THE EFFECTS OF HUNGER ON COGNITIVE ABILITY

Michelle S. Segovia¹, Marco A. Palma¹, and Rodolfo M. Nayga²

¹Department of Agricultural Economics, Texas A&M University
²Department of Agricultural Economics and Agribusiness, University of Arkansas

Selected Poster prepared for presentation at the 2018 Agricultural & Applied Economics Association Annual Meeting, Washington, D.C., August 5-August 7

Copyright 2018 by [authors]. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.
**THE EFFECTS OF HUNGER ON COGNITIVE ABILITY**

Michelle S. Segovia¹, Marco A. Palma¹, and Rodolfo M. Nayga²

¹Department of Agricultural Economics, Texas A&M University
²Deparment of Agricultural Economics and Agribusiness, University of Arkansas

**INTRODUCTION**

**RESOURCE SCARCITY**

Resource scarcity - financial constraints, sleep deprivation, time pressure, and high cognitive load can severely impede cognitive capacity.

**HUNGER & DECISION MAKING**


**FOOD ADDICTION**

- Dopamine reward system
- **Anticipatory food “reward”:** Obese individuals derive more pleasure from the desire to eat food than from the actual act of eating (Volkow et al. 2011).

**OBJECTIVES**

- Examine whether the cognitive capacity of hungry people can be enhanced by the simple act of anticipating food intake.
- Test for the presence of an *anticipatory* food reward effect by randomizing the order of a food choice task and a cognitive test.

**EYE TRACKING**

- Tobii TX300 eye tracker (120 Hz)
- iMotions Software

**ONGOING EXPERIMENTS**

- Not hungry
- Mildly hungry
- Severely hungry
  - Tasks: Raven’s test followed by IAT

**EXPERIMENTAL DESIGN**

- **Compensation:** $20
- **Inclusion criteria:** no history of psychiatric or eating disorders, no corrective eye surgery, no food allergies
- **Refrain from eating for 3 hours** before their session.
  - Hunger level: $\mu = 5.119; p = 0.593$

<table>
<thead>
<tr>
<th>No Anticipatory Effect</th>
<th>Anticipatory Effect Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>105 subjects</td>
<td>77 subjects</td>
</tr>
<tr>
<td>2. Food Choice Task</td>
<td>2. Cognitive Test</td>
</tr>
</tbody>
</table>

**TASKS**

- *Raven’s Matrices Test*
- *Food Choice Task*

**RESULTS**

**RESULT 1**

- BMI: 116 normal weight, 41 overweight, and 25 obese

**RESULT 2**

**RESULT 3**

**REFERENCES**


**CONCLUSIONS**

- Overweight and obese subjects experienced an *anticipatory food reward effect*, which enhanced their cognitive performance in a Raven’s cognitive test. This suggests that food intake presents similar patterns to those behind other forms of addiction.
- The cognitive impairment induced by hunger only affected the food choices of obese individuals, who were more likely to make unhealthy food choices.