

Design and Implementation of a Social and Mobile Weight Control
Intervention for Young Adults:
The **S**ocial **M**obile **A**pproaches to **R**educe Weigh**T** (SMART) Study

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College Students, Obesity, Diet, and Physical Activity

- A recent study of 80,000 college students from 106 United States (US) academic institutions revealed that **32% of college students are overweight or obese**
 - Transition from adolescence into early adulthood = new stresses (e.g., financial, time constraints)
- Innovative strategies for promoting healthy eating, physical activity (PA), and healthy weight in this population are imperative



Social Networks: Facebook Popularity

- In the US, 67% of adults who use the Internet also use Facebook; Facebook has reached over 1 billion users
- Most popular among young adults between 18-29 years
 - 87% of young adults use Facebook
 - College students spend approximately 30 min/d on Facebook
- Main features of Facebook
 - Create an online personal profile
 - Upload posts (e.g., messages, photos, videos)
 - Comment on friends' posts
 - Linked to friends' profiles



Pew Internet Research, 2012

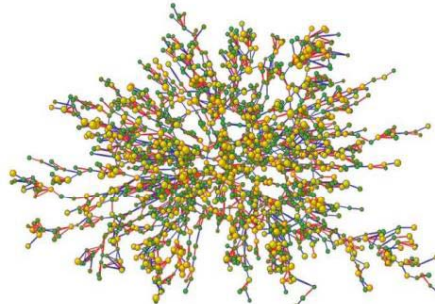
Facebook for Health Promotion

Social support is linked to improvements in health outcomes (e.g., psychological well-being, healthy eating)

- Facebook has been shown to increase social support

Social networks can also affect health

- Having a greater number of friends and family who are overweight or obese is associated with being overweight
- Having more social contacts is associated with greater intention to lose weight



Each circle (node) represents one person. The size of each circle is proportional to the person's BMI. (Christakis & Fowler, 2007)

Facebook and Other Social Media Technologies for Weight Loss Among College Students

- Other technology has also been shown to improve health outcomes:
 - Email
 - Mobile phones
 - Apps for smartphones
 - Blogs
- Napolitano et al. (2012) found greater weight loss among participants who received nutrition and PA information through Facebook and text-messages
- Few studies have used these social media technologies for weight loss purposes among young adults, particularly in combination (e.g., Facebook plus blogs)



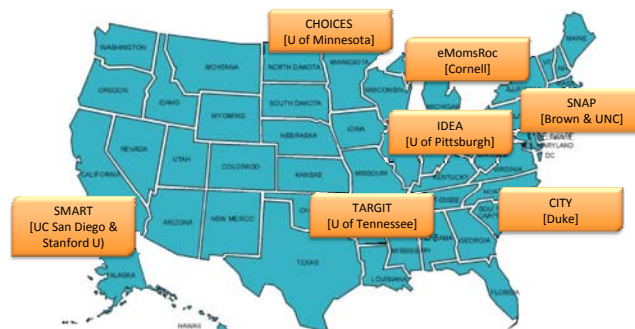
SMART: Social and Mobile Approach to Reduce Weight



PURPOSE

To leverage **social networks, social media, mobile phones, and the internet** for weight loss among obese 18-35 year old young adults

SMART is 1 of 7 studies in a consortium of studies called the EARLY Trials focused on obesity among young adults



NHLBI/NIH U01 HL096715; Patrick, PI



Sample, Recruitment, Randomization



404 Subjects, 18-35 years old male & female,
Weight: $25 < \text{BMI} \leq 34.9 \text{ kg/m}^2$
Students from three universities in the San Diego area



Recruited from May 2011 to May 2012 through flyers and word of mouth

Campus	RCT N
SDSU	182
UCSD	164
CSUSM	58
Total	404

Preliminary Inclusion Criteria

- ✓ Owns a personal computer
- ✓ Owns a mobile phone and uses text-messaging
- ✓ Facebook user/willing to start using Facebook

Study Aims



SMART is a 2-year study. Assessments will be taken at baseline, 6, 12, 18, and 24 months

- **Primary aim:** 5-10% weight loss at 24 months
- **Secondary aims:** Improvements in diet, PA, sedentary behavior, quality of life, smoking, alcohol use, sleep, body image, self-esteem, and depression
- **Exploratory aims:**
 - Mediators of intervention effects (e.g., psychosocial constructs, eating, PA, sedentary behaviors)
 - Moderators of intervention effects (e.g. gender, age, education, baseline levels of self-esteem, body image, depression)

SMART Behavioral Theory & Principles



Theoretical Principles

- Social Cognitive Theory
- Ecological Theory
- Social Network Theory
- Theories of Operant Learning
- Theories of Tailored Health Communications
- Self Regulation Theory
- Behavioral Choice Theory

