

BACKGROUND

Emerging evidence points to childhood obesity as a form of substance dependence (addiction), involving highly pleasurable food.^{1, 2, 3} In a website poll, 61% of overweight youth responding (n=83) indicate that they have a problem with mainly one food. Chocolate, fast food, chips, and candy top their list.⁴

Food Addiction Model: It is hypothesized that if obese children could break their dependence on their problem food(s), and not become addicted to a new food(s) in the process, they would gain control of their weight. Breaking food dependence necessitates that they go through withdrawal (abstain) from each problem food, one at a time, similar to coming off cigarettes or a drug. Withdrawal symptoms, e.g. intense cravings and irritability, typically subside in 2-3 weeks.⁵ In parallel with withdrawal from problem foods, obese children must learn to cope with unpleasant emotions, such as sadness, stress, and boredom, without turning to pleasurable foods for relief (comfort eating), the basis of food addiction.¹ Self-esteem and coping skills augmentation, along with stress management techniques, peer/mentor support, and motivational tools, are the necessary skills needed for recovery from food addiction and resulting obesity in children.

MATERIALS AND METHODS

An intervention was developed, based on the above described food addiction model, and implemented as an iPhone app. As shown at right, the app consists of:

- 1) Progress report (weigh-in);
- 2) My Buddy, Peer Support, and My Mentor areas for social support;
- 3) Motivational tools;
- 4) Unhooking Area, including Problem Foods Control Panel, for facilitation of withdrawal and abstinence;
- 5) Cravings, Vicious Cycles, Coping Skills, Activity Fun, and Self-Esteem areas to enhance personal resilience needed for withdrawal and abstinence, and to avoid re-addiction;
- 6) A "Panic Button" notifying provider/mentors on 24/7 call about impending binges, inability to resist overwhelming cravings, etc.

The app was evaluated by means of a one month exploratory study involving 10 overweight teens and preteens, to test the technology and content/concept acceptability of the food addiction model in children.

RESULTS

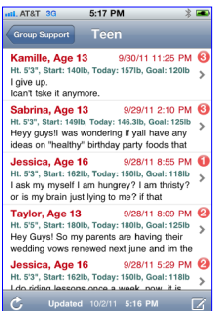
The group was very positive regarding the peer support and participant sharing features of the app. They especially liked the buddy system to share thoughts and feelings and to offer/receive tips, support, and encouragement.

An iPhone App Intervention for Childhood Obesity
Based on the Substance Dependence (Addiction) Model

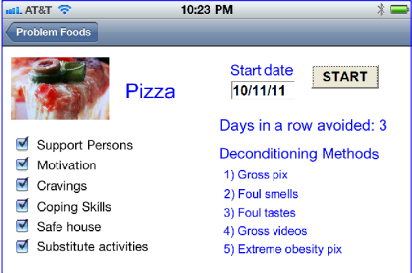
Robert A. Pretlow, MD, MSEE, FAAP (206-448-4414, director@weigh2rock.com)



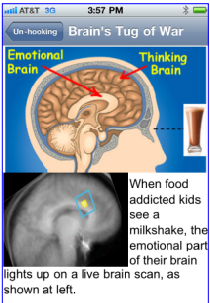
Progress Report: Individual weight chart, which mentor may view



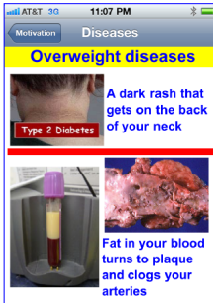
Peer support: Bulletin board messages



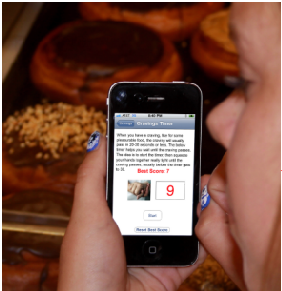
Problem foods control panel: Child lists problem foods, snaps iPhone photos of them, and proceeds through withdrawal from each food



