

Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in Low-Income Women Ages 19-49 Years

by

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ABSTRACT

Combating obesity is a top public health priority in the United States. Currently, Alabama ranks 2nd in the nation for obesity. The goal of this dissertation was to develop *My Quest*, a 12-week mHealth initiative to evaluate predictors and behaviors known to improve weight loss/management in a limited-resource, overweight/obese population. *My Quest* used an easily accessible mHealth (text message-based) format for intervention delivery. *My Quest* was developed using Social Cognitive Theory focusing on personal, behavioral and home environmental factors (availability of produce and beverages). Scales and pedometers were provided to participants for self-monitoring. Recruitment took place in 80% of Alabama counties; data collection occurred through text message response and online surveys from April to July 2016. Participants (n=218) were low-income, predominantly minority, overweight/obese women in principally rural (84%) communities. After pre-assessment, participants were block randomized into comparison or text message group. Comparison participants received a traditional nutrition education program through a weekly eNewsletter providing tips, reminders and a low-cost recipe and self-monitored body weight through a weekly text prompt requiring response. *My Quest* text message participants received short texts (n=2-3/day), which included health tips and goal setting prompts. Text message participants received the same weekly eNewsletter as comparison participants as well as text prompts to respond with self-monitored daily step counts and weekly body weight. From pre- to post-assessment, analyses between comparison and text message group showed both groups had

significant weight loss ($P < .01$), improved food environment and increased dietary/physical activity goal setting and behaviors ($P < .05$). Although traditional education was just as effective as text messaging at promoting weight loss and improving several predictors of behavior change/behaviors known to promote weight loss/management, qualitative feedback from text message participants found the text messages *helpful, motivating, informative*, and helped keep them on track. *My Quest* provides support that targeted, evidence-based mHealth programs can effectively improve weight status, and diet and physical activity behaviors at a relatively low-cost in an at-risk population. *My Quest* also determined it does not take a large outlay of time or financial resources by researchers to provide a successful health behavior change program to improve body weight and behaviors. In conclusion, text messaging is an easy delivery modality to reach a socioeconomically disadvantaged, rural dwelling population to improve body weight and health behaviors, leading to improved quality of life.

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LIST OF ABBREVIATIONS

OB	Obesity
T2DM	Type 2 Diabetes Mellitus
HTN	Hypertension
CAD	Coronary Artery Disease
OW/OB	Overweight/Obese
LTPA	Leisure Time Physical Activity
FV	Fruits and Vegetables
SSB	Sugar-sweetened Beverages
PA	Physical Activity
mHealth	Mobile Health
SMS	Short Messaging Service
BMI	Body Mass Index
RCT	Randomized Controlled Trial
SCT	Social Cognitive Theory
MMS	Multimedia Message System
2015 DGA	2015 Dietary Guidelines for Americans
HP2020	Healthy People 2020
CVD	Cardiovascular Disease

CDC	Centers for Disease Control and Prevention
PAGA	Physical Activity Guidelines for Americans
MET	Multiples of the Basal Metabolic Rate
DV	Daily Value
RCT	Randomized Controlled Trial
IRB	Institutional Review Board
SNAP	Supplemental Nutrition Assistance Program
PAR-Q	Physical Activity Readiness Questionnaire
ANOVA	Analysis of Variance

I: INTRODUCTION

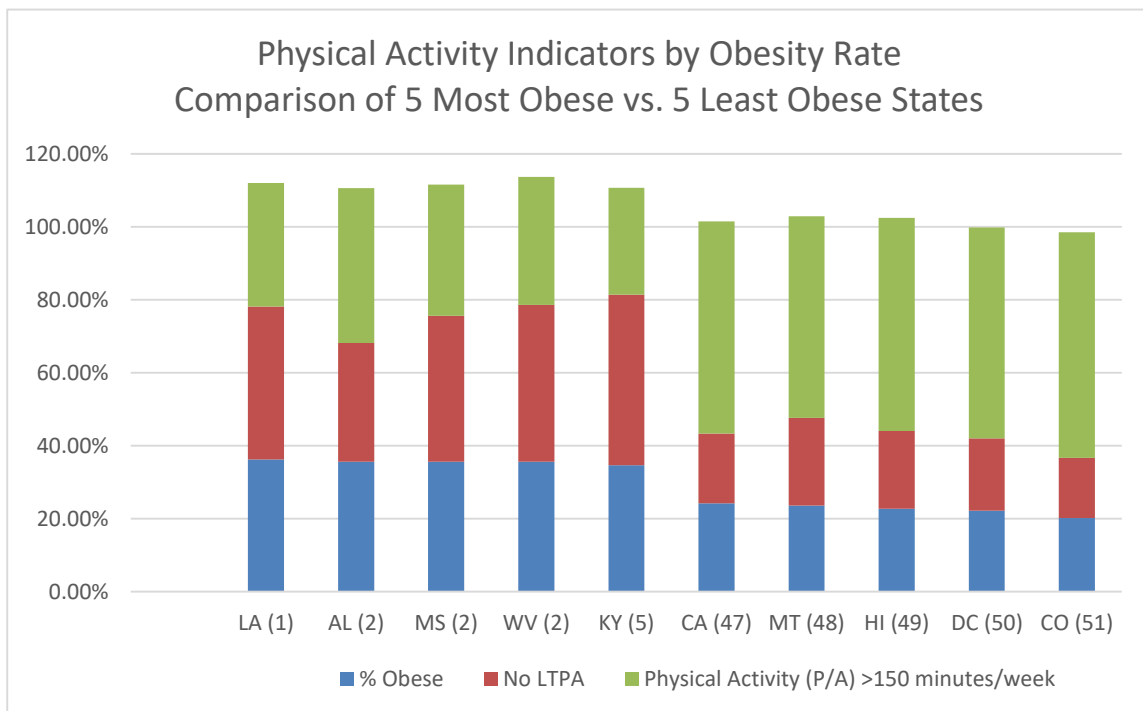
Introduction

Overweight, obesity and associated comorbidities affect over 68% of American adults.¹ Obesity (OB) prevention is at the forefront of public health initiatives in the United States. Comorbidities of OB include type 2 diabetes (T2DM), hypertension (HTN), dyslipidemia, coronary artery disease (CAD), stroke, bone and joint issues and psychological conditions.^{2,3} One in five deaths are associated with obesity.⁴ From the perspective of health insurers, the direct costs equate to an extra \$1,700 per year, per obese individual insured.^{2,3}

Decreasing OB rates, and preventing future OB in individuals at risk of OB has both financial and societal implications. Current statistics show nearly 38% of American adults are obese.⁵ Those at greatest risk for becoming OB are low-income, minority women. According to NHANES 2013-2014 data, 40.4% of adult women are OB with women ages 40-59 having the highest incidence (41.4%) followed closely by women ages 20-39 (34.3%).^{1,5} The highest rates of OB occur among low-income (33%) and minority women, with 57.2% of African American women being obese.^{5,6} Several behaviors known to increase risk for overweight/obesity (OW/OB) and chronic disease risk in this population include low leisure time physical activity (LTPA), reduced fruit and vegetables (FV) intakes, increase sugar-sweetened beverage (SSB) intake, and increased amounts of sedentary and screen time.^{5,7} These correlations can be seen in table 1 and table 2. Table 1 compares physical activity (PA) indicators (no LTPA and engaging

in >150 minutes/week of PA) for the 5 most obese states (Louisiana, Alabama, Mississippi, West Virginia, and Kentucky) to the five least obese states (California, Montana, Hawaii, Washington DC and Colorado).^{5,7} Table 2 compares behavioral predictors that correlate to higher body weight and OB (reduced FV intakes) for the 5 most obese states (Louisiana, Alabama, Mississippi, West Virginia, and Kentucky) to the five least obese states (California, Montana, Hawaii, Washington DC and Colorado).^{5,7}

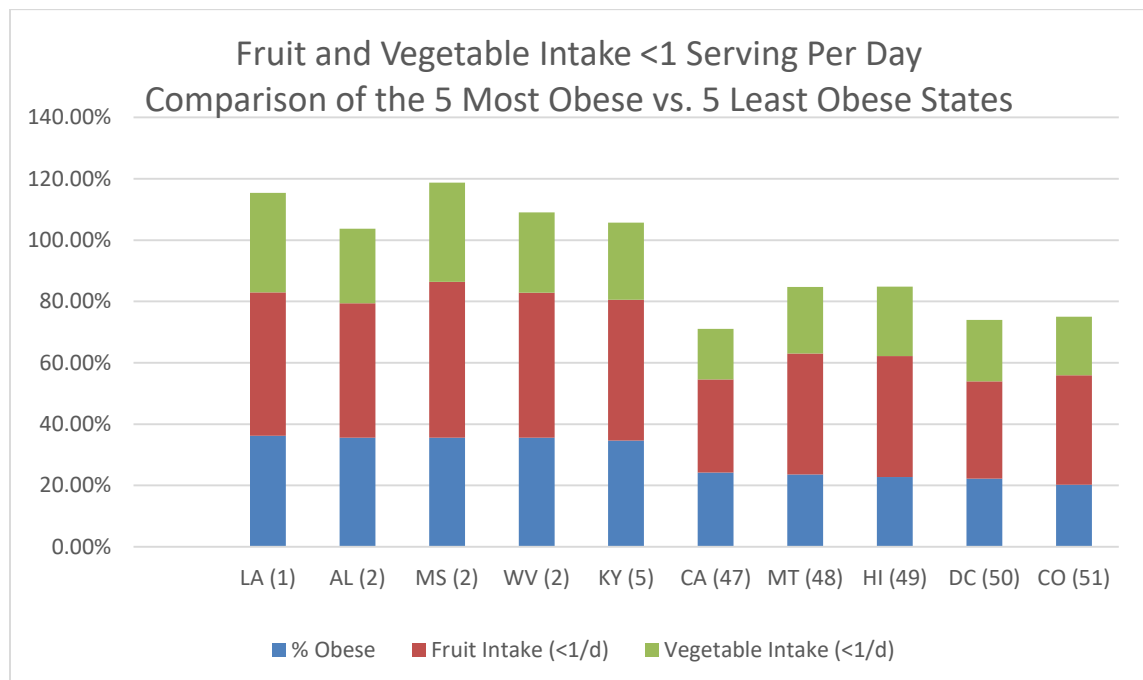
Table 1



Public health initiatives aim to promote health and reduce chronic disease risk through consuming healthful diets and achieving and maintaining a healthy body weight. Interventions promoting weight loss/management in a limited-resource, minority, female population present many challenges.⁶ Meeting low-income women where they are, using delivery methods already ingrained in their culture is a crucial first step in weight

loss/management efforts to combat OB in this at-risk population. One possible delivery method is utilizing mobile health (mHealth) modalities for intervention delivery. mHealth is the practice of medical or public health services using mobile devices to deliver information, provide education and collect data.⁸ The use of cell phones to deliver health information and behavior change programs is a form of mHealth. Cell phone ownership is highly integrated into American society, even among individuals with limited resources. In 2014, over 80% of lower-income households, persons living in rural communities, American adult women, and over 90% of African-Americans and Hispanics owned cell phones.⁹ Most cell phone owners use phones to text (81%) and send/receive e-mail (52%).¹⁰ Texting is the dominant way of communicating for Americans under 50.^{10,11}

Table 2



Short messaging service (SMS) or text message programs have shown promise as a medium for weight loss interventions and nutrition education programs. These

programs are cost-effective, convenient, have high adherence rates and promote behavior change and moderate weight loss.¹²⁻¹⁹ Text messages allow participants to retrieve information on their own time, and reduce time, financial and transportation constraints of attending classes. Messages are short and targeted, increasing the likelihood recipients read and use information. With the majority of low-income and rural individuals owning cell phones, using a text message-based program is a feasible way to remove barriers and reach a population who are female, OW/OB living in rural areas, and without financial resources, transportation or the ability to access community centers for on-site weight loss intervention programs.

Statement of the Problem

Alabama is not immune to the OB epidemic. Currently, Alabama ranks 2nd in the nation for OB and 4th for poverty.^{5,20} Alabama also ranks within the top ten for chronic diseases (i.e. diabetes and hypertension) as well as predictors known to increase risk for OB (low FV intake, and low LTPA).^{1,5} Statistics show low-income, minority women in Alabama have higher rates of OW/OB than the national average.^{1,5} Many Alabama women support single family households.²⁰ Maternal OW/OB is a strong predictor for their children to become OW/OB in adulthood. For these reasons alone, this population is in great need of OB prevention and weight management efforts.

Meeting low-income women where they are, using delivery methods already ingrained in their culture, is a crucial first step in OB prevention efforts. Barriers identified by this population include availability of healthy foods, cost of healthy foods, time constraints to eating healthy foods, lack of cooking or food prep skills, lack of knowledge about PA, lack of safe places to engage in PA, and lack of social support.

Building on this tenet, *My Quest*, a 12-week theory driven adult weight loss intervention delivered through text messaging was developed for a low-income population. The goal of *My Quest* was to aid low-income women in weight loss and behavior change using an easily accessible m-Health format for intervention delivery.

Purpose of the Study and Study Objectives

Primary Goal: Weight loss of 5% from baseline body weight.

Secondary Goal: Increased water intake, FV intake, healthy snacking, meal planning, daily steps, PA, knowledge and adherence to personal calorie requirement, food and exercise journaling, and reduced sugar-sweetened beverage intake and sedentary time.

Hypotheses

1. Delivery of a theory-driven weight loss intervention through text messaging will produce significant weight loss in Text message (T) versus Comparison (C) participants from pre- to post-intervention.
2. Delivery of a theory-driven behavior change intervention through text messaging will significantly improve 12 predictors of behavior change for weight loss/management in Text message (T) versus Comparison (C) participants from pre- to post-intervention.

Significance of the study

Limited-resource populations have limited leisure time and resources to engage in weight loss programs that require time and/or large financial outlays. Low-cost, community-based programs are still difficult for individuals who lack adequate transportation, which is a prevalent barrier for women who live in rural Alabama.

Text messaging provides quick, “in-time” messages and skills for individuals who lack time or financial resources to participate in on-site weight loss programs. People can read text messages at their own leisure. Americans want programs that are engaging, cost-effective, quick, and convenient. Programs meeting these criteria have less attrition, and are shown to be more effective and successful. Text messages can reach people where they eat, work, live and play. Receiving text messages at high risk times (such as lunch time) with reminders to make a healthier choice, or go for a walk has been shown to produce behavior changes.^{12,15}

Most weight loss studies using text messaging are with middle income and/or non-minority populations, most having higher education levels.^{12,13,18} These studies also have health coaches available to participants. According to the literature, more impact-driven studies using text messaging to support weight loss efforts is needed in this high risk population. Statistics support disparities within low-income, minority populations such as lower education level and reduced literacy. These barriers can produce cognitive differences in how low-income and/or minority women approach weight loss and healthy behaviors. They have more misconceptions about nutrition/exercise due to receiving poor information from the internet.

Summary

The purpose of *My Quest* was to enhance the limited literature on evidence-based weight loss programs using text messaging to promote healthful behaviors and improve predictors for weight loss/management in limited-resource populations. This intervention will teach low-income, predominantly minority and rural dwelling women through text

messages to reduce social and environmental barriers, leading to healthy, sustainable behavior changes.

My Quest will add to the very limited research on effectiveness of text messages as the primary modality to deliver a weight loss intervention to low-income women. This study can answer the questions, “Can text messages improve knowledge and behaviors known to reduce OB and improve health outcomes in a low-income population?” and “Can text messaging programs produce statistically significant weight loss of 5% in a low-income population?”

My Quest can reach a larger portion of this at-risk population through text messaging compared to on-site programs. Helping reduce body weight and/or improve predictors of behavior change in these low-income women can lead to reduced disease burden and improved quality of life.

II: LITERATURE REVIEW

Overweight and obesity plague 68% of Americans,^{1,5} contributing to an estimated 300,000 preventable deaths each year.²¹ Co-morbidity's of OB such as T2DM, heart disease, joint diseases, and certain cancers also take a financial toll on the economy. Obesity is one of the biggest drivers of preventable chronic disease and healthcare costs in the United States, with current direct cost estimates ranging from \$147 billion to \$210 billion per year and indirect costs of approximately \$4.3 billion annually.²² There is a large disparity in OB incidence based on race and socioeconomic background. Low-income women are more likely to be obese than higher income women, and women with college degrees are less likely to be obese than women with less education.²³ Minority populations such as non-Hispanic blacks and low-income women have the highest incidence of OB.²³ Determining effective OB prevention and weight management programs are paramount in the fight to reduce the incidence of OB within the United States.

mHealth Delivery Systems/Text Messaging Programs for Health Promotion

Mobile phone short message service (SMS, or text messaging) is an up and coming modality for delivery of health related messages. Information can be disseminated to a large number of persons in real time, with an individual having the ability to access and read messages at a time of their own convenience. Text messaging

can be a cost-effective, accessible route to deliver or communicate nutrition information and education.⁸ Text messaging provides an opportunity to improve health knowledge, behaviors, and clinical outcomes, particularly among hard-to-reach populations.²⁴ Text messaging also can be used as a data collecting tool. Text messaging is an innovative, cost-effective format that may overcome many barriers with this high-risk population.^{15,19}

Cell phone ownership is becoming ingrained in American society. According to PEW research, 91% of Americans own a cell phone with 80% using text messaging.⁹ In 2014, 90% of African Americans and 92% of Hispanics, 88% of American adult women, 88% of persons living in rural communities, and 84% of households earning less than \$30,000/year owned cell phones.^{9,10} Texting is the dominant way of communicating for Americans under 50.^{10,11} Statistics show that 81% of all cell phone owners use their phone to text and 52% to send/receive e-mail.¹⁰ Approximately 64% of cell phone owners own smart phones with the ability to search the internet.¹⁰ Among low-income smart phone users, 45% use their phone to surf the internet and 62% use their phone to look up information on medical conditions.¹⁰ SMS text message programs have shown to be a promising medium for weight loss interventions, and public health and nutrition education programs.¹²⁻¹⁹ These programs are cost-effective, convenient, have high adherence rates,^{12,13,15,18} and promote moderate weight loss.^{12,15,17,19}

A study from New Zealand used a mHealth program to deliver an eight-week weight loss intervention.¹⁷ Fifty-three ethnically diverse adults, 18 years and older with a BMI ≥ 25 kg/m² who wanted to lose weight, were provided with a program toolkit that contained personal plans, behavior monitoring, and other evidence-based information to assist with successful weight loss. Participants also received two text messages per day.

