

# Exploring the relationship between stimulus control and BMI in a real-world setting

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## Introduction

- People eat for a variety of reasons (e.g., bored, stressed)
- The majority of caloric intake occurs for reasons other than hunger (Havermans, 2013)
- Theories on stimulus control suggest individuals eat in response to cues (Weingarten, 1985)
- BMI may effect one's level of stimulus controlled eating
- Differences in BMI related cue-reactivity has mainly been explored in laboratory settings
- The relationship between real-world stimulus control and BMI is unclear

## Method

- 73 adults completed 14 days of EMA monitoring
- Participants recorded their food intake and responded to random prompts throughout each day
- Within-subject univariate logistic regression models used to differentiate between eating and non-eating instances
- Participants' levels of stimulus control were expressed as AUC-ROC values across multiple domains

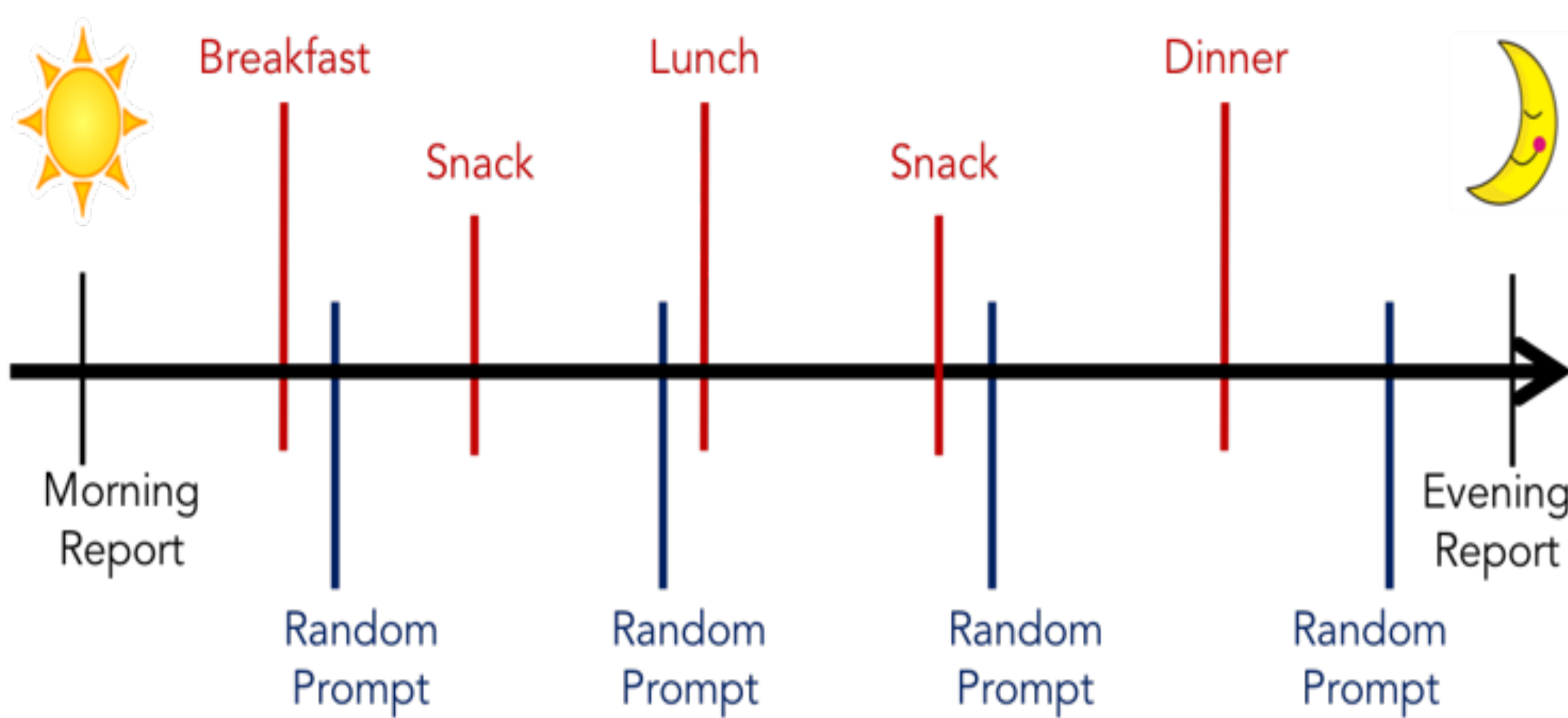


Figure 1. Ecological Momentary Assessment: Participants logged food intake in real time via electronic diary and responded to randomly-timed prompts. Each day began with morning report and ended with Evening report.

## Discussion

- Stimulus control plays a role in everyday eating patterns; specifically availability of food, time of day and experiencing negative affect
- We found BMI differences in stimulus control
- The presence of food outlets prompt eating more for those with overweight/obesity
- Built environment and clustering of food outlets need to be considered for reducing rates of obesity
- Healthy-weight individuals consumed more low-energy snacks than those with overweight in obesity

### References:

Havermans, R. C. (2013). Pavlovian craving and overeating: a conditioned incentive model. *Current Obesity Reports*, 2(2), 165-170.  
Weingarten, H. P. (1985). Stimulus control of eating: Implications for a two-factor theory of hunger. *Appetite*, 6(4), 387-401.