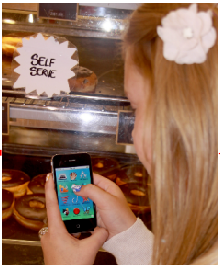
Education: Brain anatomical basis of food addiction



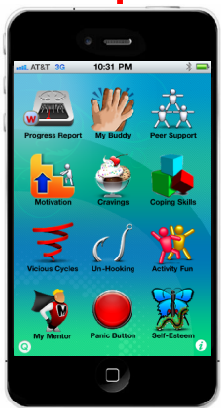
Education & Motivation: Diseases from being overweight



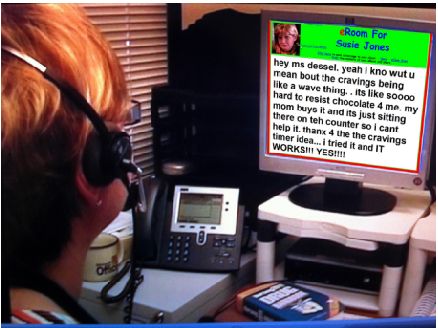
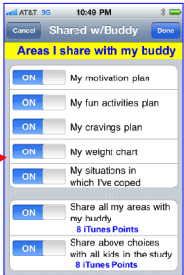
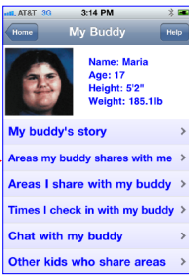
Cravings Timer: Child tries to resist the craving as long as possible, to beat previous score



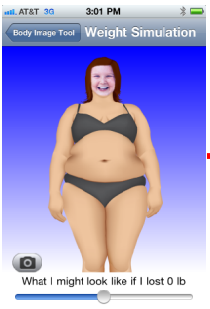
Cravings: App is started up to deal with a craving in the moment



My Buddy: Buddy support via chats and sharing of personal app areas



Mentoring: Healthcare professionals provide wireless support and guidance



Motivational tool: iPhone self-photo of face is inserted on body images of varying weights to simulate weight loss



Fun Activities: Child plans fun activities to distract from cravings and to cope with unpleasant emotions, e.g. taking her/his dog for a walk



RESULTS (CONT'D)

Comments from the study group included:

"I think that the text a buddy is kinda fun to not only get a little motivation but also possibly make a new friend."

"My problem food control panel is very helpful. You can see how long you have gone without giving into temptation and it makes you think, 'Do I really want to go through all this hard work and throw it out the window for a few minutes of comfort food?'"

"The motivation area helps you remember why you are working so hard. Especially when you are having a bad day. Also, the information about the diseases you can get is an additional motivation to get the weight off."

"I like the panic button, however the mentor or buddy may not be able to respond right away, which in a 'panic' may not be beneficial."

"The group support lets you know that you're not the only one fighting to lose weight. It makes you feel better knowing that there are people that are cheering for you and are ready to help you through the hard times."

DISCUSSION

All participants felt the app was appropriate for obese youth and understandable. Parental involvement and significant provider time were not required. Participants were able to take the app wherever they went, thus it was available "in the moment" for impending binges or overwhelming cravings. As today's youth typically are seen using cell phones, participants were not self-conscious about using the app. Provider/mentors likewise were able to effect support on the go, as any smart phone may be used. Call center mentors were an option.

CONCLUSIONS

This app has potential as a new approach for childhood obesity based on the substance dependence (addiction) model. Overweight adolescents appear to understand and are receptive to the food addiction model. The technology was easily utilized by the children.

Even if weight loss rate is less than that of face-to-face programs, the low cost and minimal staff requirement may justify the app as an intervention for childhood obesity. If interested in a randomized control trial, please contact above.

References

1. Pretlow R., *Eating Disorders*. 2011;19(4):295-307.
2. Gearhardt et al., *Archives Gen. Psychiatry*. 2011;23(3):39-5.
3. Stice, Epstein et al., *J. Neurosci*. 2011;31(12):4360-4366.
4. http://www.blubberbuster.com/cgi/poll_new_87.cgi
5. Pretlow R., *Overweight: What Kids Say*, Createspace, 2010.