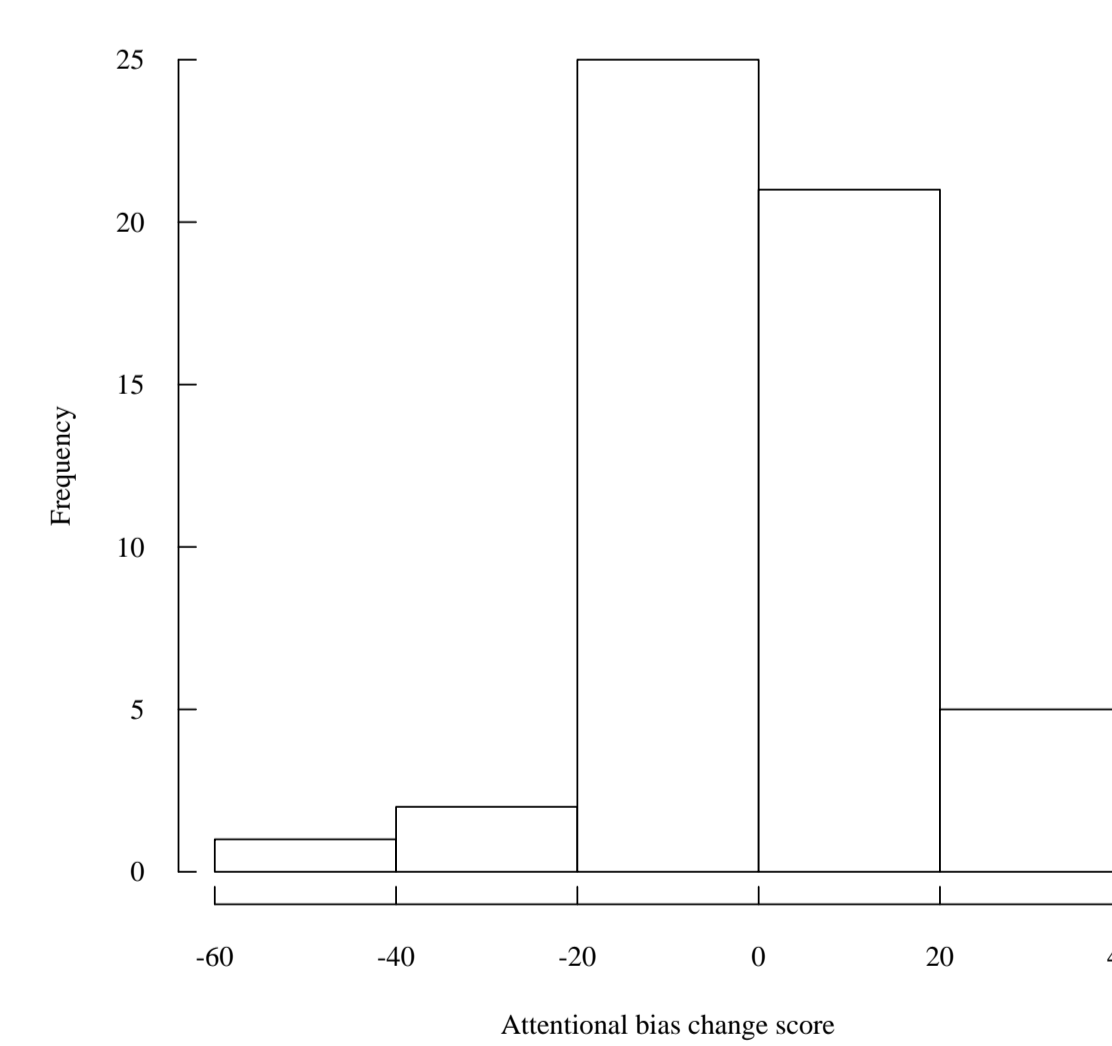


**BURGER**      **BUDGIE**  
**CAKE**        **CAT**  
**CHOCOLATE**   **CATHEDRAL**  
**BREAKFAST**   **BALLOON**

*Figure 2. Stroop task: a word presented centrally for maximum 2000ms. Participants instructed to ignore content of the word and respond quickly as possible to font colour of word by pressing a button in the corresponding colour (Nijs et al., 2010).*



*Figure 1. Histogram of AUC-ROC values*



*Figure 1. Histogram of attentional bias change-scores*