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## Results

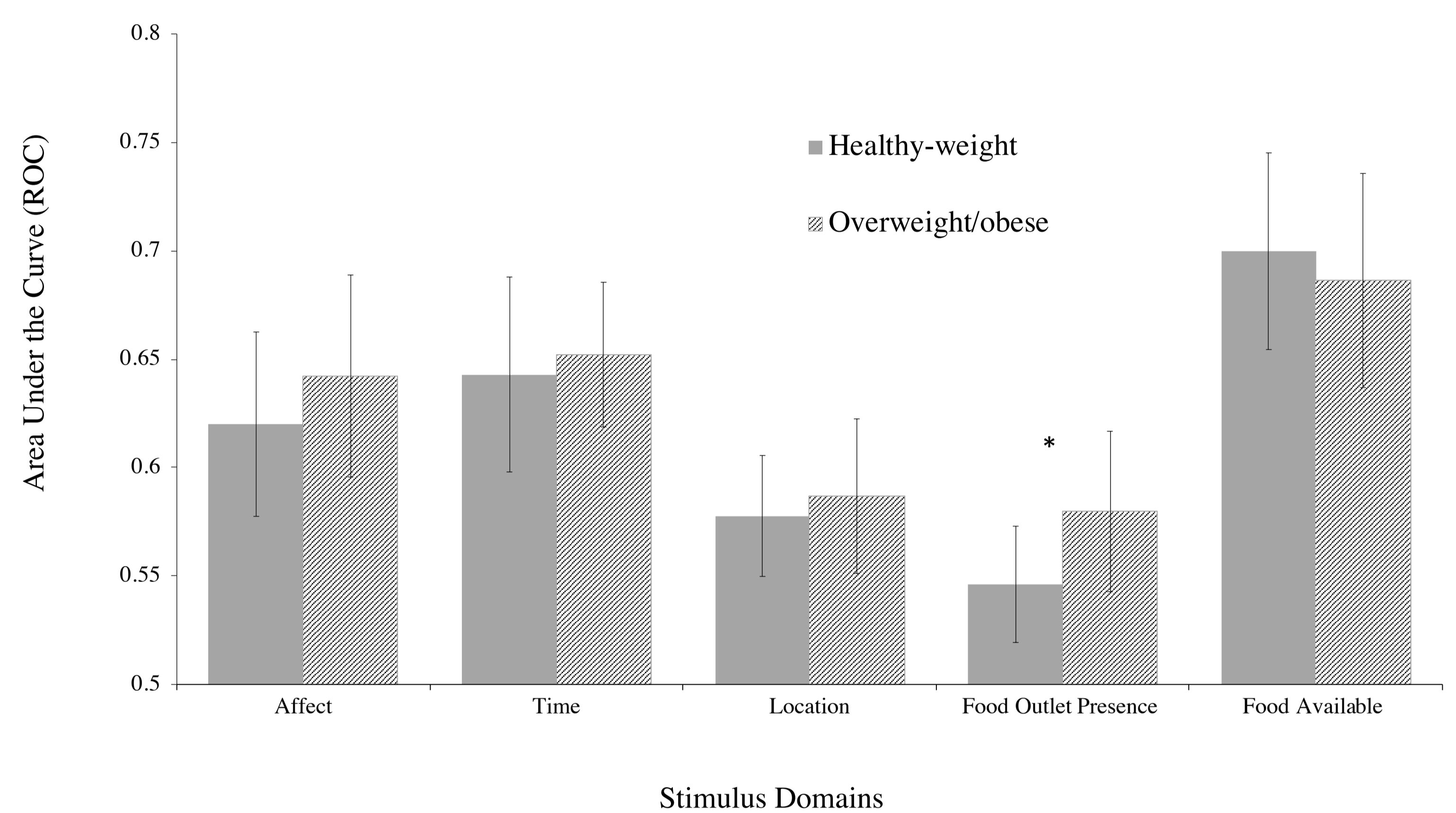


Figure 2. Mean AUC-ROC by BMI across various domains of stimulus control. BMI differences were examined with between subjects t-tests (at the  $p < .05$  level). Note: error bars represent 95% CI.

Table 1.

Daily food intake and craving between healthy-weight and overweight/obese participants (total 936 days of observation)

	Healthy-weight mean (SD)	Overweight/Obese mean (SD)
Age	32.62 (11.11)	34.46 (12.87)
BMI	22.07 (1.63)	30.65 (4.56)
Main meal	2.32 (.07)	2.28 (.06)
Snacks (overall)	1.64 (.14)*	1.29 (.13)*
High-energy snack	.96 (.10)	.87 (.10)
Low-energy snack	.57 (.06)*	.33 (.06)*
Craving	3.07 (.14)	3.01 (.13)

\* $p < .05$

