Elements of Successful Mobile Apps and Serious Games to Instill Lifestyle Change
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Disclosure Information
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Objectives

1) Assess the meaning and value of studies of stand alone digital technologies to promote a more healthy lifestyle including decreased sedentary activity, increased exercise, and dietary change.

2) Recognize standards that enhance the potential success of electronically delivered health interventions that provide self-monitoring of weight, food intake, and physical activity.

3) Summarize the potential role of newer technology to enhance motivation, and engage difficult to reach audiences.
The Need for an Intervention
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What is Causing the Problem?

• **Caloric**
  • excess food quantity - **Not** the age-old calories in versus calories out
  • excess food selection options
  • poor food selection (sugar/high calorie)
  • bad match in composition for an individual (low fat, low carb, etc.)

• **Activity**
  • lack of activity,
  • minimal activity
  • physical inability to exercise
  • excessive sitting,
  • the wrong type of activity,
  • decreased muscle mass

• **Environment**
  • working habits/requirements
  • light,
  • media/advertising
  • lack of exercise options
  • lack of healthy food options

• **Psychological**
  • isolation/Emotional disconnect
  • emotional eating
  • eating disorders

• **Genetic/prenatal**
  • Mitochondria
  • maternal diet/weight
What do we know?

- Different interventions address different causes and thus don't fit all users.
- There is not one cause that explains all of obesity.
- There are individual causes for obesity in an individual.
Audience Input 1

- Have You Used a Fitness or Diet Tracker
- Did it work?
- Would you recommend it to others?
What do we Know about the Value of Technology Interventions


What About the Studies?

Why don’t they work?

• Neuroscience – Change is hard!
Technological Solutions Disappoint or Fail – Until they Succeed

- 1900s - Everything has been invented
- Internet crash - “all a bubble” -> Google/Facebook
- Phone -> iPhone
- Car -> Uber -> Autonomous Car
- VR/AR, Multiplayer Games/Alexa/Ok Google
What is so Great About Technology?

- less expensive
- capture data
- interactive
- adaptive
- consistent experience
- scalable

- already there
- potentially useful elsewhere
- patient
- science-based
- reliable
- 24 hour model. I'd say 24/7/365 model
We Need an Individually Tailored Technological Solution

- Customizing the lifestyle change to the needs and capabilities of the intended user
  - activity
  - dietary choice
  - water/hydration
  - sleep
Potential Solution

• Engages older adults (aged 65 to 75, no major chronic illness) in an online simulation to build a plan for long-lasting change related to diet and physical activity.

• This population is in a life transition period and need to establish dietary/exercise habits that maximize health.
The Power Of Unity/C#

- A PC/Unity interface identifies specific personal/provider-based health concerns to target.
- The software is essential to creating a comprehensive, and tailored experience that adjusts for individual, age, gender, and racial/ethnic variation.
User Experience

- User completes 5 to 8 brief (approximately 5 minute) scenario-based PC experiences patterned after “first/third-person thinker” games.

- Each includes role-playing characters, challenges, and decision-making opportunities for choices based on their health concerns.
1) Before starting the scenario, older adults complete a short activity to specify concerns or barriers and customize the scenario experience. For example, before

- activity scenarios, they may highlight inexperience, exercise intolerance, health conditions, or anxiety.
- scenarios on healthy eating, they may specify concerns about food allergies, expense, or availability.
Scenario-based PC experiences

1) Before starting the scenario,

2) In the scenario, the user faces challenges in making changes and decisions that affect in-game health. In the process, they experience a mirror of how these health factors, hurdles, and potential outcomes may play out in real life as they identify strategies and develop confidence.
Scenario-based PC experiences

1) Before starting the scenario,
2) In the scenario,
3) After each scenario a debriefing summarizes the experience and solidifies lessons learned. The user adds potential lifestyle changes to an evolving list of real-world goals and changes.
Artificial Intelligence and Pulling it Together

• Prioritize and select from the list created in the debriefing to form a lifestyle-change strategy and action plan.
We Need a Novel Way to Deliver the Intervention

- Voice-first technology (Amazon Alexa) to support positive diet and lifestyle choices for prevention in older adults
Alexa Experience Overview

• Interact with the Alexa system to enhance real-world habit formation and longer-term changes through prompts, daily check-ins, and resources
Alexa Experience Elements

1) Time-based prompts to implement a change, such as to exercise, get up and move, eat at a particular time, prepare a specific type of food, track vital signs, or implement other changes.

2) Immediate positive feedback and reminders to address dietary health risks, nutritional choices, and physical inactivity or low physical activity.

3) Progress reports showing changes over time and goal accomplishments including visual support if the older adult has the video version of Alexa.

4) Social connection to enhance support.
Current Status

• Concept – Funding proposal submitted
• Consultants and Academic Partners
Welcome!
Don’t Give Up Hope! Thanks!