Two data collection questions were sent via text each week asking for pedometer step counts and progress toward a specified weekly behavior change goal. Participants also were able to “text an expert” during the intervention phase and receive a reply to their queries within 24 hours. Body weight and height were measured by Research Assistants during face-to-face assessments at pre-intervention and at 12-weeks (four weeks post-intervention) to determine BMI. Pedometers were provided for self-monitoring of PA and food diaries to facilitate dietary monitoring. Results showed the program had a retention rate of 68%. From baseline to 12 weeks, body weight showed a significant change of -1.4 kg (± 3.6) kg, or 2.2 pounds ($P=.023$). Five participants lost 5% or more of their baseline weight. Qualitative participant feedback reported participants found most helpful the following features: goal setting (43%) and recording step counts (45%), while fewer found monitoring weight (17%) or keeping a food diary (26%) helpful. Overall, the program showed mHealth was a feasible delivery method for an ethnically diverse population, and mHealth programs could be effective in supporting people with weight loss.

A single-center, randomized controlled trial (RCT) was conducted in the United Kingdom to evaluate the impact of a PA program based on internet and mobile phone technology.¹⁸ Participants were randomized into test groups that had access to an internet and phone based PA program ($n=47$) or control group ($n=30$) that received no support. Participants received up to £30 for initial screening, £140 to cover cell phone costs, and £290 at post-assessment. Both groups were issued an Actiwatch accelerometer to monitor PA. The test group received tailored solutions for perceived barriers to PA, a schedule to plan weekly exercise sessions via mobile phone and email reminders, a message board

for social support and behavior change strategies, and real-time feedback on their level of PA. At the end of the nine week study period, 75% of participants logged in each week to the behavior change system. Most log-ins were to look at activity charts, the exercise planner and visit the chat room message board. The test group spent more time engaging in moderate PA compared to the control group ($P=.02$). Weight loss between groups approached significance ($P=.06$), with the test group reducing BMI -0.24 , $SE=0.11$ and the control group increasing BMI 0.10 , $SE=0.14$. There was a significant reduction in percent body fat in the test group compared to control ($P=.04$). The trial found participants who had access to a fully automated behavior change system engaged in more PA per week than those without access.

A 16-week, RCT through the University of California, San Diego, was developed using Social Cognitive Theory (SCT) and evaluated to determine whether weight loss could be promoted in OW/OB adults through the use of a largely SMS and Multimedia Message System (MMS) messaging system.¹² Inclusion criteria included adults, age 25 to 55 years, $BMI \geq 25-39.9$, not taking medications known to cause weight gain, and present use of a mobile phone for sending and receiving SMS and MMS messages or willingness to learn. Participants ($n=78$) were randomized into one of two conditions: (1) receipt of monthly printed materials about weight control or (2) an intervention that included personalized SMS and MMS messages sent two to five times daily, printed materials, and brief monthly phone calls from a health counselor (baseline, two months and four months). The primary outcome was body weight at post-intervention. The intervention was organized by weekly behavior and dietary topics that changed as participants proceeded through the intervention. Participants in the intervention group could choose

different times during the day to receive two to five personalized text messages per day. Text messages included tips, reminders, and text prompts requiring a response. To support self-monitoring, participants reported their body weight once a week through a text response. At post-intervention, 67% of participants completed assessments and were analyzed. Results from this trial showed participants in the intervention group lost 1.99 kg more than the comparison group ($P=.04$). Although results could not be generalized to the U.S. population due to the sample being predominately Caucasian female, it did support that interventions based primarily on use of tailored SMS messages are effective at promoting weight loss over four months, and mobile technology offers few barriers to reach individuals through deployment of interventions based on a simple mode of communication.

Text4Diet built upon the previous study to develop a 12-month RCT using SMS messaging for weight loss behaviors.¹³ Primary outcome was weight at 6 months. Secondary outcomes were group difference in weight at 12 months, intervention adherence, change in PA per average daily pedometer steps, and intervention satisfaction. Inclusion criteria were adults ages 21 to 65 years, BMI between 25.0-39.9 kg/m², regular access to internet, own and use a cell phone with SMS, read and speak English, and ability to participate in moderate PA. Participants were randomized into the intervention (n=81) or control group (n=89). Each group received \$175 to cover travel expenses. The intervention group also received up to \$50 for completing online surveys and \$10/month for SMS reimbursement. Participants in the intervention group received a pedometer to measure daily steps; those without a scale were given a digital scale to record body weight. Intervention participants also received four SMS or MMS messages per day for

12 months. Messages included tips, facts, motivation, and messages requesting answers to knowledge questions or self-monitoring data on weight or steps. Height and weight were measured during assessment visits (baseline, 6 months and 12 months), and weekly body weight was provide via self-reported SMS. Both intervention and control group received a monthly eNewsletter with diet and PA information from credible sources. At 12 months, retention was 70% in the intervention group and 82% in the control group. Results showed there were no group differences in weight loss at 6 or 12 months, though intervention lost an average 3 more pounds than control. Adherence to the text message program was moderately strong with 60-69% response rate. Intervention participants did increase PA by almost 3,000 steps/day over time ($P<.05$). Overall, results showed that text-messaging did not have an effect on weight, although self-report adherence was associated with improvement in weight-related behaviors and weight outcomes. Future implications showed text messages could be a useful adjunct to a weight loss program.

Duke University developed a six month pilot study to evaluate the feasibility of a text messaging intervention for weight loss among a predominantly minority population (African American women).¹⁵ Inclusion criteria were women ages 25-50 years, BMI ≥ 25 kg/m², willingness to come to all study assessments, own and use a personal cell phone with ability to send/receive up to five texts per day without compensation for the text messages, and be randomized into intervention or control group. Obese women were recruited through a nonprofit, church-based community wellness organization. After recruitment, 50 women were randomized into (1) text message education intervention (n=26) that receive daily text messages with tips or self-monitoring of behavioral goals and feedback on goals or (2) educational control group (n=24). The primary outcome for

this study was to evaluate the feasibility of daily text messaging for self-monitoring behavior goals for weight loss in predominantly obese, African American women. A secondary outcome evaluated the effect of the intervention on weight change relative to the educational control group. Self-reported age, gender, height, weight and race were completed during the initial eligibility screening. Trained staff also measured participants' height and weight at baseline and 6 months. Participants in the intervention group received information sheets about behavior goals, a pedometer, 2 face-to-face group sessions, and a skills training DVD. They worked toward one of 12 behavior change goals, and a weekly goal of 7,000 steps/day, working toward a goal of 10,000 steps/day. One daily text message was sent requesting feedback on personal behavior change goals from the previous day [Ex: Please text yesterday's: # steps, #sugary drinks, if u watched more than 2 hrs TV. Separate with commas (ex: 6124, 3, y)]. Participants in the educational control group received 2 in-person group education sessions (baseline and 6 months), a set of behavior change videos at three months, a pedometer and a prescription to walk 10,000 steps/day. Control group participants had the option to receive a 3-month version of the text messaging intervention after the intervention. Using an intent to treat analysis, treatment participants lost a mean of 1.27 kg (SD 6.51) and control gained a mean of 1.14 kg (SD 2.53). Weight loss from pre- to post-intervention in the treatment group was not statistically significant ($P=.09$). The daily text messaging adherence rate was 49%, with most participants texting at least 3 days each week. The overall retention rate was 54%. Qualitative feedback showed participants found daily texting easy and helpful as well as helped them increase the number of daily steps walked. Overall conclusions determined self-monitoring via texting is a cheaper, easier to

program and more proximal to behavior changes compared to paper-based and web-based self-monitoring modalities. Text messaging may be a useful self-monitoring tool for weight control, particularly among high-risk populations.

Social Cognitive Theory and Weight Loss/Behavior Change

According to Bandura, reciprocal determinism, or the dynamic interaction between a person, behavior, and the environment determines behavior.²⁵ Three processes within SCT are relevant to nutrition education: (1) personal factors, a person's thoughts, feelings and beliefs, which include self-efficacy and self-regulation/goal setting, (2) behavioral factors, food, nutrition, PA, and health related skills, which includes self-monitoring, and (3) environmental factors, a person's physical and social environment.²⁶

Personal factors include self-regulation (or goal setting) and self-efficacy. Self-regulatory processes are closely tied to a person's self-efficacy. Self-regulatory processes, such as goal setting, mediate the effects of most external influences and provide the basis for meaningful action.²⁵ Self-efficacy is a person's self-confidence they can carry out an intended behavior successfully, or effectively deal with various situations (Ex: overcome barriers).^{25,26} High self-efficacy is important in the initiation, modification, and maintenance of behaviors such as healthy eating and PA.²⁶ Behaviors, including healthful lifestyle choices, must be clearly targeted in an intervention.²⁷

Behavioral capacity enables people to perform a particular behavior after learning what the behavior is and how to perform it.²⁷ Healthful lifestyle behaviors include healthful eating (such as increasing FV intake and whole grains and decreasing dietary fat intake) and being physically active.²⁸ The effects of various personal and environmental factors influence healthful lifestyle behaviors.²⁸

Environmental factors include the social and physical environments that affect a person's behaviors.²⁵ A person's environment provides the model for their behavior choices^{25,27} Environmental factors can include the availability of specific food types in the home. For example, availability of FV or SSB in the home affects a person's behavior to engage in eating FV or drinking SSB instead of water or non-caloric beverages.

Predictors of Behavior Change

Increasing Water/ Reducing SSB

Reducing calories from added sugars is a recommendation of the *2015 Dietary Guidelines for Americans* (2015 DGA) and an objective of *Healthy People 2020* (HP 2020).^{29,30} Sugar-sweetened beverages, a major source of added sugars, are associated with chronic health conditions such as T2DM, CAD, cardiovascular disease (CVD), and OB.³¹⁻³² The relationship between SSB to OB can be attributed to (1) the increase calorie intake from added fructose (sugar, high fructose corn syrup, fructose) to the diet without reducing energy intake from other sources which leads to weight gain and (2) beverages not suppressing food intake calories to an appropriate degree to prevent weight gain, therefore beverages are “add on” calories leading to increased risk for OB.³²

Added sugars are a top source of added calories in the United States diet.³¹ According to the Centers for Disease Control and Prevention (CDC), the most common sources of SSB are regular soda and fruit drinks.³¹ The highest consumers of SSB (>2 servings/day) are adults ages 19-49 years, with an average intake of 485 calories/day.³³ A study by Park et al. found 24.4% of females drink ≥ 1 SSB per day, with females age 35-54 having the highest intakes (30.1%).³⁴ The *2015 DGA* recommendation is to shift to healthier food and beverage choices to reduce sugar consumption to <10% of

calories/day.³³ Preference should be for calorie-free beverages, especially water.

Replacing two SSB each day, provides a savings of 302 calories and 19 teaspoons of sugar. This calorie saving can assist with weight loss, weight management, and help reduce risk for certain chronic diseases.^{33,35}

Increasing FV Intake

Current recommendations for adults is 1.5-2.0 cup equivalents of fruit and 2-3 cups of vegetables daily.³⁶ National FV intakes are far below these recommendations with adults consuming 1.1 servings of fruit and 1.6 servings of vegetables each day.⁷ Only 13.1% of Americans meet the daily fruit recommendation and 8.9% meet the daily vegetable recommendation.³⁶ In Alabama, 43.8% report consuming fruits and 24.3% consuming vegetables less than one time a day.⁷ Median intake of fruit is lower than national average at 1.0 fruit per day compared to 1.1.⁷ The median intake of vegetables is consistent with the national average of 1.6 vegetables per day. Increasing FV intake adds nutrients to diets, reduces risk for heart disease, stroke, and some cancers as well as helps manage body weight, especially when eaten in place of more energy-dense foods.^{7,36}

Increasing Physical Activity

Americans are encouraged to be physically active 30-60 minutes most days of the week.^{37,38} Several government entities promote reducing sedentary time and increasing physically active time to reduce disease burden and mortality risk.^{37,39-42} The *2008 Physical Activity Guidelines for Americans* (PAGA) and *HP2020* both aim to reduce sedentary behaviors and increase LTPA to improve the health of Americans.^{42,43} According to the *2008 PAGA*, Americans age 18-64 should engage in 150 minutes/week of moderate intensity PA or 75 minutes of vigorous intensity PA or a combination of both

for health benefits (such as reduced risk for CVD, T2DM, HTN, OW/OB). *Healthy People 2020* encompasses these guidelines and sets two objectives specific to sedentary behaviors and PA: (1) reduce the proportion of adults who engage in no LTPA and (2) increase the proportion of adults who engage in aerobic PA of at least moderate intensity for at least 150 minutes/week or 75 minutes/week of vigorous intensity (or an equivalent combination).^{30,43} *Healthy People 2020* outcome measures for sedentary behaviors call for a reduction in no LTPA to 32.6% of American adults and an increase to 47.9% of American adults meeting the *2008 PAGA*.⁴³ Currently, 36.2% of Americans engage in no LTPA.⁴³ Rates are highest among OW/OB, women, lower-income and minorities.^{44,45} Racial and ethnic minorities are consistently shown to be less physically active during leisure time compared to whites.⁴⁵ Chronic disease burden associated with physical inactivity may disproportionately affect these socioeconomically disadvantaged populations.⁴⁵ Minority women have the lowest LTPA levels in the United States. This population also is more at risk for preventable chronic disease (T2DM, HTN, CVD, OW/OB).⁴⁴

According to the CDC, 31.7% of adult women and 38.5% of African Americans engage in no LTPA. African American females have the highest rates of OB (45%), and the lowest rates of LTPA (42.4%) in the US.⁴⁶ Increasing PA helps expend more calories and creates a calorie deficit that can positively impact energy balance and aid with weight loss/management.

Increasing Daily Steps

According to Bassett, pedometers can increase PA levels in OW/OB individuals by an average of 2,183 steps, or one mile, each day. Accumulating 8,000 steps per day

may be equivalent to 30 minutes of moderate intensity PA on a single day.⁴⁵ Pedometers can be used as a self-monitoring tool to motivate and increase PA levels.^{44,47} In a study by Bennett, et.al, PA accumulated using pedometers through non-leisure and leisure sources were determined in a disadvantaged population.⁴⁵ Findings showed pedometers could be used to assess PA in low-income settings. They also demonstrated that pedometers could be used effectively in understudied populations to assess PA in a manner that is largely devoid of recall bias, which is a typical impact factor associated with self-report measures. A study by Clarke et al. showed that an intervention using pedometers successfully increased PA and promoted weight loss.⁴⁴ Knowing personal daily step counts helps gauge PA levels.

Knowledge of Personal Calorie Requirement and Portion Control

Portions sizes and body weight increased substantially between 1977 and 1996.^{48,49} Previous studies show that controlling food portions is a major contributor to reducing calorie intake and aids in weight management.⁴⁸⁻⁵⁰ Multiple controlled studies have shown providing individuals with larger food and beverage portions lead to substantial and sustained increases in calorie intake.⁴⁸ Increase in portion sizes of foods have occurred in parallel with the rise in the prevalence in OB.⁴⁸ Substituting energy-dense foods with nutrient-dense foods can reduce calories. For 1,200 grams of food, a change in foods, such as substituting with FV for higher energy-dense foods such as cookies, could reduce daily calorie intake an estimated 120 calories/day.⁴⁸ For weight management, people need to learn they can eat a satisfying amount of food if they eat larger portions of low-energy dense foods while limiting portions of high-energy dense foods. Portion control interventions incorporating dietary counseling with a portion

control plate or portion control strategies also may be an effective strategy to enhance weight loss.⁴⁹

Reduced Sedentary Time

Research now links sedentary behaviors, such as prolonged sitting in occupational environments and transportation, recreational screen time (TV viewing or computer use) and physical inactivity with increased risk for OB, CVD, morbidity and mortality.^{51,52} Sedentary behaviors typically are in the energy-expenditure range of 1.0 to 1.5 METs (multiples of the basal metabolic rate).⁵³ Low-intensity behaviors require no more than 2.9 METs, while moderate-to-vigorous PA require an energy expenditure of 3 to 8 METs.⁵³ Sedentary behaviors are becoming a focus of research for the distinct risk factors associated with the lack of activity.⁵² Reducing sedentary time and screen time is becoming a public health priority to positively impact body weight and health risk.

