Electronically-Enhanced Weight Control
Intervention for Adolescents: Feasibility,
Acceptability, and Effectiveness

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Introduction

- Effectiveness of adolescent behavioral weight control treatments is variable
- Even less research exists examining maintenance of treatment gains
- Teens are more likely too make weight-related decisions autonomously

Introduction

- Teens are ubiquitous users of technology
  - Technologically-enhanced weight control interventions may assist in achievement of weight loss (Cushing, Jensen, & Steele, 2010)
- Self-monitoring has been descrived as "the cornerstone of behavioral weight control"
  - Technology may facilitate improved self-monitoring adherance
- Tailored text messaging may also hold promise for promoting behavior change

E-Health Methods for Weight Control

- Application of technological enhancements to weight control interventions

    – Electronic momentary assessment
        - Diet and physical activity monitoring

    – Electronic momentary intervention
        - Tailored feedback
        - Adherence prompts

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Electronic Monitoring
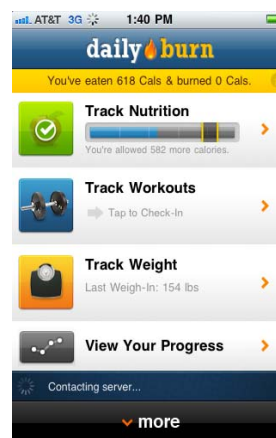
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Open Trial of Electronically-enhanced Intervention

- 16 adolescents ages 13-17 (Mean age = 14.34 SD = 1.12)

- BMI at 85th percentile or above (Mean BMI % = 95.84, SD = 3.36)

- 87% female

- Ethnicity: 56% White, not Hispanic, 19% Hispanic, 25% multiracial (including African-American, Asian, Hispanic, Native American)

Electronically-enhanced BWC

- 12 weekly behaviorally-based group weight control treatment sessions, separate groups for parents and adolescents

- Participants monitored diet and physical activity on iPhone ® using Daily Burn ®, a commercially-available diet and physical activity monitoring application

- Research staff monitored behavior daily and sent tailored text messages to participants to reinforce healthy behaviors and self-monitoring

- 12 additional weeks of self-monitoring and text messaging after group sessions finished

Intervention Tailoring

- Diet/physical activity data is monitored daily by research assistants
- Patterns of monitoring and behavior are tracked
- Text messages specific to successes and challenges are sent to teens
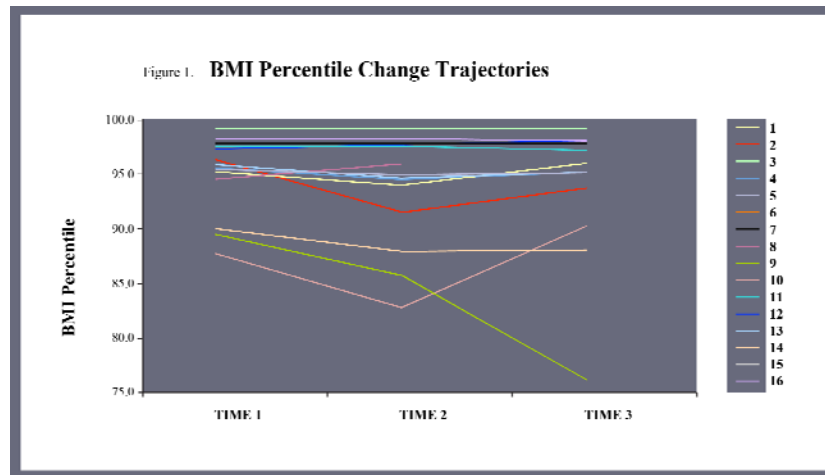- Teens text questions, successes, challenges to study staff and anticipate responses

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Results

Figure 2. **Mean BMI Percentile Change**

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Results

Figure 1. **BMI Percentile Change Trajectories**
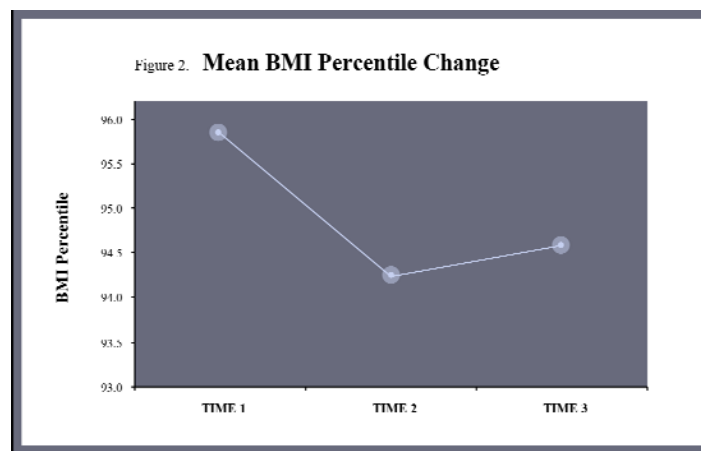
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Results

- **FEASIBILITY:**
  - Analyses of self-monitoring data revealed that participants recorded their dietary intake in DailyBurn® on 39% of recording days (69/178 days; range = 22-159 days, 12% - 89%).
  - Participants recorded their physical activity on 13% of recording days (24/178 days; range = 2-48 days, 3-86%).
- **ACCEPTABILITY:**
  - Mean adolescent Client Satisfaction Questionnaire total score was 27.66 (SD = 4.27; Maximum score = 30) and mean parent satisfaction score was 25.93 (SD = 3.78).

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Conclusions

- On average, participants achieved a modest reduction in BMI %

- Average BMI increased after in-person treatment concluded but did not return to pre-treatment levels

- Overall satisfaction with the intervention was comparable to previous studies

- Participants adhered to self-monitoring at a higher rate then in previous studies

- Teens wanted more frequent text messages and had some technological difficulties with electronic monitoring

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Practical Clinical Trial

- Participants randomly assigned to one of two treatment groups
  - 12 weeks BWC with manual self monitoring
  - 12 weeks BWC with electronic monitoring and text interventions
- Randomization stratified by age, sex, and BMI percentile

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Measurement Strategy

Results

Results

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Overall Conclusions

- Teens found the electronic intervention to be acceptable
- Feasibility assessment suggests that the intervention

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Future Directions

- Component analysis
  - Is effect attributable to increased self-monitoring, text, or both?
- Automation of text messaging
- Reduced in-person intervention to increase cost effectiveness
- Integration into primary care to increase access to underserved populations

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