The Bite Counter: 
A tool for measuring and manipulating intake

Dr. Eric Muth
Professor of Psychology
Dr. Adam Hoover
Associate Professor of Electrical & Computer Engineering
What is it?

- Watch-like device that counts bites or estimates calories
- User interface provides during and post-eating feedback
- Memory stores data
- USB connection for data download and PC interface
- Software for device setup and data management
- Customizable display and alarms
- Wear anywhere
How does it work?

- Gyroscope measures biologically determined wrist roll
  - “roll, pause, roll”
What is it good for?

- Recording time-stamped log of meal data
- Real-time feedback of eating behavior in bites or an estimate of caloric intake
- Long term monitoring of eating behavior
  - Calendar of eating
  - Average eating rate
  - Estimate of calories
- Augment existing methods (e.g. diet diary or weight loss plan)
- Alert the wearer to periods of over eating or fast eating
Has it been validated? - counting bites

Data

- actual count from video vs. Bite Counter count
- True detection rate = \( \frac{T}{T+U} \)
- Positive predictive value = \( \frac{T}{T+F} \)

- Experiment 1: 51 participants ate standard “waffle” meal
  - True detection rate=94%; PPV=80%
- Experiment 2: 47 participants ate meal of choice
  - True detection rate=86%; PPV=81%
- Experiment 3: 300 participants eating in a cafeteria (NIH STTR)
  - Data collection and analysis ongoing

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-counting calories

Data
- bite count both experiments
  - Experiment 1: diet diary
  - Experiment 2: 24 hr recall

- Experiment 1: 4 participants, 54 meals
  - $R = 0.6$

- Experiment 2: 83 participants, 2 wks
  - $R = 0.5$

- Experiment 3: 300 participants eating in a cafeteria (NIH STTR)
  - Data collection and analysis ongoing
Applications under investigations

• Weight loss
  – Collaborative project with MUSC Weight Management Center directed by Dr. Patrick O’Neil and funded by SCTR
  – 2 wk baseline then randomized to bite count reduction or calorie reduction treatment

• Slowing eating
  – Proof of concept study at CU*
  – Collaborative work with Dr. Kathleen Melanson at University of Rhode Island

Opportunities for collaboration

- Eating behavior
- Weight loss
- Diabetes
- Eating disorders
- Epidemiological studies
- Ideas?

Eric Muth: 
muth@clemson.edu
Adam Hoover: 
ahoover@clemson.edu
Bite Technologies: 
http://www.icountbites.com