Healthy Snacking

According to surveys completed by the NPD Group, over half of Americans have two or more snacks on a typical day.⁵⁴ The most typical between meal snacking times occur at 10 am, 4 pm and 8 pm. In a separate survey, it was found that frequent snacking may be replacing standard daily meals. Americans are moving toward a preference for healthier snacking, but 62% of Americans consumers still snack mainly to satisfy a craving (such as sweet, salty, or savory).⁵⁵ A report by the Mintel group stated there is a need for more convenient, healthier snacks.⁵⁵ In Alabama, the Department of Public Health has launched the Alabama Healthy Vending Machine Program (<http://www.adph.org/NUTRITION/index.asp?id=4929>), publically known and branded as “Good Choice”, to assist Alabamians in making healthier snacking choices and help

prevent or reduce OB.⁵⁶ “Good Choice” snacks meet the following nutrition standards per serving: 200 calories or less, 10% or less of Daily Value (DV) of total fats (nuts are exceptions), 10% or less of DV of total carbohydrate (fruits are exceptions), 5% or more of DV of at least one of the following nutrients: fiber, calcium, iron, potassium or Vitamin D, 230 mg or less of sodium. Preferred beverages include pure water, 100% fruit juice, plain, low-fat milk, and all other beverages with 40 calories or less.⁵⁶

Meal Planning

Grocery shopping with a list is one tool that may help a low-income population navigate complicated food environments.⁵⁷ African American and low-income individuals are at increased risk for poor diet, OW/OB.⁵⁷ Targeted marketing and residing in areas with limited or no access to healthy fresh foods present a barrier for healthful eating.⁵⁷ Several renowned entities promote planning meals ahead, and shopping with a grocery list⁵⁸⁻⁶³ Grocery lists function as: (1) a memory aid, (2) a guide to limit impulsive purchases, (3) a formal planning method that structures meals and eating habits, and (4) help to preserve financial resources.^{57,62,63} According to *ChooseMyPlate*, planning meals ahead and buying for the week helps avoid extra shopping trips, unwanted food purchases, and keeps costs within the shopping budget.^{61,63} Planning meals and creating a grocery shopping list allows people to plan for healthier foods to include with meals and snacks such as whole grains, fruits, vegetables, and low-fat dairy. According to the Mayo Clinic, meal planning doesn't have to be complicated. It begins with writing down a list of favorite meals, looking through cookbooks, and checking out recipe websites for ideas.⁵⁹ Develop a menu based on weekly supermarket sales, foods already stocked in the pantry, fresh produce availability, meatless meals or breakfast for dinner that meet the *My*

Plate criteria.⁵⁹ A recent study in a predominantly minority, limited-resource population lends support to this notion. Results show people who used a shopping list versus those who did not had a higher diet quality ($p=.001$), and lower BMI and body weight ($p=.084$).⁵⁷

Food and Exercise Journaling

Regular self-monitoring of diet and PA behaviors is one of the strongest predictors of weight loss success.¹⁵ It is proposed that self-monitoring improves weight loss outcomes by activating several self-regulatory mechanisms.¹⁵ mHealth approaches to self-monitoring include features such as prompts, real-time data collection, data driven feedback, and asynchronous communication.¹⁵ Text messages are short (typically 160 characters) per message, which limits detail and helps avoid cognitive overload.¹⁵ Daily self-monitoring of diet and PA behaviors is a strong predictor of weight loss success.^{15,64-}
⁶⁶ Keeping a food journal is a common form of self-monitoring with weight loss interventions.

A study with 1,700 participants found the simple act of writing down foods and drinks consumed encourages people to consume less calories and could double a person's weight loss.⁶⁷ In a RCT, the Shape Plan, used text messaging for daily self-monitoring of step counts, SSB intake and screen time >2 hours.¹⁵ Results showed that 49% of participants responded daily to text prompts for self-reporting, with the treatment group losing more weight than control (-2.41kg, $P=.08$).¹⁵

III: METHODOLOGY

Human Subjects Approval

In order to begin recruitment and collecting preliminary data for *My Quest*, an expedited research protocol review form was submitted to the Auburn University Institutional Review Board for Research Involving Human Subjects (IRB). Following regulations set forth by the Auburn University IRB, the *My Quest* IRB request was approved for use from 2/2/2016 to 2/3/2017 under the following protocol number: 16-053 EP 1602

(Appendix A).

Study Design and Participants

From April 4-22, 2016, Alabama Cooperative Extension System Agent Assistants in 55 counties (84% rural) recruited 318 women ages 19-49 using a standardized Recruitment Script and an Eligibility Check List (Appendix B). Women met study criteria if they; (1) were Supplemental Nutrition Assistance Program (SNAP) eligible, (2) had a cell phone with text message capability, (3) had an active email account, and (4) were low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q).⁶⁸ Exclusion criteria included: (1) attempted weight loss or enrollment in a weight loss program within the past 3 months, or (2) pregnant, or planning to become pregnant during the study.

Agent Assistants were asked to recruit five participants for each county where they worked. Agent Assistants in the 14 Alabama Preventing and Reducing Obesity: Helping to Engage Alabamians for Long Term Health (ALProHealth) counties (Barbour, Bibb, Bullock, Chambers, Coosa, Crenshaw, Cullman, Escambia, Greene, Lowndes, Macon, Pickens, Sumter and Wilcox), recruited an additional five participants in these 14 counties. During recruitment, seven women were not interested, six had recently tried to lose weight, six were too old, and 13 were high risk per the PAR-Q.

At the time of written consent, participants opted-in to the text messaging program, weighed themselves on a scale provided and immediately texted their initial body weight to the *My Quest* number. Participants (n=286) kept the scale to weigh themselves each week during the intervention. Participants were provided a copy of the Informed Consent for their records. Women who received a scale during the recruitment period were emailed a web-based Qualtrics pre-assessment survey to complete using a computer, tablet or smart phone. Participants who opted-in to the text message program and completed the pre-assessment survey received a pedometer (n=218). After the pre-assessment period, participants were block randomized in a 1:1 ratio into comparison (C) and text message (T) groups. Blinding did not occur in this study.

Intervention

My Quest was a 12-week, theory-driven adult weight loss intervention delivered by text messaging for a Supplemental Nutrition Assistance Program (SNAP) population. The goal of *My Quest* was to aid low-income women in weight loss and behavior change using an easily accessible format for intervention delivery. *My Quest* was based on SCT, specifically goal setting, self-efficacy, self-monitoring, behavioral factors, and

environmental factors. Social Cognitive Theory guided all aspects of the intervention development.

My Quest focused on diet and physical activity behavior change skills related to weight loss/management. Promoting weight loss requires creating a calorie deficit through (1) reducing calorie intake and (2) increasing PA. According to the *MyPlate Daily Checklist* women ≥ 19 years need a calorie intake of 1,800 calories to meet their daily nutrient needs.⁶⁹ In order to promote a calorie deficit from the 1,800 calorie recommendation, *My Quest* C and T participants were prescribed a 1,600 kilocalorie/day *MyPlate* meal plan by a Registered Dietitian (bit.ly/1NSso36).⁷⁰ This calorie level ensured (1) adequate calorie intake to promote satiety and satiation, thereby avoiding risk for overeating, (2) a variety of foods were allowed in the diet, (3) balanced food intake from all major food groups, and (4) an attainable and sustainable calorie intake for lifelong eating habits, unlike low-calorie meal plans which are not sustainable for long periods of time. Participants in both groups were encouraged to wear the provided pedometer each day and work toward a goal of $\geq 10,000$ steps each day.

My Quest was conducted in two phases: Phase 1 (May 1-July 23, 2016) and Phase 2 (August 7-October 29, 2016). During Phase 1, T group received a weekly e-Newsletter based on the weekly nutrition or physical activity theme (Appendix C). Content of the e-Newsletter was based on the nutrition or physical activity goal and objective for the week. Each e-Newsletter provided tips, reminders, and a low-cost healthy recipe. A weekly text prompt was sent each Sunday morning requesting a response: “#MQ: Good morning! Remember to weigh yourself this morning. Respond with your current weight (Ex: 145#).” The text message group received 2-3 short daily

SMS text messages. Text messages included tips, goal setting, reminders and questions about exercise or healthy eating, and step count prompts that required a response.

During weeks one through four, T group received a text prompt each evening to respond with their step counts for the day. From weeks five-12, T group received a text prompt on Monday, Wednesday, and Friday evening to respond with step counts. Comparison group received traditional nutrition education or usual care. They were provided with the same weekly e-newsletter and received one weekly text prompt to respond with current body weight. At post-intervention, participants in both C and T group completed a web-based Qualtrics post-assessment. Participants who completed both pre- and post-assessments received a \$20 check.

During Phase 2, C group received all text messages. The text message group continued to receive 3 texts/week. Comparison and T groups received a weekly text prompt to respond with their current body weight. No other assessments were conducted during Phase 2.

Text Message Education

During Phase 1, each week was based on one of twelve secondary predictors of behavior change (Food Journaling, Know Your Calories, Portion Control, Exercise Journaling, Increasing Steps, Increasing Intake of Water, Reducing Intake of SSB, Meal Planning, Increasing Intake of Fruits and Vegetables, Smart Snacking, Increasing Physical Activity and Reducing Screen Time). Text messages were scheduled for daily delivery in the morning, lunch and evening. Delivery time of the morning and lunch text messages were randomized daily to ensure participants did not become complacent nor habitualized to receive text messages at a specific time. The goal was to reduce the

likelihood that participants would begin to ignore text messages. Morning text messages were scheduled for delivery between 7:00 am and 8:00 am. Lunch text messages were scheduled for delivery between 11:00 am and noon. Evening text messages were sent at 8:30 pm. Appendix D provides the 12-week text message schedule.

Weekly Education Theme

A database of 350 SMS text messages was developed based on the weekly education objective. Text messages were (1) modified from literature,^{12,13,15,16,37,39,76} (2) received from other Auburn University sources (personal communication with Katie Funderburk, SNAP-Education), and (3) originally developed. Weekly themes had a goal, as well as objectives, that were met through the text message education component.

Week One-Food Journaling. Goal: Begin using a food journal to monitor food intake.

Objective: Introduce the Super Tracker online food journal to participants ([USDA SuperTracker-Food Tracker](#)).⁶⁹ Provide a tutorial to use the Super Tracker. Understand the importance of individual calorie needs, compared to actual calorie intake in the promotion of weight loss/management.

Week Two-Know Your calories. Goal: Know individual calorie intake level.

Objective: Introduce ChooseMyPlate Meal planning for 1,600 calories per day ([1600 Calorie Checklist](#)).⁷⁰ Understand how many servings from each food group are needed to meet calorie requirements.

Week Three-Portion Control. Goal: Understand what a standard serving of food looks like. Know the difference between a serving and a portion.

Objective: Decrease portion sizes to reduce calorie intake. Provide common sense ways to reduce portions and calorie intake (e.g. using smaller plate).

Week Four-Exercise Journal. Goal: Begin using an exercise journal to monitor daily physical activity.

Objective: Introduce participants to the Super Tracker online exercise journal ([USDA SuperTracker](#)).⁶⁹ Understand the importance of monitoring daily exercise to meet the minimum guidelines of physical activity each week (150 minutes of moderate intensity aerobic physical activity, plus 2 days of muscle strengthening activities). Know the definition of, as well as ways to engage in, moderate intensity physical activity and muscle strengthening activities.

Week Five-Increasing Steps. Goal: Walk 5,000 steps each day.

Objective: Provide small ways to increase daily step counts. Increase step counts by 500 steps each day. Know the distance walked (in miles) for specific step counts (2,000; 5,000; 7,500; 10,000), and the benefits of 10,000 steps a day.

Week Six-Increasing Water. Goal: Know the daily recommended intake amount of water.

Objective: Choose two ways to increase water each day (i.e. take water bottle with you).

Week Seven-Reducing Sugar Sweetened Beverages. Goal: Know the amount of added sugar and calories in common sugar sweetened beverages.

Objective: Replace one sugar sweetened beverage or one caloric beverage (fruit juice) with water or a zero calorie beverage each day.

Week Eight-Meal Planning. Goal: Create weekly meals and develop grocery lists for each meal.

Objective: Plan weekly meals. Use MyPlate to develop a low-budget, weekly menu. Use USDA Mixing Bowl ([USDA Mixing Bowl](#)) to find low-cost, easy recipes for the week.⁷¹

Week Nine-Increase Fruits and Vegetables. Goal: Increase FV intake by one serving each day.

Objective: Eat two snacks per day, select a vegetable for one and a fruit for another. For dinner, serve an additional vegetable at dinner than usual.

Week Ten-Smart Snacking. Goal: Choose FV, low-fat dairy or low-fat whole grain foods as snacks.

Objective: Understand hunger cues. Increase knowledge of high fiber, low-fat dairy foods that are good snacks. Provide examples of ways to eat F/V as healthier on-the-go snacks. Use the Alabama Department of Public Health ([10-10-5 Fact Sheet](#)) “Good Choice” criteria to choose healthier vending machine snacks.⁵⁶

Week Eleven-Increase Physical Activity. Goal: Increase time and variation of physical activity each day this week.

Objective: Increase physical activity by 30 minutes or 3000 additional steps, and create variations in type of physical activity. Promote 75 minutes of vigorous intensity aerobic physical activity this week (give examples).

Week Twelve- Reduce Screen Time. Goal: Decrease the time spent in front of a screen (no more than 2 hours per day).

Objective: When at work, and in front of a computer screen, take hourly screen breaks. Reduce extra-curricular screen time to no more than 2 hours each day. Get up, take a short walk, and get in some steps. Eat at the dinner table, not in front of the TV or computer.

Data Collection

Data were collected through participant text responses and the web-based Qualtrics survey. Text response data were manually entered into an electronic dataset. The Qualtrics survey tool was developed using previously validated self-report instruments.^{12,72-80} Questions were modified to ensure ease of readability for a limited-resource audience. Before administration of the web-based survey, a pilot test was conducted with women (n=49) recruited through Alabama Cooperative Extension System, social media and email lists (Appendix E). Pilot study participants included 10 nutrition professionals, 12 SNAP Economic Self-sufficiency Program caseworkers, 13 Extension assistants, and 12 community members. They were all female, predominantly Caucasian (71.4%, 12.2% African American), middle age (46.4±12.7 years), educated (34.6% 2year/some college; 57% ≥4 year degree), and higher income (32.6% \$25,000-\$50,000; 38.8% >\$50,001). During the pilot test, feedback showed the survey flowed well, and the questions were easy to read and understand. Analysis showed good reliability/internal consistency (α .6-.8). Revisions were made as needed. Scales with lower α were corrected for consistency. The final assessment tool had a Flesch-Kincaid Grade Level of 4.8.

Statistical Analysis

Descriptive statistics were used for demographic and physical characteristics. Between group comparisons of baseline sample characteristics were conducted to assess the success of the randomization process and to identify participant characteristics associated with attrition. The primary outcomes for *My Quest* were changes in SCT processes, nutrition and physical activity behaviors, and body weight at the end of the intervention. Primary outcome measures were tested for normality using histogram plots, and found to be not normally distributed, therefore non-parametric analyses were conducted. Between group analyses used Fisher Exact Test/Pearson χ^2 (dichotomous), mixed-design Analysis of Variance (ANOVA-continuous data) or Mann Whitney U (ordinal data). Within group analyses were conducted using a McNemar test (dichotomous data), paired *t*-test (continuous data), or Wilcoxon Signed Rank Test (ordinal data). Body weight change and step count change over time were analyzed by a repeated-measures ANOVA with a Greenhouse-Geisser correction, using pre- midpoint and post-intervention data. $P < .05$ was considered statistically significant. Step count and body weight response rates were analyzed using Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA). Remaining statistical analyses were performed with SPSS software (version 22, IBM Corp, Armonk, NY, 2013).

IV. MANUSCRIPT 1

EFFECTIVENESS OF MY QUEST, AN INTERVENTION USING TEXT MESSAGING TO IMPROVE DIETARY AND PHYSICAL ACTIVITY BEHAVIORS AND PROMOTE WEIGHT LOSS IN LOW-INCOME WOMEN IN ALABAMA

Submitted to the *Journal of Nutrition Education and Behavior* on December 15, 2016

ABSTRACT

Objective: To evaluate a 12-week text messaging initiative (*My Quest*) on predictors and behaviors known to improve weight loss/management.

Design: *My Quest* was developed using Social Cognitive Theory focusing on personal, behavioral and environmental factors. Scales and pedometers were provided for self-monitoring.

Setting: Recruitment took place in 80% of Alabama counties; data collection occurred through text message response/online surveys from April to July 2016.

Participants: Participants (n=104) were low-income, predominately minority, overweight/obese women in mainly rural communities.

Intervention: Short texts (n=2-3/day) provided health tips and goal setting prompts; weekly eNewsletter; participant feedback on weekly body weight self-monitoring.

Main Outcome Measure: Dependent variables were body weight, self-efficacy, goal setting, self-monitoring and behavioral and environmental factors. Independent variable was intervention (pre-post).

Analysis: Analyses were conducted using a McNemar test (dichotomous data), paired t-test (continuous data) or Wilcoxon Signed Rank Test (categorical/ordinal data).

Results: From pre- to post-assessment, females significantly ($P < .05$) reduced body weight, improved food environment and increased self-efficacy, dietary and physical activity goal setting, dietary and physical activity behaviors.

Conclusions and Implications: A low-cost, nutrition education intervention delivered through text messaging can improve dietary and physical activity behaviors and promote weight loss in low-income, minority women. (Words: 196)

Key Words: Text messaging, weight loss, mHealth, socioeconomic status, women

INTRODUCTION

Overweight, obesity and associated comorbidities affect 68.6% of American adults.¹ The highest rates of obesity occur among low-income, minority women.^{1,2} Interventions promoting weight loss/management in high-risk populations present many challenges.² Meeting low-income women where they are by using delivery methods already ingrained in their culture is a crucial first step in weight loss/management efforts.

One possible intervention delivery method is utilizing mobile health (mHealth) modalities. The use of cell phones to deliver health information, behavior change programs and to collect data is a form of mHealth.³ Cell phone ownership is highly integrated into American society, even among individuals with limited resources. In 2015, cell phone ownership was substantial among lower-income households, rural communities, American adult women and African-Americans and Hispanics.⁴ Most cell phone owners use phones to text and send/receive e-mail.^{4,5} Texting is the dominant way of communicating for Americans under 50.⁵

Short messaging service (SMS) or text message programs have shown promise as a medium for weight loss interventions. These programs are cost-effective, convenient, have high adherence rates and promote behavior change and moderate weight loss.^{3,6-9} Messages are short and targeted, increasing the likelihood recipients read and use the information. With the majority of low-income and rural individuals owning cell phones, using a text message-based program is a feasible way to remove barriers and reach a population who are female, overweight/obese living in rural areas and with limited

financial resources, transportation or the ability to access community centers for on-site weight loss intervention programs.