Core Behavior Strategies

- Self-monitoring
- Intention Formation
- Goal Setting
- Goal Review
- Feedback on Performance

A "User-centered" Intervention with Multiple Touch Points



Internet



Smart-phone Apps



Facebook



Email

Blog

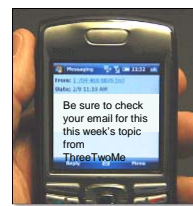
Health Coach Life Lines

Via phone & online chat

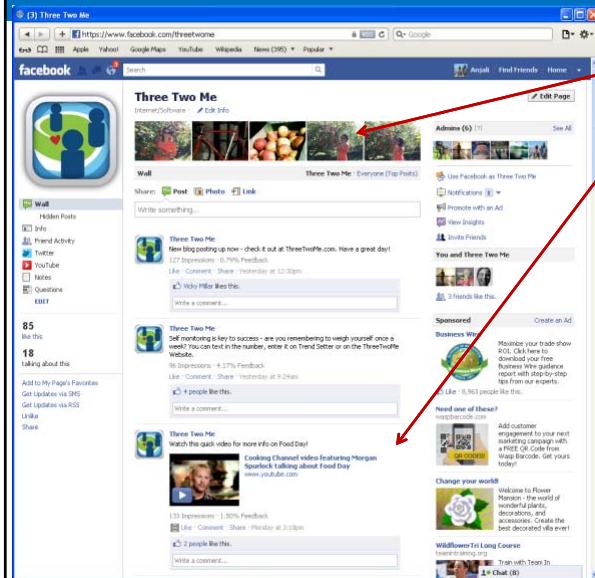
Other Tools

Bathroom Scale
Pedometer

Mobile Txt-Msgs



Intervention: Facebook Page



- Christina – “The Health Coach”
- Video on National Food Day

Engagement

- # of “Likes” overall
- # of “Likes” per post
- # of impressions (opened FB page)
- % feedback on the post

Mobile Apps



- Mobile apps designed to run on smart phones or the internet were created specifically for the SMART study
- Apps allow participants to self-monitor behavior, set goals, and receive feedback on their progress



SMART Application Programming Interface (API)



- A unique feature of the SMART app intervention modality was the creation of an open source SMART Application Programming Interface (API)
 - A protocol that permits different 'SMART-enabled' apps to communicate with each other
- Development of a SMART API enables new apps to be created by programmers outside of the SMART study that can generate and share data with the existing suite of SMART apps (which can also be used by others)

Adaptive Intervention – “Learns Over Time”



Mobile Apps



APP	TARGET BEHAVIORS & STRATEGIES					
	Self-Monitoring	Intention Formation	Goal-Setting	Goal Review	Feedback	Knowledge
Be Healthy		x	x	x		
TrendSetter	x	x			x	x
Goal Getter			x	x	x	
Facts & Quizzes					x	x

All apps accessible via

- ✓ Mobile
- ✓ Web
- ✓ Facebook



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Text-messages, Email, and Health Coach Lifelines



- Text-Messages:
 - Prompting monitoring/reporting of weight
 - Used to reinforce behavior change principles offered via other intervention channels
 - 1x per week initial phase; daily commencing 5/1/2013
- Emails:
 - Prompt participation in intervention activities
 - For contacting health coach or study staff
- Health Coach Lifelines:
 - 10 lifelines (~15 mins) used by the participant when s/he requires additional support from the health coach
 - Via telephone calls, Skype, or instant chat as one-on-one conversations between the participant and the health coach

Comparison Condition



Has access to a **website without social networking components** that provided information on

- Topics of relevance to college students
 - Tips on relationships, sexual health, alcohol and drugs, effective studying, career planning, sun protection, stress management, and other similar topics
- General weight loss information that is comparable to what one would receive from a primary care provider

Statistical Analysis

- Mixed-effects regression analysis
 - Factor for treatment condition (SMART intervention, control)
 - Continuous linear term for time (baseline, 6, 12, 18 and 24 months)
 - Random effects for subject, campus, and friend network defined according to Facebook
- Missing data assumed missing at random (MAR)
- We will also assess friend links among participants at baseline and over the course of the intervention period

Conclusion



- Social and mobile technologies have changed the way people communicate, gather information, and make decisions about their health behaviors
- Using an adaptive multimodal intervention enables researchers to keep pace with changes in technology and user preferences during the intervention
- This study may yield important insights into:
 - The relationships between Facebook use, social support, and behavior change
 - The strengths and limitations of using Facebook in health promotion research

Study Investigators, Staff, and Students



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Thank You

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