Public health initiatives aim to promote health and reduce chronic disease risk through healthful diets and body weight management.¹⁰ Strategies that support these initiatives include increasing physical activity and fruit and vegetable (FV) consumption and reducing sugar intake and sedentary behavior.¹⁰

Building on these objectives, *My Quest*, a 12-week, theory-driven adult weight loss intervention delivered by text messaging was developed for a low-income population. The goal of *My Quest* was to aid low-income women in weight loss and behavior change using an easily accessible mHealth format for intervention delivery.

METHODS

Study Design and Participants

Women ages 19-49 in 55 [blinded for review] counties (84% rural) were recruited at the following offices: Supplemental Nutrition Assistance Program (SNAP), Department of Housing and Urban Development, or [Blind] Food Bank using a standardized Recruitment Script and Eligibility Checklist (n=197). The [Blind] Institutional Review Board approved this study.

Women met study criteria if they were SNAP eligible, had a cell phone with text message capability, had an active email account and were low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q).¹¹ During recruitment, 4 women were not interested and 12 did not meet study criteria. At the time of written consent, participants opted-in to the text messaging program,

removed shoes and outer garments to weigh themselves on a provided scale and immediately texted their initial body weight to researchers.

Participants (n=143) kept the scale to weigh themselves each week during the intervention and were emailed an online pre-assessment to complete using a computer, tablet or smart phone. Participants who opted-in to the text message program and completed the pre-assessment survey were mailed a pedometer to measure daily step counts (n=104). Baseline participant demographic characteristics are presented in Table 1.

Intervention

My Quest was based on Social Cognitive Theory (SCT), specifically goal setting, self-efficacy, self-monitoring, diet and physical activity behaviors and environmental factors related to weight loss/management. Using self-reported baseline body weight, height, age and a physical activity factor (sedentary or moderate), the *MyPlate* Checklist Calculator determined a calorie intake level.¹² According to the calculator for sedentary and moderate physical activity, a daily intake was needed of 1,800 or 2,000 calories, respectively. To create a small calorie deficit to elicit slow and steady weight loss, a Registered Dietitian prescribed a 1,600 kilocalorie *MyPlate* meal plan to participants. This calorie level ensured (1) adequate calorie intake to promote satiety and satiation, thereby avoiding risk for overeating, (2) a variety of foods were allowed in the diet, (3) balanced food intake from all major food groups and (4) an attainable and sustainable calorie intake for lifelong eating habits, unlike low-calorie meal plans which are not sustainable for long periods of time. Participants were to wear the provided pedometer each day and work toward a daily goal of $\geq 10,000$ steps.

My Quest was conducted over 12 weeks. Participants were provided a scale (\$20 value) and pedometer (\$15 value) to keep track of body weight and physical activity, respectively. Participants received 2-3 short daily SMS text messages, which included tips on diet and exercise, web links, goal setting prompts and reminders or questions about exercise or healthy eating that required a response. They also received a weekly eNewsletter that provided tips, reminders and a low-cost healthy recipe. Each Sunday morning, a text prompt requested a response for current body weight that participants could obtain at home on the provided scale. At post-intervention, participants completed an online post-assessment. Participants who completed both pre- and post-assessments received a \$20 check. In addition to participant payment, the cost of *My Quest* included text messaging software (\$159.00/month to send a maximum 50,000 messages).

Text Message Education

A database of 350 SMS text messages was developed with each message targeting 1 of 12 secondary predictors of behavior change. Weekly goals and objectives were met through the text message education component (Table 2). Text messages were scheduled for daily delivery in the morning (between 7 am-8 am), lunch (between 11 am-noon) and evening. Delivery time of the morning and lunch text messages were randomized daily to reduce the likelihood participants would begin to ignore text messages.

Data Collection

In addition to responses to text prompts, pre- and post-assessment data were collected through an online survey. The online survey tool was developed and adapted to this study using selected items from previously validated self-report instruments.¹³⁻¹⁷ Three scales were used in the *My Quest* assessment and include: (1) ordinal data using a

5-point or 7-point Likert scale; (2) dichotomous data using *Yes* or *No*; and (3) continuous data using open-ended questions. Identical questions (Table 3) were asked at pre- and post-assessment to determine changes in participant engagement in goal setting, nutrition and health behaviors as well as availability of FV and sugar-sweetened beverages (SSB).

Before administration of the online survey, a pilot test was conducted with women (n=49) recruited through social media and email. Pilot study participants included 10 nutrition professionals, 12 SNAP caseworkers, 13 Extension assistants and 12 community members. They were all female, predominantly Caucasian (71.4%, 12.2% African American), middle age (46.4±12.7 years), educated (34.6% 2year/some college; 57% ≥4 year degree) and higher income (32.6% \$25,000-\$50,000; 38.8% >\$50,001). Feedback showed the survey flowed well and questions were easy to read and understand. Analyses showed good reliability/internal consistency ($\alpha = .6-.8$). Scales with lower α were corrected by creating like numbered response scales to create consistency among questions. Questions were modified for readability to a low-income audience. The final assessment tool had a Flesch-Kincaid Grade Level of 4.8.

Statistical Analysis

Descriptive statistics were used for demographic and physical characteristics. Body Mass Index was calculated using self-reported weight and height. Primary outcomes for *My Quest* were changes in body weight, BMI, SCT processes and nutrition and physical activity behaviors at the end of the intervention. Primary outcome measures were tested for normality using histogram plots and were not normally distributed; therefore, non-parametric analyses were conducted. Analyses were McNemar test (dichotomous data), paired *t*-test (continuous data) or Wilcoxon Signed Rank Test

(ordinal data). Statistical significance was $P < .05$. Statistical analyses were performed with SPSS software (version 22, IBM Corp, Armonk, NY, 2013).

RESULTS

During the intervention, 10 participants were removed from the text message system due to disconnected phone numbers and 27 participants voluntarily opted-out of the program. At post-assessment, an online survey link was emailed to remaining participants ($n=67$) resulting in a 64% retention rate. Fifty-six post-assessments were completed (84% response rate). Participants who did not complete the *My Quest* program compared to those who completed both *My Quest* pre- and post-assessments were younger (33.9 vs. 38.1 years), African American (66.0% vs. 42.9%), less educated (\leq High School or GED, 41.5% vs. 23.2%), lower income [$< \$15,000/\text{year}$ (39.6% vs. 23.2)] and had higher initial body weight (220.4 vs. 204.3 lbs.).

Body Weight

There was a significant reduction in body weight [204.3 lbs. vs. 199.6 lbs.; $t(55)=3.047; P=.004$] and BMI [(34.7 vs. 33.9); $t(55)=3.254; P=.002$] from pre- to post-assessment in 56 participants. Participants lost an average of 4.7 pounds and reduced BMI by 0.8 kg/m^2 .

SCT Constructs

Table 3 displays pre- and post-assessment means and SE of the variables used to assess each SCT construct and results of the Wilcoxon Signed Rank Tests, McNemar Tests and paired t -tests. For the following constructs, self-regulation/goal setting, physical activity behaviors, sedentary behaviors and environmental factors, participants

exhibited significant change from pre- to post-assessment. Significant changes were not seen in 2 of the 3 self-efficacy questions nor in vegetable intake.

DISCUSSION

The objective of this study was to assist low-income, rural women in weight loss using text messaging. While other studies using text messaging have found weight loss, their population was middle-income, highly educated individuals.⁶⁻⁸ The novelty of this study is its findings within a vulnerable population. In addition, *My Quest* is believed to be the first completely remote weight loss intervention with all education delivered through text messaging and eNewsletter. After providing signed consent and receiving a scale, participants had no further requirements to attend face-to-face meetings or weigh-ins. Responses to text prompts were exclusively through text messaging, and assessments were completed online. Previous studies using text messaging for weight loss required participants to attend on-site baseline, mid and post-assessments.^{3,6-9}

My Quest retention was slightly lower (64%) than previously published studies using text messaging to promote weight loss and/or behavior change. Previous weight loss studies using text messaging reported retention rates between 68%-96%.^{3,6-9}

My Quest supports using mHealth modalities such as text messaging to deliver targeted education programs such as weight loss/management. Use of *My Quest* was able to produce modest weight loss of 2.3% body weight. This finding is consistent with other mHealth weight loss programs which range from 1.8% to 3.7%.^{3,6-9}

In addition to body weight, *My Quest* positively influenced physical activity, dietary behavior and the home food environment for low-income women. In the US physical activity rates are low, with rates lowest among lower-income and minority

women.^{18,19} Chronic disease burden associated with physical inactivity may disproportionately affect socioeconomically disadvantaged populations.¹⁹ Daily self-monitoring of physical activity behaviors is a strong predictor of weight loss success.^{7,8,20} Moreover, knowing personal daily step counts helps gauge physical activity levels. This study examined participant's physical activity behavior through minutes exercised and step count monitoring. Consistent with other research, *My Quest* participants improved occurrence and self-monitoring of physical activity.²⁰

Sedentary behaviors (sitting during daily commutes, during the workday, at home and during leisure) are becoming a focus of research for the distinct risk factors associated with the lack of activity.²¹ A subclass of sedentary behaviors is screen time, the time spent in front of a computer, tablet or television. After *My Quest*, participants reduced their time sitting at work, home or travel, and reduced screen time by an average .82 hours/day. Reducing sedentary time and screen time is becoming a public health priority to positively impact body weight and reduce health risk.²¹

Increased FV intakes are associated with weight management and better health.^{13,22} *My Quest* text messages promoted choosing FV as snacks and provided easy ways to increase FV intake. Participants increased their fruit intake an average of 0.8 servings from an average of 1.7 to 2.4 servings/day. At pre- and post-assessment, participants ate an average of 2.6 vegetable servings each day. National FV intakes are 1.1 serving fruit and 1.6 serving vegetables each day.²² *My Quest* participants had higher than national average intakes at pre- and post-assessment.

According to the Centers for Disease Control and Prevention, 24.4% of females drink ≥ 1 SSB per day with females age 35-54 having the highest intakes.²³ After *My*

Quest, there was a reduction in the number of participants who drank ≥ 3 SSB per day, and an increase in the number of participants who drank < 1 SSB per day. After *My Quest*, the majority of participants were choosing to drink water over SSB each day. Reducing SSB by one serving each day can remove 151 calories and 9.5 teaspoons of added sugar from the diet (based on a 12 oz. can of soda). These calorie savings can assist with weight loss/management.

My Quest was a low-cost, community-based weight loss and behavior modification intervention developed using tenets of SCT. Commercially available weight loss programs range from \$66 to \$204 for 12-weeks (not including costs for weekly meetings or required food).^{24,25} Participant cost of *My Quest* was limited to existing cost of cell phone, text messaging and data service.

There are several strengths with *My Quest*. First, *My Quest* was delivered through text messages. Text messaging software is relatively inexpensive, making text messages a low-cost modality to deliver nutrition education and reach a high-risk, low-income population residing in rural areas. Participants were not obligated to attend classes or weigh-ins, which can be a barrier. Participants were provided a scale and pedometer to keep track of body weight and physical activity.

My Quest was not without limitations. *My Quest* had a small sample size, which may affect the strength of the results. *My Quest* also used a convenience sample of self-selected participants located in 1 geographic region. Because of the targeted nature of the study, results may have limited generalizability. Participants were not prescribed a personalized calorie intake; therefore, the calorie intake level may have been too high for some and not sufficient for others. Participant feedback was through self-report, allowing

for recall bias. Moreover, self-reporting can lead to participants providing socially desirable responses. Participants did not receive personalized feedback and were not required to attend appointments. Therefore, they did not receive social support or interaction with others. African American participants had the highest attrition. An exit-interview to determine specific reasons or barriers that led to this higher dropout rate would have been beneficial.

Future studies should include a control group that receives a pedometer and scale with no other education. A process evaluation should be included to determine which processes worked well with participants and what modifications should be made to better reach the target population. Future programs also should include individual calorie intake levels and two-way communication to participants as well as a level of social support between members.

IMPLICATIONS FOR RESEARCH AND PRACTICE

My Quest text messaging was able to reach an at-risk population through an integrated modality that was low-cost and convenient to participants. Inexpensive tools, such as a scale and pedometer, can be potential motivators for self-monitoring and engaging in physical activity, which promote weight loss/management. Post-assessment feedback on *My Quest* was positive. Participants reported the eNewsletters and text messages were *extremely helpful* (55% and 58%, respectively). Most participants (n=40) reported the number of texts sent each day was *about right*. Participants also found the text messages *informative* and *very motivating*. One participant relocated to another state and was still able to complete *My Quest*. She stated, “*My Quest* kept me on board to make sure I was doing the right job.”

Participants in previous successful weight loss programs state providing social support and personalized feedback were important contributors for motivation and weight loss success.^{2,6-8} In addition to personalizing the program, it would be beneficial to include additional modalities of education. Some of these include, easy-to-do at home physical activity videos, personalized feedback on food journals and physical activity journals and progress toward goals.

My Quest provides support that targeted, evidence-based mHealth programs can effectively improve weight status and diet and physical activity behaviors at a relatively low-cost in an at-risk, low-income population residing in rural locations.

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Table 1. Demographic Characteristics of Low-income Female *My Quest* Participants at Pre-assessment (n=104)

Characteristic	(n=104)
Age [y(SD)]	36.1(8.1)
Race [n(%)]	
White	47(43.0)
African American	59(54.0)
Other	3(3.0)
Education [n(%)]	
High School or GED	35(32.0)
2 Year/Some College	41(37.6)
Marital Status [n(%)]	
Single	71(65.0)
Income [n(%)]	
<\$25,000/year	70(64.0)
\$25,001-\$50,000/year	36(33.0)
Height [in(SD)]	64.3(2.5)
Weight [lb(SD)]	212.1(55.7)
BMI [kg/m ² (SD)]	36.2(9.5)
Normal Weight [n(%)]	5(4.6)
Overweight [n(%)]	22(20.2)
Class 1 Obese [n(%)]	28(25.7)
Class 2 Obese [n(%)]	25(22.9)
Class 3 Obese [n(%)]	29(26.6)

Note: GED indicates General Equivalent Diploma; BMI Indicates Body Mass Index.

Data represent participant self-report information from the online pre-assessment survey.

Table 2. My Quest 12-week Text Message Educational Topics

Week-Theme	Goal	Text Message	SCT* Construct
1-Food Journaling	Use a food journal to log food intake.	#MQ: The secret to weight loss is to know what you eat and drink. Use Super Tracker to help make good choices. 1.usa.gov/1StxdM5 **	Self-monitoring
2-Know Your Calories	Know individual calorie intake level.	#MQ: Use Super Tracker to know your numbers. It will show you how many carbs, sugar, fat, saturated fat and calories you eat each day.	Self-monitoring
3-Portion Control	Know what is a standard serving of food compared to a portion.	#MQ: Cut calories by reducing portion sizes. If you cut out 250 calories a day from your diet you could lose up to 1/2 pound in a week.	Goal Setting Behavior
4-Exercise Journaling	Keep a daily exercise journal and know weekly physical activity guidelines.	#MQ: Every bit counts...Log each activity you do for 10 minutes or more. Remember to use Fitness Tracker to meet your goals this week.	Self-monitoring Goal Setting
5-Increasing Steps	Walk 5,000 steps or more each day.	#MQ: Wear your pedometer and record your daily step count. This is a great way to keep active and track your physical activity.	Self-monitoring
6-Increase Water	Know the daily recommended water intake.	#MQ: Set a goal to drink 8-10 cups of water each day this week.	Goal Setting
7-Reduce SSB*	Know amount of added sugar and calories in common SSB.*	#MQ: Drink sweet tea or sodas? If so, try replacing one each day with water instead to save 200 calories and 50 grams of sugar.	Self-monitoring Behavior
8-Meal Planning	Create weekly menu and develop grocery lists for each meal.	#MQ: Make a SMART goal this week to cook and eat 3 home cooked meals that include 1 vegetable side dish. For success, plan meals ahead.	Goal Setting
9-Increase FV	Increase fruit and vegetable intake by one serving each day.	#MQ: Put out cut veggies to snack on while you are cooking dinner. Get the good stuff in while you're hungry!	Environment
10-Smart Snacking	Choose fruits, vegetables, low-fat dairy or low-fat whole grain foods as snacks.	#MQ: Always on the go? Fruits and veggies make good "grab and go" snacks. Pack bananas or baby carrots in your bag for a quick snack.	Goal Setting Environment
11-Increase Physical Activity	Increase time and variation of daily physical activity.	#MQ: Try a new exercise. Jumping rope is a cheap, easy, at-home way to increase your exercise intensity and get your heart pumping!	Behavior
12-Reduce screen time	Decrease time spent in front of a screen (no more than 2 hours per day).	#MQ: Make a goal today to take several small "screen breaks". Get up and walk 200 steps or more during each break.	Behavior Self-monitoring
Post-intervention	Complete the post-assessment.	#MQ: Still need to take the second survey? Click the link below to take it now. Hurry, it closes tonight at 11:45 PM. [blinded for review] **	

*SCT= Social Cognitive Theory; SSB= Sugar-sweetened beverages

**Shortened Universal Resource Locator (also known as URL) link. Participants received text messages throughout *My Quest* that contained a link to a web-based resource.

Table 3. Comparison of Social Cognitive Theory (SCT) Construct Scores of Low-income Female Participants Before and After the *My Quest* Intervention (n=56)

SCT Constructs	Pre Mean(SE)	Post Mean(SE)	P-value
Self-Regulation/Goal Setting			
Physical Activity			
In the next week, how many hours do you plan to do the following (vigorous exercise)? ^{1, a}	2.3(0.2)	2.7(0.2)	<.001***
In the next week, how many hours do you plan to do the following (moderate exercise)? ^{1, a}	3.4(0.2)	4.0(0.2)	.022*
Dietary			
How often do you make a grocery shopping list? ^{1, b}	3.3(0.2)	3.8(0.2)	.045*
How often do you plan your meals ahead? ^{1, b}	3.5(0.3)	4.7(0.2)	<.001***
Self-Efficacy			
I can exercise 30 minutes or more each day when I'm tired, upset or stressed. ^{1, c}	3.5(0.1)	3.7(0.1)	.225
I can eat 5 servings of fruits and vegetables most days. ^{1, d}	3.4(0.1)	3.7(0.1)	.067
I can control my food portions to control my weight. ^{1, d}	3.8(0.1)	4.0(0.1)	.048*
Behavioral Factors			
Physical Activity			
Yesterday, I exercised 30 minutes. ^{2, e}	0.3(0.1)	0.6(0.1)	.002**
I know the number of steps I walked yesterday. ^{2, e}	0.2(0.1)	0.7(0.1)	<.001***
Dietary			
Yesterday, I wrote down what I ate and drank. ^{2, e}	0.1(0.03)	0.2(0.01)	.022*
<i>Fruits and vegetables</i>			
How often do you eat fruits and vegetables as a snack? ^{1, b}	5.3(0.2)	5.8(0.2)	.021*
How many servings of fruits do you eat each day? ^{3, f}	1.7(0.2)	2.4(0.2)	.002**
How many servings of vegetables do you eat each day? ^{3, f}	2.5(0.4)	2.6(0.2)	.797
<i>Sugar-sweetened beverages</i>			
How often do you drink water instead of sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks)? ^{1, b}	5.7(0.2)	6.5(0.1)	<.001***
How many sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) do you drink each day? ^{1, g}	2.9(0.1)	2.5(0.1)	.001**
Sedentary Behaviors			
Think about the time you spend at home, work or travelling. In a typical day, how many hours do you spend sitting? ^{3, f}	5.8(0.5)	5.0(0.5)	.017*
Think about the time you spend at home, work or travelling. How much time do you usually spend sitting watching television, playing video games, or searching the internet (computer, tablet or cell phone)? ^{1, h}	3.7(0.2)	3.3(0.1)	.021*
Environmental Factors			
Fruits and Vegetables			
How often do you have fruits and vegetables ready to eat as a snack? ^{1, b}	4.4(0.3)	5.5(0.2)	<.001***
Sugar-Sweetened Beverages			
How often do you have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks) in your home? ^{1, b}	5.7(0.2)	5.0(0.3)	.004**

Note: Data represent scores for participants who completed both pre- and post-assessments. Data represent mean ±standard error (SE).

P was derived from: ¹Wilcoxon Signed Rank Test; ²McNemar Test; ³Paired t-test

^aResponse scale: 1=None, 7=8 or more hours per week; ^bResponse scale: 1=Never, 7=Daily; ^cResponse scale: 1= Strongly Disagree, 5=Strongly Agree;

^dResponse scale: 1= Not Sure At All, 5=Extremely Sure; ^eResponse scale: 0=No, 1= Yes; ^fResponse: Open-ended question; ^gResponse scale: 1=None, 5=5 or more per day;

^hResponse scale: 1=None, 7= 9 or more hours per day.

*P<.05, **P<.01, ***P<.001

V: MANUSCRIPT 2

USING A TEXT MESSAGE-BASED MHEALTH PROGRAM TO INCREASE PHYSICAL ACTIVITY AND PROMOTE WEIGHT LOSS IN SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM (SNAP) ELIGIBLE WOMEN RESIDING IN ALABAMA

Prepared for submission to a to-be-determined journal

INTRODUCTION

Americans have become increasingly sedentary over the past several decades, and are more sedentary than those from other countries.¹ Research now links sedentary behaviors such as sitting, screen time, and physical inactivity with increased risk for obesity (OB), cardiovascular disease (CVD), morbidity, and mortality.^{2,3} Engaging in leisure time physical activity (LTPA) is associated with reduced mortality risk, cancer related mortality, and CVD-related mortality.⁴

Several government entities promote reducing sedentary time and increasing physically active time to reduce disease burden and mortality risk⁵⁻⁷ The *2008 Physical Activity Guidelines for Americans (PAGA)* and *Healthy People 2020 (HP2020)* both aim to reduce sedentary behaviors and increase LTPA to improve the health of Americans.^{5,6} According to the *2008 PAGA*, Americans age 18-64 should engage in 150 minutes/week of moderate intensity physical activity (PA) or 75 minutes of vigorous intensity PA or a combination of both for health benefits.⁵ Health benefits consist of reduced risk for CVD, type 2 diabetes (T2DM), hypertension (HTN), and overweight/obesity (OW/OB).

Healthy People 2020 encompasses these guidelines and sets two objectives specific to sedentary behaviors and physical activity which include to: (1) reduce the proportion of adults who engage in no LTPA and (2) increase the proportion of adults who engage in aerobic PA of at least moderate intensity for at least 150 minutes/week or 75 minutes/week of vigorous intensity (or an equivalent combination).⁷ *Healthy People 2020* objectives call for a reduction in Americans who engage in no LTPA to 32.6% of adults and an increase in PA to 47.9% of American adults meeting the *2008 PAGA*.⁷

Currently, 36.2% of Americans engage in no LTPA with rates highest among OW/OB women, lower-income and minorities.⁸⁻¹⁰ Lower socio-economic racial and ethnic minorities are consistently shown to be less physically active during leisure time compared to whites.¹⁰ Chronic disease burden associated with physical inactivity may disproportionately affect these socioeconomically disadvantaged populations.¹⁰ Minority women have the lowest LTPA levels in the United States. This population also is more at risk for preventable chronic disease (T2DM, HTN, CVD, OW/OB).⁹

Barriers to LTPA in limited-resource, minority populations include self-efficacy, teaching tools to be physically active, and safe locations.¹⁰ Traditional programs to increase PA and reduce body weight involve behavior modification techniques that improve self-efficacy and motivation. However, these cannot always overcome participant barriers such as access to equipment/facilities or workout partners.⁴ Pedometers can be used as a self-monitoring tool to motivate and increase PA levels.^{9,10} Bennett and co-workers determined PA accumulated using pedometers through non-leisure and leisure sources in a disadvantaged population.¹⁰ Findings showed pedometers can be used to assess PA in low-income settings. They also demonstrated that pedometers

can be used effectively in understudied populations to assess PA in a manner that is largely devoid of recall bias, which is a typical impact factor associated with self-report measures. Developing programs that reduce barriers to PA are important to reduce body weight and improve health risk in this target population.

Developing programs that can reduce sedentary time and barriers to PA, and increase LTPA are important to decrease body weight and improve health risk in a low-income, minority population.^{2,3} One approach to reach this target population is through a mobile health (mHealth) modality using cell phones to deliver health information and behavior change programs. Programs using mHealth (text messaging/internet/telephone) for intervention delivery have shown promise in promoting behavior change. Short messaging service (SMS) or text messages are sent through cell phones. Text message programs are cost-effective, convenient, have high adherence rates, and promote behavior change. Some behavior changes affected consist of: (1) smoking cessation, antiretroviral therapy adherence, improving home routines to prevent childhood obesity, and increasing PA,¹¹⁻¹⁴ and (2) producing moderate weight loss.¹⁴⁻¹⁷ Text messages allow participants to retrieve information on their own time as well as reduce time, financial, and transportation constraints of attending classes. Messages are short and targeted, increasing the likelihood that recipients read and use information.

Cell phone ownership is highly integrated into American society, even among individuals with limited resources. In 2014, cell phone owners were lower-income households (84%), living in rural communities (88%), American adult women (88%), and African-Americans and Hispanics (90%).¹⁸ Most cell phone owners use phones to text (81%) and send/receive e-mail (52%).¹⁹ Texting is the dominant way of communicating

for Americans under 50.^{19,20} With the majority of low-income and rural individuals owning cell phones, using a text message-based program is a feasible way to remove barriers and reach a population who are female, OW/OB, living in rural areas, and without financial resources, transportation, or the ability to access community centers for on-site weight loss intervention programs.

My Quest was a weight loss intervention developed using Social Cognitive Theory (SCT) to deliver a mHealth intervention through text messaging to: (1) overcome barriers such as time, access to facilities, and exercise self-efficacy, (2) increase LTPA and exercise through self-monitoring and self-reporting prompts for body weight and daily step counts, and (3) reduce body weight in a low-income, female population residing primarily in rural Alabama. The primary outcome for *My Quest* was weight loss. Secondary outcomes were increased self-efficacy, self-monitoring, goal setting to increase LTPA, and increased PA behaviors as measured through daily step counts during the intervention. The Auburn University Institutional Review Board approved this study.

METHODS

Low-income women ages 19-49 years (n=159) from 55 Alabama Counties (84% rural) were recruited. Participants were recruited by Cooperative Extension Agent Assistants using a Standardized Recruitment Script and Eligibility Check List from April 4-22, 2016. Eligibility criteria included: (1) Supplemental Nutrition Assistance Program (SNAP) eligible, (2) own a cell phone with text message capability, (3) an active email account, and (4) low-risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)²¹ Exclusion criteria included: (1) an

attempted weight loss or enrollment in a weight loss program within the past three months, and (2) being pregnant or planning to become pregnant during the study. During recruitment, three women did not meet age criteria, four women were not interested in the study, three had recently tried to lose weight, and six were high risk per the PAR-Q. At the time written consent was obtained, participants opted-in to the text message program using a keyword and short code, weighed themselves on a provided scale and immediately texted their initial body weight to researchers. Participants (n=143) kept the scale to weigh themselves each week during the intervention and were emailed an on-line pre-assessment to complete using a computer, tablet or smart phone. Participants who opted-in to the text message program and completed a pre-assessment survey received a pedometer (n=109). Before *My Quest* began, five participants opted-out of the program, leaving 104 participants who began the text message intervention.

Intervention

My Quest, a 12-week theory-driven adult weight loss intervention, was delivered through text messaging to aid low-income women in weight loss and increase PA behaviors using an easily accessible format for intervention delivery. *My Quest* was based on SCT, specifically goal setting, self-efficacy, behavioral factors, and self-monitoring. *My Quest* focused on diet and PA behavior change skills related to weight loss/management. Promoting weight loss requires creating a calorie deficit through (1) reducing calorie intake and (2) increasing PA. According to the *MyPlate Daily Checklist* women ≥ 19 years need a calorie intake of 1,800 calories to meet their daily nutrient needs.²² In order to promote a calorie deficit from the 1,800 calorie recommendation, *My Quest* participants were prescribed a 1,600 kilocalorie/day *MyPlate* meal plan by a

Registered Dietitian (bit.ly/1NSso36). This calorie level ensured (1) adequate calorie intake to promote satiety and satiation, thereby avoiding risk for overeating, (2) a variety of foods were allowed in the diet, (3) balanced food intake from all major food groups and (4) an attainable and sustainable calorie intake for lifelong eating habits, unlike low-calorie meal plans which are not sustainable for long periods of time. Participants also were required to wear the provided pedometer each day, working toward a daily goal of $\geq 10,000$ steps.

During *My Quest*, participants received a weekly eNewsletter containing nutrition and PA goals and objectives for the week. Each eNewsletter provided tips, reminders, and a low-cost healthy recipe. Participants received 2-3 short daily (SMS) text messages. Text messages included: (1) tips, goal setting, and reminders about exercise or healthy eating, (2) simple, easy, low-cost ways to increase step counts and PA, and (3) step count and body weight prompts that required a response.

During weeks 1-4, participants received a text prompt each evening to respond with their step counts for the day [#MQ: What is your step count for today? Respond with your steps (Ex: 5000)]. From weeks 5-12, participants received a text prompt on Monday, Wednesday, and Friday evenings. A weekly text prompt for body weight also was sent each Sunday morning requesting a response (Table 1).

Data Collection

Data were collected through participant text responses and a pre- and post-intervention online survey. Daily text responses and weekly body weights were manually entered into an electronic dataset. The online survey tool was developed using previously validated self-report instruments.²³⁻³¹ Questions were based on goal setting, self-

monitoring, self-efficacy, behavior factors and environmental factors, and modified to ensure ease of readability for a low-income audience. Before administration of the online survey, a pilot test was conducted with women (n=49) recruited through Alabama Cooperative Extension System, social media and email lists. Pilot study participants included 10 nutrition professionals, 12 SNAP Economic Self-sufficiency Program caseworkers, 13 Extension assistants, and 12 community members. They were all female, predominantly Caucasian (71.4%, 12.2% African American), middle age (46.4±12.7 years), educated (34.6%, 2year/some college; 57%, ≥4 year degree), and higher income (32.6% \$25,000-\$50,000; 38.8% >\$50,001). During the pilot test, feedback showed the survey flowed well, and the questions were easy to read and understand. Analyses showed good reliability/internal consistency (α .6-.8). Revisions were made as needed. Scales with lower α were corrected for consistency. The final assessment tool had a Flesch-Kincaid Grade Level of 4.8.

Statistical Analysis

Descriptive statistics were used for demographic and physical characteristics. The primary outcome for *My Quest* was body weight change from pre- to post-intervention. Body weight of participants was self-reported each week. A repeated-measures Analysis of Variance (ANOVA) determined body weight change over time (pre, midpoint and post). Output tests showed violations of sphericity; therefore, data were reported using a Greenhouse-Geisser correction. A follow-up paired t-test determined body weight change from pre- to post-intervention.

Secondary outcomes included participant changes from pre- to post-intervention in step counts. Step counts were captured daily. Self-reported daily step counts from

Sunday through Saturday each week from each participant were averaged to create an average participant daily step count for each week during the 12-week intervention. Participants with at least one text response for the week had an average weekly daily step count calculated. A repeated-measures ANOVA determined step count change over time (week 1, midpoint and week 12). Output tests showed violations of sphericity; therefore, data were reported using a Greenhouse-Geisser correction. A follow-up paired t-test determined step count change from pre- to post-intervention.

Secondary outcome measures also included goal setting, self-efficacy, PA behaviors, and self-monitoring collected through the online survey. These were tested for normality using histogram plots, and found to be not normally distributed. Therefore, non-parametric analyses were conducted. Analyses were conducted using a McNemar test (dichotomous data) or Wilcoxon Signed Rank Test (ordinal data). $P < .05$ was considered statistically significant. Text response rates were analyzed using MS Excel 2013. Statistical analyses were performed with SPSS software (version 22, IBM Corp, Armonk, NY, 2013).

RESULTS

After recruitment, but before *My Quest* began, five participants opted-out of the text message program, leaving 104 participants who began the intervention. Participant demographics are displayed in Table 2. During the intervention, 10 participants were automatically removed from the text message system due to disconnected phone numbers and 27 participants voluntarily opted-out of the program. After the 12-week intervention, 67 participants (64%) remained in the text message program and were emailed a post-

assessment survey link. After the post-assessment period, 56 participants (55%) completed both pre- and post-assessments and had text response data for analysis.

Body Weight

At post-intervention, 56 participants had text responses for pre- and post-intervention body weight. A repeated-measures ANOVA with a Greenhouse-Geisser correction comparing body weight change was conducted on participants (n=39) with body weight responses at three time points: pre, mid, and post (Figure 1). A significant effect was found [$F(1.58,60.15)=16.30$, $P<.001$, $\eta^2=.30$] showing body weight decreased significantly over the 12-week intervention. Follow-up t-tests revealed body weight decreased significantly from pre to mid ($M=3.43$, $SD=4.72$; $P<.001$), and from pre to post ($M=3.99$, $SD=12.68$; $P=.021$). A reduction in body weight from mid to post approached significance ($M=1.45$, $SD=4.74$; $P=.063$). The mean decrease in body weight was 3.99 ± 12.7 (SD) pounds (203.6 lbs. to 198.2 lbs.; pre- to post-intervention, respectively).

Step Counts

At post-intervention, 39 participants had text responses for weekly step counts at pre- and post-intervention (Figure 2). A repeated-measures ANOVA with a Greenhouse-Geisser correction comparing step count change was conducted on participants (n=39) with weekly average step count responses at three time points: pre, mid, and post. A significant effect was found [$F(1.36,51.55)=5.07$, $P=.019$, $\eta^2=.118$] showing step counts increased significantly over the 12-week intervention. Follow-up t-tests revealed step counts increased significantly from pre to mid ($M=834.8$, $SD=2991.7$; $P=.033$) and from pre to post ($M=1689.2$, $SD=4301.5$; $P=.019$). Step counts from mid to post did not increase significantly ($M=582.7$, $SD=2283.7$; $P=.115$). The mean increase in step counts

was $1,689 \pm 689$ (SE) steps (6,819 steps to 8,980 steps; pre- to post-intervention, respectively).

Goal Setting

Three questions assessed participant goal setting to be more physically active from pre- to post-intervention. Participants were asked, “I know how to set goals to increase my physical activity.” Responses were on a 5-point scale ranging from *Not Sure at All* to *Extremely Sure* (Table 3). From pre- to post-intervention, there was a significant increase in participants who knew how to set goals to increase their PA ($Z = -2.86$, $P = .004$). Participants were asked, “In the next week, how many hours do you plan to do the following (vigorous intensity exercise)?” Responses were on a 7-point scale ranging from *None* to *8 or More Hours Per Week* (Table 3). From pre- to post-intervention, there was a significant increase in participants who planned to engage in vigorous exercise ($Z = 3.89$, $P < .001$). Participants were asked, “In the next week, how many hours do you plan to do the following (moderate intensity exercise)?” Responses were on a 7-point scale ranging from *None* to *8 or More Hours Per Week* (Table 3). From pre- to post-intervention, there was a significant increase in participants who planned to engage in vigorous exercise ($Z = 2.29$, $P = .022$).

Self-efficacy

Participant were asked, “I can exercise 30 minutes or more each day when I’m upset, tired or stressed.” Responses were on a 5-point scale ranging from *Strongly Disagree* to *Strongly Agree* (Table 3). From pre- to post-intervention, there were no statistically significant differences ($Z = -1.21$, $P = .225$). Although no statistically significant differences were found, an increasing trend from pre- to post-intervention was

observed. At pre-assessment, 59% of participants *Strongly Agreed/Agreed* they could exercise 30 minutes or more when upset, tired or stressed; 20% of participants responding they *Strongly Disagreed/Disagreed*. At post-assessment, a 4% increase was seen in participants who *Strongly Agreed/Agreed* and an 11% reduction in participants who reported they *Strongly Disagreed/Disagreed* with the question.

Behavioral Factors

Participants were asked, “Yesterday, I exercised 30 minutes.” Responses were either *Yes* or *No* (Table 3). An exact McNemar test determined a significant increase from pre- to post-intervention in participants who exercised 30 minutes on the previous day ($P=.002$). Participants were asked, “I know the number of steps I walked yesterday.” Responses were either *Yes* or *No* (Table 3). An exact McNemar test determined a significant increase from pre- to post-intervention in participants who knew the number of steps they walked on the previous day ($P<.001$).

Self-monitoring

Table 4 shows body weight and step count text response rates for the 12-week intervention. Over the 12 weeks, participants ($n=56$) received a total of 672 text response prompts for body weight. At post-intervention, 482 text responses were received (Table 4). Over the 12 weeks, an average of 8.61 ± 3.4 body weight responses per participant were received (mode= 9). Over the 12 weeks, participants ($n=56$) received a total of 4,704 text response prompts for daily step counts. At post-intervention, 3,150 text responses were received.

DISCUSSION

My Quest was a low-cost, community-based weight loss and behavior modification intervention developed using tenets of SCT. *My Quest* low-income participants were provided a scale (\$20 value) and pedometer (\$15 value) to keep and track body weight and PA, respectively. Through text messages, participants were provided education, tips, and motivation (#MQ: Fad diets work for quick weight loss, but the weight doesn't stay off. Remember what you've learned in MQ. Slow and steady = success) or web-based resources on how to set weekly PA and dietary goals. Throughout the intervention, text messages educated participants on dietary and PA recommendations (#MQ: Just walk! It's the safest form of exercise. Get a minimum of 30 minutes per day. Short on time? Break it into 3, 10-minute sessions).

My Quest was able to produce weight loss of 2.3% from baseline body weight, which is consistent with other weight loss programs using mHealth delivery.¹⁵⁻¹⁷ Research has shown that weight loss of 5% in OW/OB individuals can produce health benefits such as improvements in CVD risk factors (blood pressure, blood cholesterol) and blood glucose.^{32,33} Although *My Quest* weight loss was modest in comparison to these recommendations, 32.1% (n=18) of *My Quest* participants were able to attain a 5% weight loss and 5.3% of participants (n=3) attained $\geq 10\%$ weight loss from baseline. Any amount of weight loss has the potential to provide health benefits as well as improve interpersonal motivation and confidence to continue a weight loss journey.^{4,32,33}

Daily self-monitoring of PA behaviors is a strong predictor of weight loss success.^{14,34,35} *My Quest* participants were provided instructions on how to use *USDA Physical Activity Tracker* (#MQ: Need help creating a Super Tracker profile? Click the

link to watch a short video showing you how to get started. bit.ly/1NSso36) to monitor daily PA. They also were provided a pedometer to record daily step counts.

Text messages encouraged participants to set weekly goals and engage in exercise (#MQ: Exercising regularly will maintain a healthy weight, blood pressure and reduce risk of developing Type 2 Diabetes). Throughout the intervention, participants also were educated on the *2008 Physical Activity Guidelines for Americans*, and encouraged to work toward these guidelines as well as getting 10,000 steps each day. After the *My Quest* intervention, participants had intentions to be more physically active than prior to *My Quest*. They wanted to set goals to be more physically active and reach a step count goal of 10,000 steps/day. Participants set weekly goals to be more physically active and engage in moderate to vigorous intensity exercise at post- compared to pre-intervention.

Participants also engaged in more PA after *My Quest*, with over half of participants reported exercising 30 minutes the previous day, and knowing their previous day step count. Knowing personal daily step counts helps gauge PA levels. According to Bassett, pedometers can increase PA levels in OW/OB individuals by an average of 2,183 steps, or one mile, each day. *My Quest* participants increased steps almost 1,700 steps/day, or approximately $\frac{3}{4}$ mile. It has been proposed that accumulating 8,000 steps per day may be equivalent to 30 minutes of moderate intensity PA (such as brisk walking, water aerobics, bicycling, or general gardening) on a single day.¹⁰ At post-intervention, *My Quest* participants had a daily average of 8,980 steps, or approximately 4 miles. Engaging in 60 minutes of moderate intensity PA expends an average 180-420 kcal. Engaging in 60 minutes of vigorous intensity PA expends an average of 426 kcal or

more. Increasing PA helps expend more calories and creates a calorie deficit that can positively impact energy balance and aid with weight loss/management.

CONCLUSION

Several major barriers exist that lead to the lack of PA among American adults. These include motivation, time, access to facilities and equipment, energy, having a workout partner and exercise self-efficacy⁴ Through text messages, *My Quest* provided tools to break down some of the barriers that lead to the inability to engage in a weight loss/management program in this targeted low-income population. Text messages provided (1) motivation and encouragement (#MQ: Happy Saturday! You are half way through your *My Quest* journey. Don't quit, don't give in. You can do it! Be a weight loss winner.); (2) inexpensive, easy-to-do at home activities (#MQ: House work and yard work count as activity. Wash the floors, sweep the garage or carport, vacuum the rugs or trim the shrubs!); (3) goal setting tips (#MQ: Make a goal today to take several small "screen breaks". Get up and walk 200 steps or more during each break.); and (4) tips to increase PA (#MQ: Increase the intensity of your exercise. If you walk 1 mile in 20 minutes, challenge yourself to walk 1 mile in 15 minutes.). Previous research highlights the importance of directing additional research attention to designing interventions that promote PA among low-income, socioeconomically disadvantaged populations.¹⁰ *My Quest* was able to increase PA behaviors in this low-income population through self-monitoring of steps with a pedometer. Pedometers are an inexpensive, easy to use, self-monitoring tool that can successfully increase PA^{9,10} *My Quest* adds to the body of literature supporting the use of pedometers to promote increased PA as well as using text message delivery of an intervention to improve PA behaviors and promote weight loss.

There are several strengths to the *My Quest* intervention. *My Quest* was an evidence-based, theoretical intervention. It was low-cost and easily accessible at any time or anywhere cell service was available to participants. Pedometers were used to monitor step counts, which have been shown to reduce self-recall bias or error.^{1,10} They also are portable and a good gauge to assist with increasing PA. *My Quest* participants were a racially diverse group of women encompassing an age range from 19 to 49. Participants came from rural communities; therefore, results can be generalized for low-income, rural dwelling women.

My Quest was not without limitations. Week 1 average step counts were 1,800 steps higher than reported in other studies.¹⁰ Participants received the scale at time of signed consent, and pedometers immediately upon completing the pre-assessment survey during the three-week recruitment period. Participants who signed up earlier for the program and completed the online survey may have already begun wearing the pedometer to capture step counts and increase their PA. Due to this, it is possible Week 1 step counts may have been superficially high as an initial step count measure. *My Quest* depended on self-report data for body weight and step counts. Error was reduced at pre-intervention with initial body weight being captured by someone other than the subject. Another limitation was that *My Quest* was a one-way text message program. Participants could respond individually to text message prompts, but researchers could not respond back individually via text message to provide feedback or progress reports on PA or weight loss. However, responses to questions could be answered through email communication.

Future studies should determine ways to quantitate the time and intensity of PA participants engage in each day. Pedometers cannot measure time nor intensity of PA. Using actimeters or other devices that quantitate PA can assess calorie deficits created through PA. Future interventions should provide personalized recommendations for dietary requirements and individualized PA programs tailored to participant's likes/dislikes. A two-way response program should be used to provide motivation, social support, monitoring and personalized feedback and progress toward goals.

It is important to understand the reason for racial disparity in attrition rates between African American and Caucasian *My Quest* participants. Before *My Quest*, participants were predominantly African American (54.1%), >2 years or some college (37.6%) and earning >\$15,000/year (66%). After *My Quest*, demographics of participants not completing the program showed those who opted-out were younger, African American, had higher pre-body weight and BMI, and lower education (\leq High School) and income ($<$ \$15,000/year) than participants who completed *My Quest* (Table 2). Providing an easy-to-use opt-out exit survey or developing a formative panel with African Americans would be helpful to determine barriers, information important for a program to include, and the appropriate amount of text messages for this target population to ensure retention.

In conclusion, *My Quest* adds to the body of literature for interventions that positively promote PA among this at-risk segment of the United States population. Text message delivery of an evidence-based weight loss program can promote weight loss and increase PA in a low-income, predominantly rural population.

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Table 1. My Quest Text Message Prompts Requiring a Participant Response During Weeks 5-12

Sunday Morning	Monday Evening	Wednesday Evening	Friday Evening
#MQ: Good morning! Remember to weigh yourself this morning. Respond with your current weight (Ex: 145#).	#MQ: What is your step count for Friday, Saturday and Sunday? Respond with your steps. Separate with a comma (Ex: 7500, 7500, 7500).	#MQ: What is your step count for Tuesday and Wednesday? Respond with your steps. Separate with a comma (Ex: 7500, 7500).	#MQ: What is your step count for Thursday and Friday? Respond with your step counts. Separate with a comma (Ex: 7500, 7500).

Table 2. Baseline Demographic Characteristics of *My Quest* Text Message Program Participants

Characteristic	All (n=109)	Complete ^a (n=56)	Non-Complete ^b (n=53)
Age [y(SD)]	36.1(8.1)	38.1(8.4)	33.9(7.3)
Race [n(%)]			
White	47	30(53.6)	17(32.1)
African American	59	24(42.9)	35(66.0)
Education [n(%)]			
Less than High School	3	1(1.8)	2(1.8)
High School Graduate or GED	35	13(23.2)	22(41.5)
2 Year/Some College	41	25(44.6)	16(30.2)
Marital Status [n(%)]			
Single	71(65.0)	30(53.6)	35(66.0)
Income [n(%)]			
<\$15,000/year	34	13(23.2)	21(39.6)
\$15,001-25,000/year	36	23(41.1)	13(24.5)
\$25,001-50,000/year	36	20(35.7)	16(30.2)
Height [in(SD)]	64.3(2.5)	64.6(2.2)	64.1(2.7)
Body Weight [lbs.(SD)]	212.1(55.7)	204.3(43.3)	220.4(65.9)

^a Demographics of participants who completed the 12-week *My Quest* text message intervention.

^b Demographics of participants who did not complete the 12-week *My Quest* text message intervention.

Table 3. Comparison of Physical Activity Scores Before and After My Quest Text Message Education (n=56)

	Pre Mean(SD)	Post Mean(SD)	P-value
Self-Regulation/Goal Setting			
Physical Activity			
In the next week, how many hours do you plan to do the following (vigorous exercise)? ^{1, a}	2.28(1.3)	2.70(1.3)	<.001***
In the next week, how many hours do you plan to do the following (moderate exercise)? ^{1, a}	3.43(1.7)	4.04(1.5)	.022*
I know how to set goals to increase my physical activity. ^{1, b}	3.54(.89)	3.98(.56)	.004**
Self-Efficacy			
I can exercise 30 minutes or more each day when I'm tired, upset or stressed. ^{1, c}	3.45(.99)	3.66(.82)	.225
Behavioral Factors			
Physical Activity			
Yesterday, I exercised 30 minutes. ^{2, d}	.29(.46)	.57(.50)	.002**
I know the number of steps I walked yesterday. ^{2, d}	.18(.39)	.68(.47)	<.001***

¹Wilcoxon Signed Rank Test; ²McNemar Test; ³Paired t-test

^aResponse scale: 1=None, 7=8 or more hours per week; ^bResponse scale: 1= Not Sure At All, 5=Extremely Sure; ^cResponse scale: 1= Strongly Disagree, 5=Strongly Agree;

^dResponse scale: 0=No, 1= Yes;

*P<.05, **P<.01, ***P<.001

Table 4: Self-monitoring Response Rates for Participants (n=56) Completing the 12-week *My Quest* Text Message Intervention

	Total Text Prompts Sent (n)	Total Text Responses Received (n)	Text Response Received (%)	Mean(SD)	Mode ^a
Body Weight (Weeks 1-12)	672	482	72	8.61(3.4)	9
Step Counts					
Week 1 ^b	392	287	73	5.13(1.9)	6
Week 2 ^b	392	314	80	5.61(1.9)	7
Week 3 ^b	392	292	74	5.21(2.1)	7
Week 4 ^b	392	295	75	5.27(2.2)	7
Week 5 ^b	392	270	69	4.82(2.2)	6
Week 6 ^b	392	265	68	4.73(2.2)	7
Week 7 ^b	392	261	67	4.66(2.3)	7
Week 8 ^b	392	256	65	4.57(2.6)	7
Week 9 ^b	392	220	56	3.93(2.8)	7
Week 10 ^b	392	242	62	4.32(2.5)	7
Week 11 ^b	392	254	65	4.54(2.6)	7
Week 12 ^b	392	194	49	3.46(2.6)	6

^aMode is the most reported text prompt response. Example: Each participants received a total of 12 body weight text prompts during *My Quest*. Most participants responded to 9 out of 12 body weight prompt requests.

^bEach participant received a prompt to report daily step counts, totaling 7 responses each week per participant.

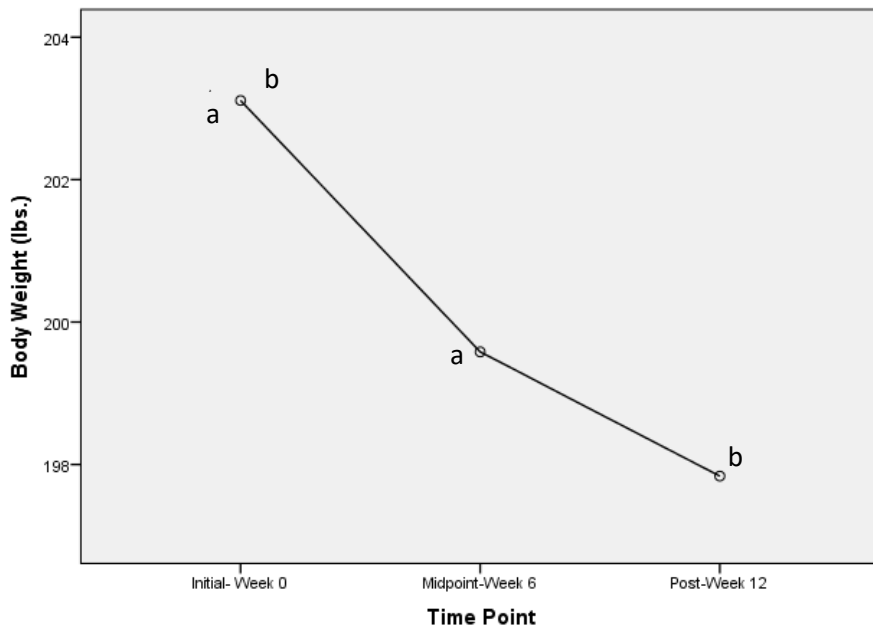


Figure 1. Change in body weight of 39 women during the 12-week *My Quest* weight loss intervention.

^a $t=4.54$, $P<.001$

^b $t=7.36$, $P=.021$

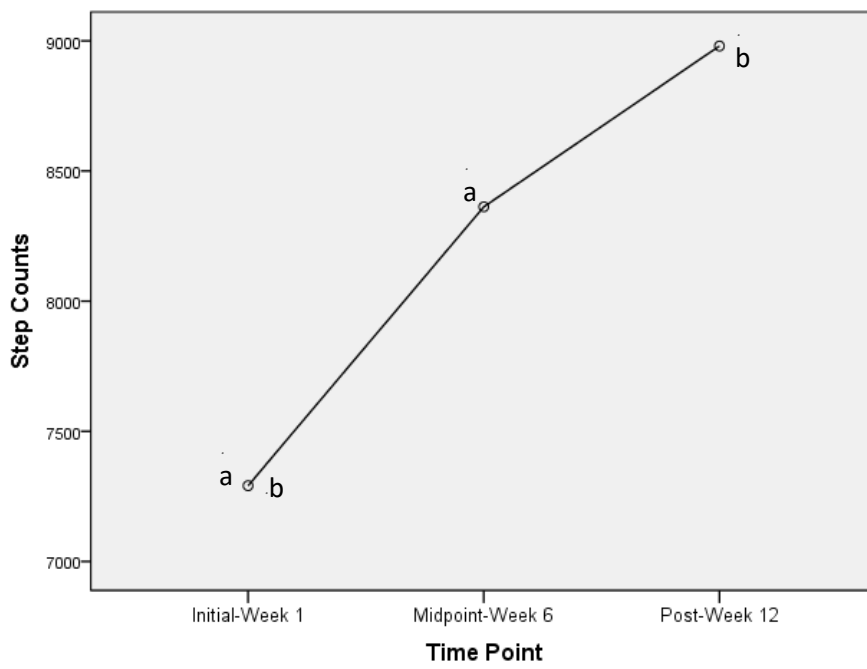


Figure 2. Change in step counts of 39 women during the 12-week *My Quest* weight loss intervention.

^a $t=-2.18$; $P=.033$

^b $t=-2.54$; $P=.019$

VI: FINDINGS BETWEEN COMPARISON AND TREATMENT *MY QUEST* GROUPS

**THIS SECTION WILL COMPARE THE RESULTS FOR THE *MY QUEST*
COMPARISON AND TREATMENT GROUPS.**

Results will be prepared as a manuscript for journal submission.

INTRODUCTION

Randomized controlled trials are experiments aimed to reduce bias and confounders when testing a new treatment or practice (Ex: text message delivery of a weight loss program). Randomized controlled trials are the gold standard for research, as they compare the efficacy of two or more treatments or practices.⁸¹ Strengths of RCT include: (1) participants are randomly allocated to either a treatment (T) or control (C) group, (2) randomization minimizes bias, and (3) all other variables in the study are kept constant to allow researchers the ability to determine the effect of treatment, if any, compared to a group who does not receive treatment or who receives traditional treatment, or usual care.

My Quest was a randomized intervention that used a comparison (C) group who received a traditional treatment. *My Quest* C group participants received a traditional nutrition and health education program through a weekly eNewsletter and self-monitored body weight through a weekly text prompt requiring response. *My Quest* text messaging (T) group participants received 2-3 short daily SMS text messages, which included tips

on diet and exercise, web links, goal setting prompts, reminders or questions about exercise or healthy eating that required a response. Text message participants also received text prompts to respond with their daily step counts. Text message group participants received a weekly eNewsletter that provided tips, reminders and a low-cost healthy recipe. Each Sunday morning, a text prompt requested a response for current body weight that both C and T participants could obtain at home on a provided scale. At pre- and post-intervention, C and T participants completed an identical online survey. The only two differences in treatment between the C group and T group is the T group received text message education and daily step count text prompts requiring a response. The objective of this chapter is to compare the results of the C group to the T group.

METHODOLOGY

In April 2016, Alabama Cooperative Extension System Agent Assistants in 55 counties recruited 318 SNAP-eligible women ages 19-49. A total of 286 women interested in *My Quest* provided informed consent and 218 completed the pre-assessment. After the pre-assessment period, participants were block randomized in a 1:1 ratio into C (n=109) and T (n=109) groups. Before *My Quest* began, 9 participants opted-out of the texting program, leaving 209 participants who began the traditional nutrition education (n=105) or text message education (n=104) program. At pre-assessment, no statistically significant demographic differences were noted between C and T group ($P>.05$); therefore, randomization was successful (Table 1). At post-assessment, 153 Qualtrics surveys were emailed to remaining participants in the program (C= 85; T= 67), with 125 post-assessments completed (80% response rate). Participant demographics at post-assessment are presented in Table 1.

RESULTS

Body Weight

At post-intervention, 75 C and 56 T participants had text responses for pre- and post-intervention body weight. A mixed-design ANOVA was conducted to investigate the impact of group on body weight change (Table 2). Results showed a significant interaction effect for time in both the C and T group [time: $F(1,130)=32.61$, $p<.001$; $\eta^2=.201$], but not for time and group [time*group: $F(1,130)=2.85$; $p=.094$; $\eta^2=.021$]. A follow-up paired t-test showed there was a statistically significant decrease in body weight from pre- to post intervention in both the C condition [(204.1 vs. 211.4); $t(74)=6.28$; $P<.001$] and T condition [(198.2 vs. 202.2); $t(56)=2.38$; $P=.021$]. A mixed-design ANOVA was conducted to investigate the impact of group on BMI change (Table 2). Results showed a significant interaction effect for time in both the C and T group [time: $F(1,130)=13.42$, $p<.001$; $\eta^2=.094$], but not for time and group [time*group: $F(1,130)=3.06$; $P=.082$; $\eta^2=.023$]. A follow-up paired t-test showed there was a statistically significant decrease in BMI from pre- to post-intervention in the C condition [(33.7 vs.35.6); $t(74)=3.26$; $P=.002$] and the T condition [(33.8 vs. 34.6); $t(56)=2.72$; $P=.009$].

Qualtrics Assessment

At post-intervention, 56 C and 69 T participants had pre- and post- responses available for analyses. Post-intervention changes in the C and T group is demonstrated in Table 3.

Goal Setting

Physical Activity

Participants were asked, “In the next week, how many hours do you plan to do the following (vigorous intensity exercise)?” Responses were on a 7-point scale ranging from *None* to *8 or More Hours Per Week* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant increase in participants who plan to engage in vigorous physical from pre- to post-assessment in both C ($Z=2.502$; $P=.012$) and T ($Z=3.890$; $P<.001$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1655.5$, $Z=-1.41$, $P=.159$).

Participants were asked, “In the next week, how many hours do you plan to do the following (moderate intensity exercise)?” Responses were on a 7-point scale ranging from *None* to *8 or More Hours Per Week* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant increase in participants who plan to engage in moderate physical activity from pre- to post-assessment in T ($Z=2.293$; $P=.022$), but not in C ($Z=1.766$; $P=.077$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1575.5$, $Z=-1.814$, $P=.07$).

Dietary

Participants were asked, “How often do you do the following? Make a grocery shopping list?” Responses were on a 7-point scale ranging from *Never* to *Daily* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant increase in participants who make a grocery list from pre- to post-assessment in both C ($Z=3.165$; $P=.002$) and T ($Z=2.001$; $P=.045$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1678.5$, $Z=-1.293$, $P=.196$).

Participants were asked, “How often do you do the following? Plan your meals ahead?” Responses were on a 7-point scale ranging from *Never* to *Daily* (Table 3). A

Wilcoxon Signed Rank Test showed a statistically significant increase in participants who plan meals ahead from pre- to post-assessment in both C ($Z=3.481$; $P<.001$) and T ($Z= 3.552$; $P<.001$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1896.0$, $Z=-.182$, $P=.855$).

Self-efficacy

Three questions assessed participant self-efficacy. At pre-assessment, self-efficacy scores for questions were high with all questions showing no statistically significant improvement in self-efficacy scores at post-intervention.

First, for physical activity, participants were asked, “I can exercises 30 minutes or more each day when I’m upset, tired or stressed.” Responses were on a 5-point scale ranging from *Strongly Disagree* to *Strongly Agree* (Table 3). A Wilcoxon Signed Rank Test showed no statistically significant changes from pre- to post-assessment in both C ($Z=-1.46$; $P=.144$) and T ($Z= -1.214$, $P=.225$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1706.5$, $Z=-1.19$; $P=.234$).

Second, two questions assessed dietary self-efficacy. Participants were asked, “I can eat 5 servings of fruits and vegetables most days.” Responses were on a 5-point scale ranging from *Not Sure at All* to *Extremely Sure* (Table 3). A Wilcoxon Signed Rank Test showed no statistically significant changes from pre- to post-assessment in both C ($Z=-1.53$; $P=.127$) and T ($Z= -1.831$, $P=.067$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1849.0$, $Z=-.454$; $P=.65$).

Third, participants were asked, “I can control my food portions to control my weight.” Responses were on a 5-point scale ranging from *Not Sure at All* to *Extremely Sure* (Table 3). A Wilcoxon Signed Rank Test showed no statistically significant

differences from pre- to post-assessment in C ($Z=-1.57$; $P=.115$). There was a statistically significant increase in participants who can control their food portions to control their weight in T ($Z= -1.98$, $P= .048$), A Mann Whitney-U test showed no statistically significant difference between groups ($U=1769.5$, $Z=-.916$, $P=.360$).

Behaviors

Physical Activity

Participants were asked, “Yesterday, I exercised 30 minutes.” The response scale was *Yes* or *No* (Table 3). An exact McNemar test determined a statistically significant increase from pre- to post-intervention in both C ($P=.003$) and T ($P=.022$) participants who exercised 30 minutes on the previous day. Results from a Pearson X^2 test shows treatment condition did not have an effect, with both groups engaging in the behavior equally ($X^2(1)=1.434$, $P=.231$).

Participants were asked, “I know the number of steps I walked yesterday.” The response scale was *Yes* or *No* (Table 3). An exact McNemar test determined a statistically significant increase from pre- to post-intervention in both C ($P<.001$) and T ($P<.001$) participants who knew the number of steps they took on the previous day. Results from a Pearson X^2 test shows treatment condition did not have an effect, with both groups engaging in the behavior equally ($X^2(1)=.097$, $P=.756$).

Dietary

Participants were asked, “Yesterday, I wrote down what I ate and drank.” The response scale was *Yes* or *No* (Table 3). An exact McNemar test determined a statistically significant increase from pre- to post-intervention in both C ($P<.001$) and T ($P=.022$) participants who wrote down the foods they ate on the previous day. Results from a

Pearson χ^2 test shows T condition did not have an effect, with both groups engaging in the behavior equally ($\chi^2(1)=2.173$, $P=.140$).

Participants were asked, “How often do you eat fruits and vegetables as a snack?” Responses were on a 7-point scale ranging from *Never* to *Daily* (Table 3). A Wilcoxon Signed Rank Test showed statistically significant increase from pre- to post-assessment in participants who eat fruits and vegetables as snacks in both C ($Z=3.90$; $P<.001$) and T ($Z= 2.31$; $P=.021$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1797.5$, $Z=-.702$, $P=.483$).

Participants were asked, “How many servings of fruits do you eat each day?” Responses were open-ended (Table 3). A paired t-test showed there was a statistically significant increase in fruit intake from pre- to post-intervention in both the C condition [(1.81 vs. 2.38); $t(67)=-2.507$; $P=.015$] and T condition [(1.65 vs. 2.41); $t(54)=-3.202$; $P=.002$]. A mixed-design ANOVA showed a significant interaction effect for time in both the C and T group [time: $F(1,121)=16.21$, $p<.001$; $\eta^2=.118$], but not for time and group [time*group: $F(1,121)=.357$; $p=.551$; $\eta^2=.003$].

Participants were asked, “How many servings of vegetables do you eat each day?” Responses were open-ended (Table 3). A paired t-test showed there was a statistically significant increase in vegetable intake from pre- to post-intervention in the C condition [(2.13 vs. 2.51); $t(67)=-2.147$; $P=.035$] but not in the T condition [(2.54 vs. 2.64); $t(54)=-.258$; $P=.797$]. A mixed-design ANOVA showed no significant interaction effect for time in both the C and T group, [time: $F(1,121)=1.449$, $p.231$; $\eta^2=.012$], nor for time and group [time*group: $F(1,121)=.497$; $P=.482$; $\eta^2=.004$].

Participants were asked, “How often do you drink water instead of sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks)?” Responses were on a 7-point scale ranging from *Never* to *Daily* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant increase from pre- to post-assessment in participants choosing to drink water instead of SSB in both C ($Z= 2.562$; $P=.010$) and T ($Z= 3.512$; $P<.001$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1882.5$, $Z= -.288$, $P=.773$).

Participants were asked, “How many sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) do you drink each day?” Responses were on a 5-point scale ranging from *None* to *5 or More Per Day* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant decrease from pre- to post-assessment in the number of SSB participants drank each day in both C ($Z= -2.656$; $P=.009$) and T ($Z= -3.252$; $P=.001$). A Mann Whitney-U test showed no statistically significant difference between groups ($U=1876.0$, $Z= -.298$, $P=.766$).

Sedentary Behaviors

Participants were asked, “Think about the time you spend at home, work or travelling. In a typical day, how many hours do you spend sitting?” Responses were open-ended (Table 3). A paired *t*-test showed there was a statistically significant decrease in hours spent sitting from pre- to post-intervention in both the C condition [(6.00 vs. 5.04); $t(68)=2.191$; $P=.032$] and T condition [(5.85 vs. 5.03); $t(55)=2.472$; $P=.017$]. A mixed-design ANOVA showed a significant interaction effect for time in both the C and T group, [time: $F(1,121)=9.734$, $P=.002$; $\eta^2=.073$], with no significant interaction between time and group [time*group: $F(1,121)=.056$; $P=.813$; $\eta^2=.000$].

Participants were asked, “Think about the time you spend at home, work or travelling. How much time do you usually spend sitting watching television, playing video games, or searching the internet (computer, tablet or cell phone)?” Responses were on a 7-point scale ranging from *None* to *9 or More Hours Per Day* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant decrease from pre- to post-assessment in the time participants spent sitting in both C ($Z = -3.298$; $P = .001$) and T ($Z = -2.307$; $P = .021$). A Mann Whitney-U test showed no statistically significant difference between groups ($U = 1923.0$, $Z = -.047$, $P = .962$).

Availability

Participants were asked the question, “How often do you have fruits and vegetables ready to eat as a snack?” Responses were on a 7-point scale ranging from *Never* to *Daily* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant increase from pre- to post-assessment in number of participants who keep fruits and vegetables ready to eat as a snack in both C ($Z = 4.062$; $P < .001$) and T ($Z = 3.940$; $P < .001$). A Mann Whitney-U test showed no statistically significant difference between groups ($U = 1876.0$, $Z = -.287$, $P = .774$).

Participants were asked, “How often do you have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) in your home?” Responses were on a 7-point scale ranging from *Never* to *Daily* (Table 3). A Wilcoxon Signed Rank Test showed a statistically significant reduction from pre- to post-assessment in how often participants have SSB in their home in both C ($Z = -2.765$; $P = .006$) and T ($Z = -2.875$; $P = .004$). A Mann Whitney-U test showed no statistically significant difference between groups ($U = 1785.0$, $Z = -.742$, $P = .458$).

DISCUSSION

My Quest was a randomized comparison intervention. During Phase 1 (May 1- July 23), C participants acted as a control, receiving traditional treatment (or usual care) consisting of an eNewsletter containing education, tips, and credible resources for weight loss/management information, and one weekly text message requiring self-monitoring and responding with current body weight. Analyses of between groups determined whether the addition of text messaging (T) to a traditional treatment (C) protocol for weight loss/management could promote significantly more weight loss over traditional treatment (C) only.

Results found were consistent with previous research that supported traditional treatment (C group) could promote weight loss. Inconsistent with previous research is that the *My Quest* C participants had a significant reduction in body weight from pre- to post-intervention ($P < .001$). They also had weight loss greater than T participants [6.63 lbs. (C) vs 4.88 lbs. (T)]. *My Quest* traditional nutrition education (C group) was able to produce an average weight loss of 9.7% from baseline.

During pre-assessment, both C and T participants were provided a pedometer to record step counts and gauge physical activity level. Through eNewsletter education (Appendix C), C and T participants were provided ways to increase amount and intensity of physical activity. At post-assessment, C and T participants knew how to set goals and plan PA. Both groups also reported being more physically active and monitored their daily step counts. eNewsletters educated on the health risks of too much sitting and encouraged “step breaks” to reduce sitting time. After *My Quest*, C and T participants

reduced screen time and reduced their time sitting at work, home, or travel by 0.96 hours and 0.82 hours (C and T, respectively).

Both groups of participants also had significant improvements in predictors of behavior change known to promote weight loss/management (Table 3). Through eNewsletters, participants received reliable resources to assist with meal planning, making a shopping list and links to *USDA SuperTracker* to monitor food intake (Appendix C). After *My Quest*, more C and T participants planned more meals and made a weekly shopping list. In addition, both groups also reported an increase in logging their food and drink intake.

My Quest eNewsletters promoted choosing FV as snacks. After *My Quest*, more C and T participants chose to eat FV as a snack each day. Participants in both groups increased their fruit intake. Comparison participants increased their fruit intake an average of 0.57 servings from an average of 1.81 to 2.38 servings/day. Text message participants increased their fruit intake an average of .76 servings from an average of 1.65 to 2.41 servings/day. Participants in both groups also increased their vegetable intake. Comparison participants increased their vegetable intake an average 0.38 servings from an average of 2.13 to 2.38 servings/ day. Although not significant, T participants increased their vegetable intake an average of .10 servings from an average of 2.54 to 2.64 servings/day. Text message participants had higher vegetable intakes at pre- and post-intervention compared to C participants.

Participants were provided with tips and ways to reduce or replace SSB, especially by replacing with water or a non-calorie beverage. After *My Quest*, there was a reduction in the number of C and T participants who drank ≥ 3 SSB per day, and an

increase in C and T participants who drank <1 SSB per day (Table 3). After *My Quest*, more C and T participants were choosing to drink water over SSB each day (Table 3). One eNewsletter focused on two environmental factors during the intervention: (1) FV kept ready to eat as snacks, and (2) fewer SSB in the home. After *My Quest*, C and T participants had FV ready to eat as a snack more often. *My Quest* C and T participants also reduced how often they had SSB in their home.

CONCLUSION

The traditional treatment program (C group) was just as effective as T group at promoting weight loss and improving several predictors of behavior change and behaviors known to promote weight loss/management. Results from the C group support it does not take a large outlay of time or financial resources by researchers to provide a successful health behavior change program to improve behaviors and body weight in a highly motivated, socioeconomically disadvantaged, rural population. Future programs should include follow-up sessions with participants who receive a traditional treatment protocol to determine the motivators to remain in the program, in addition to specific components of the education program that provided the most benefit during their behavior change and weight loss journey.

Table 1. Demographic Characteristics of *My Quest* Comparison and Text Message Participants at Pre-assessment and Post-assessment

Characteristic	Pre-assessment			Post-assessment		
	All (n=218)	Comparison (n=109)	Text Message (n=109)	All (n=125)	Comparison (n=69)	Text Message (n=56)
Age [y (SD)]	36 (8.1)	36.6 (8.0)	36.1 (8.1)	37.0 (8.4)	36.1 (8.3)	38.1 (8.4)
Race [n (%)]						
White	97 (44.4)	50 (45.8)	47 (43.0)	48.0 (60)	43.5 (30)	53.6 (30)
Black or African American	117(53.6)	58 (53.0)	59 (54.0)	49.6 (62)	55.1 (38)	42.9 (24)
Other	4 (2.0)	1 (1.2)	3 (3.0)	2.4 (3)	1.4 (1)	3.6 (2)
Education [n (%)]						
High School or GED	70(32.0)	35 (32.0)	35 (32.0)	32.8 (41)	39.1 (27)	25.0 (14)
2 year/Some College	85 (40.0)	44 (40.4)	41 (37.6)	37.6 (47)	31.9 (22)	44.6 (25)
Marital Status [n (%)]						
Single	129 (59.2)	70 (64.0)	71 (65.0)	56.0 (70)	58.0 (40)	53.6 (30)
Income [n (%)]						
<\$25,000/year	149 (68.0)	79 (72.4)	70 (64.0)	71.2 (89)	76.9 (53)	64.3 (36)
\$25,001-\$50,000/year	62 (28.0)	26 (23.8)	36 (33.0)	28.8 (36)	23.1 (26)	35.7(20)

Table 2. Anthropometric Characteristics of *My Quest* Comparison and Text Message Participants at Pre-assessment and Post-assessment

Characteristic	Pre-assessment			Post-assessment			P-value ^a
	All (n=218)	Comparison (n=109)	Text Message (n=109)	All (n=125)	Comparison (n=69)	Text Message (n=56)	
Height [ft (SD)]	64.4 (2.8)	64.6 (3.0)	64.3 (2.5)	64.3 (2.7)	64.1 (3.1)	64.6 (2.2)	.40
Weight [lb (SD)]	211.3 (51.0)	210.4 (45.9)	212.1 (55.7)	202.3 (44.6)	204.3 (42.7)	199.6 (47.2)	.56
BMI [kg/m ² (SD)]	35.8 (8.5)	35.5 (7.2)	36.2 (9.5)	34.3 (7.1)	34.6 (6.2)	33.9 (8.3)	.30

^aMixed-design ANOVA (between C and T group analysis)

Table 3. Social Cognitive Theory Construct Scores Before and After *My Quest* for Comparison (n=69) and Text Message (n=56) Groups

	Comparison Group ^a		Text Message Group ^a		Between Group ^b
	Pre Mean(SD)	Post Mean(SD)	Pre Mean(SD)	Post Mean(SD)	P-value
Self-Regulation/Goal Setting					
Physical Activity					
In the next week, how many hours do you plan to do the following (vigorous exercise)? ^{1,4,c}	2.28(1.2)	2.70(1.3) [*]	2.28(1.3)	2.70(1.3) ^{***}	.16
In the next week, how many hours do you plan to do the following (moderate exercise)? ^{1,4,c}	3.16(1.5)	3.51(1.6)	3.43(1.7)	4.04(1.5) [*]	.07
Dietary					
How often do you make a grocery shopping list? ^{1,4,d}	3.45(1.7)	4.17(1.6) ^{**}	3.32(1.8)	3.75(1.5) [*]	.20
How often do you plan your meals ahead? ^{1,4,d}	3.80(2.3)	4.70(1.8) ^{***}	3.54(2.1)	4.7(1.7) ^{***}	.86
Self-Efficacy					
I can exercise 30 minutes or more each day when I'm tired, upset or stressed. ^{1,4,f}	3.28(1.1)	3.46(0.95)	3.45(.99)	3.66(.82)	.23
I can eat 5 servings of fruits and vegetables most days. ^{1,4,f}	3.51(1.2)	3.71(1.0)	3.38(1.1)	3.66(.90)	.65
I can control my food portions to control my weight. ^{1,4,f}	3.88(.93)	4.06(.87)	3.81(.95)	4.00(.77) [*]	.36
Behavioral Factors					
Physical Activity					
Yesterday, I exercised 30 minutes. ^{2,5,g}	.29(.48)	.46(.50) ^{**}	.29(.46)	.57(.50) ^{**}	.23
I know the number of steps I walked yesterday. ^{2,5,g}	.12(.32)	.65(.48) ^{***}	.18(.39)	.68(.47) ^{***}	.76
Dietary					
Yesterday, I wrote down what I ate and drank. ^{2,5,g}	.04(.21)	.33(.48) ^{***}	.05(.22)	.21(.41) [*]	.14
<i>Fruits and vegetables</i>					
How often do you eat fruits and vegetables as a snack? ^{1,4,d}	5.12(1.6)	5.88(1.3) ^{***}	5.34(1.4)	5.80(1.2) [*]	.48
How many servings of fruits do you eat each day? ^{3,6,h}	1.81(1.6)	2.38(1.2) [*]	1.65(1.7)	2.41(1.3) ^{**}	.75
How many servings of vegetables do you eat each day? ^{3,6,h}	2.13(1.1)	2.51(1.3) [*]	2.54(2.7)	2.64(1.2)	.23
<i>Sugar-sweetened beverages</i>					
How often do you drink water instead of sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks)? ^{1,4,d}	6.0(1.3)	6.42(.93) [*]	5.73(1.7)	6.45(1.0) ^{***}	.77
How many sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) do you drink each day? ^{1,4,i}	2.71(.97)	2.41(.90) ^{**}	2.91(1.0)	2.50(.76) ^{**}	.76
Sedentary Behaviors					
Think about the time you spend at home, work or travelling. In a typical day, how many hours do you spend sitting? ^{3,6,h}	6.00(3.9)	5.04(3.1) [*]	5.85(3.5)	5.03(3.2) [*]	.38
Think about the time you spend at home, work or travelling. How much time do you usually spend sitting watching television, playing video games, or searching the internet (computer, tablet or cell phone)? ^{1,4,j}	3.97(1.3)	3.35(1.1) ^{**}	3.70(1.3)	3.29(1.0) [*]	.96
Environmental Factors					
Fruits and Vegetables					
How often do you have fruits and vegetables ready to eat as a snack? ^{1,4,d}	4.46(1.9)	5.41(1.8) ^{***}	4.43(1.9)	5.46(1.5) ^{***}	.77
Sugar-Sweetened Beverages					
How often do you have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks) in your home? ^{1,4,d}	3.97(1.3)	3.35(1.1) ^{**}	5.66(1.7)	4.96(1.9) ^{**}	.46

^aWithin group analysis: ¹Wilcoxon Signed Rank Test; ²McNemar Test; ³Paired t-test

^bBetween group analysis: ⁴Mann Whitney U test; ⁵Pearson χ^2 ; ⁶Mixed-design ANOVA

^cResponse scale: 1=None, 7=8 or more hours per week; ^dResponse scale: 1=Never, 7=Daily; ^eResponse scale: 1=Strongly Disagree, 5=Strongly Agree;

^fResponse scale: 1=Not Sure At All, 5=Extremely Sure; ^gResponse scale: 0=No, 1=Yes; ^hResponse: Open-ended question; ⁱResponse scale: 1=None, 5=5 or more per day;

^jResponse scale: 1=None, 7=9 or more hours per day.

*P<.05, **P<.01, ***P<.001

VII: FINDINGS AND CONCLUSION

Overview

The goal of this dissertation was to develop and deliver a randomized, theory-driven weight loss and behavior change intervention (*My Quest*) through text messaging to low-income, predominantly minority women residing primarily in rural locations throughout Alabama. Participants were randomized into either text message intervention (T) or comparison (C) group. Goals of the *My Quest* intervention for these limited-resource women were to have: (1) a weight loss of 5% from baseline body weight, (2) an increased water intake, fruit and vegetable intake, healthy snacking, meal planning, daily steps, PA, knowledge and adherence to personal calorie requirement, and food and exercise journaling, and (3) a reduction in sugar-sweetened beverage intake and screen time. Chapters IV-VI of this dissertation addressed these research questions using quantitative methodologies.

Discussion of Significant Findings

Chapter IV: Manuscript 1: Effectiveness of *My Quest*, an Intervention using Text Messaging to Improve Dietary and Physical Activity Behaviors and Promote Weight Loss in Low-Income Women in Alabama

Manuscript 1 in Chapter IV examined the efficacy of a text messaging education program to increase weight loss and improvements in SCT constructs (goal setting, self-efficacy, behavioral and environmental factors) in T participants. The results from this study were promising in that T participants had a significant weight loss from pre- to

post-intervention ($P=.021$), and significant increases in goal setting, and behavioral and environmental factors known to promote weight loss/management ($P<.05$).

The main objectives of Manuscript 1 in Chapter IV were to assess the research questions: (1) can a theory-driven weight loss intervention delivered through text messaging produce a significant weight loss from baseline in limited-resource women, and (2) can a theory-driven behavior change intervention delivered through text messaging significantly improve predictors of behavior change for weight loss/management from pre- to post-intervention in limited-resource women? Results from the *My Quest* intervention did produce a significant weight loss from baseline to midpoint ($P<.001$) and baseline to post ($P=.021$). Several predictors of behavior change for weight loss/management were improved through the *My Quest* intervention. These predictors included (1) increased water and fruit intake, PA, meal planning and shopping with a grocery list, (2) increased goal setting to be physically active, (3) increased self-monitoring food intake, (4) improved snack choices and (5) reduced SSB intake and sedentary/sitting time.

Overall, findings from this article highlight text message delivery of a weight loss program was well received, and able to reach a rural, low-income, socioeconomically disadvantaged population. *My Quest* was a low-cost program for participants and researchers. For researchers, the overall investment per participant with both pre- and post-assessments was \$55 (\$20 scale, \$15 pedometer, and \$20 check). This cost did not include the cost for a six-month subscription to the text messaging system, Tatango (\$159.00/month). Collaborative efforts through Auburn University Extension state staff, with the ability to develop evidence-based mHealth community programs, and local

county Extension personnel, who work closely with this target population to meet their needs, can recruit and improve the quality of life for this disadvantaged population.

Chapter V: Manuscript 2: Using a Text Message-based mHealth Program to Increase Physical Activity and Promote Weight Loss in Supplemental Nutrition Assistance Program (SNAP) Eligible Women Residing in Alabama

Manuscript 2 in Chapter V analyzed changes in body weight, PA and step counts in T participants over the 12-week *My Quest* intervention. Results from this study indicated that body weight was significantly reduced ($P=.021$), and step counts significantly increased ($P=.019$) from pre- to post-intervention. Goal setting to be more physically active and engaging in PA behaviors also significantly increased from pre- to post-intervention ($P<.05$).

The main objectives of this study were to assess the research questions: (1) can a theory-driven weight loss intervention delivered through text messaging produce a 5% weight loss from baseline to post-intervention in limited-resource women, and (2) can a theory-driven behavior change intervention delivered through text messaging significantly increase PA (as measured through step counts) and improve PA predictors of behavior change for weight loss/management from pre- to post-intervention in limited-resource women? First, results from the *My Quest* text message intervention did not produce the expected overall 5% weight loss in participants, although weight loss from pre- to post-intervention was modest (2.3%) and significant ($P=.021$). Although weight loss did not meet the 5% goal, weight loss in *My Quest* was higher than other mHealth programs.^{13,15,17} Second, several PA predictors of behavior change for weight loss/management, as well as behaviors, were improved through the *My Quest*

intervention. These included participant increases in: (1) goal setting to be more physically active, (2) PA and step counts, and (3) self-monitoring PA and body weight. *My Quest* had a low implementation cost, with participants being provided scales (\$20) and pedometers (\$15) to self-monitor body weight and PA, respectively.

Overall, results supported text messaging could provide tools and tips to break down barriers that lead to physical inactivity and not engaging in weight loss/management programs in this targeted population. *My Quest* promoted self-monitoring of PA and body weight through text response prompts. Self-monitoring rates were consistent with other research.^{12,15,18} with participants (n=56) responding to 72% of body weight prompts and 67% of step count prompts. *My Quest* also adds to the literature supporting pedometers as an effective tool for monitoring and increasing PA in a low-income population. *My Quest* supports that text message delivery of an evidence-based weight loss intervention can promote weight loss and increase PA in a socioeconomically disadvantaged, rural population.

Chapter VI: Significant findings between the Comparison and Treatment *My Quest* Groups

Chapter VI reported results for the *My Quest* C and T groups. Results indicated C group had significant weight loss ($P < .001$) and improvements in goal setting, behavioral and environmental factors ($P < .05$) known to promote weight loss/management from pre- to post-intervention. Results indicated T group also had significant weight loss ($P = .021$) and improvements in goal setting, behavioral and environmental factors ($P < .05$) known to promote weight loss/management from pre- to post-intervention.

The main objective of Chapter VI was to assess two *My Quest* hypotheses.

Hypothesis 1: Delivery of a theory-driven weight loss intervention through text messaging will produce significant weight loss in T versus C participants from pre- to post-assessment. Hypothesis 1 was rejected with a mixed-design ANOVA analysis between groups showing no significant difference in weight loss for C and T ($P > .05$).

Hypothesis 2: Delivery of a theory-driven behavior change intervention through text messaging will significantly improve 12 predictors of behavior change for weight loss/management in T versus C participants from pre- to post-assessment. Hypothesis 2 was rejected with nonparametric analyses (Fisher Exact/Pearson χ^2 and Mann Whitney U) between groups showing no significant difference in several predictors of behavior change for weight loss/management ($P > .05$).

Both C and T groups had significant weight loss and improvements in predictors of behavior change and behaviors. Participants in the C group had higher weight loss from pre- to post-intervention compared to T participants (6.5 lbs. vs 4.0 lbs., respectively). Participants in C group who completed *My Quest* were predominantly African American (38%), younger (36.1 years), lower education (High School or GED), and had higher baseline body weight (211.4 lbs.) compared to T participants (African American 24%, 38.1 years, 2 year/some college, and 202.4 lbs., respectively) (Table 6.1).

In order to promote retention, participants in both groups were provided a financial incentive to complete the program (\$20 with both pre- and post-assessments complete). Participants in C group had a higher retention rate compared to T group (81% vs 64%, respectively). The highest attrition occurred during the first month, with 24 T participants (23%) dropping out of the text message program. Participants in C group

received one text/week compared to 21 texts/week (4-5 requiring a response) in the T group. Once Phase 2 began, C group received 2-3 texts/day, compared to T group that received three texts/week. Within 3 weeks, 16% of C participants opted-out of the text message program. With this observation, it is speculated the cost and/or volume of text messages received during Phase 1 may have been a driving factor for the higher attrition seen in T compared to C group.

Limitations

My Quest was a short-term, 12-week weight loss program without long-term follow up procedures. During Phase 2 (August 7- October 29, 2017), body weight prompts were sent each Sunday to both C and T participants with very low response rates (typically <25%). Participants in both C and T groups lost a statistically significant amount of weight. Even though both groups lost weight, without follow-up, it is unclear if the weight loss is sustainable or if it will be maintained. To assist with sustainability, C and T participants remaining in the text message program after Phase 2 (n=92) were moved into the statewide #*Livewell Alabama* text messaging campaign. Another limitation of the program was the inability of the text message system to provide feedback to participants. Participants were able to individually respond to text prompts sent or text questions to researchers, but researchers could not respond back individually via text. However, responses to questions could be answered through email communication. *My Quest* data consisted of a self-selected group with data collected through self-report measures that can introduce bias. Bias was accounted for by pre-intervention body weight being captured by Agent Assistants instead of the participant as well as using pedometers as an objective measure for PA.

Implications

My Quest was able to produce statistically significant weight loss from pre- to post-intervention in both C and T groups. Self-efficacy is the basis for interpersonal motivation and extrinsic engagement in healthful behaviors. During recruitment, participants were a highly motivated, self-selected group for the *My Quest* intervention. This was supported through pre-assessment analyses showing self-efficacy for both C and T was high. *My Quest* enhances evidence-based weight loss programs using text messaging to promote healthful behaviors and improve predictors for weight loss/management. This population has limited leisure time and resources to engage in weight loss programs that require large time and/or financial outlays. The *My Quest* intervention taught women through eNewsletters (Appendix C) and text messages (Appendix D) to reduce social and environmental barriers, leading to healthy behavior changes.

Conclusion

Low-cost, community-based programs are still difficult for individuals who lack adequate transportation, which is a prevalent barrier for low-income women who live in rural Alabama. *My Quest* reached this at-risk population through text messaging and contributed weight loss. Reducing body weight and/or improving predictors of behavior change in these low-income women can lead to reduced disease burden and improved quality of life.

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APPENDIX A
IRB PROTOCOL

Do not sign this form unless an IRB approval stamp with current dates is on this form.



Informed Consent for a Research Study Called

“Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP-Ed Eligible Women Age 19-49 Years.”

You are invited to participate in a 3-month research study that will determine if text messaging is a good education and support tool to help women trying to lose weight. You do not have to come to Auburn University to be part of this study.

The purpose of this study is to determine the effectiveness of a text messaging program to promote weight loss and improve dietary behavior in women age 19-49 years.

To be eligible, you must be:

- Female
- Age 19-49
- Have a cellular phone with text messaging
- Active email address
- Not pregnant or planning to become pregnant during the study
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

You must meet all these requirements to be eligible for participation in this study.

During the 3-month study, you will be asked to text the researcher some information each week. This includes your weight and the number of steps you have taken. When you sign the Consent Form, you will be asked for your cell phone number and email address. You also will opt-in to the text messaging program. You will then weigh yourself and text your current weight to 33733. You will take home the scale to weigh yourself each week. You can keep the scale after the study is over.

During this study you complete 2 online surveys. The surveys will be sent to you at the email address you write down on your Consent Form. The surveys should take no longer than 15 minutes to finish. The first survey will arrive in your email box soon after you sign this form. The second survey will arrive in your email inbox in June.

When you finish the first survey, a pedometer will be mailed to you. You will use this pedometer to measure your weekly step count. You can keep the pedometer after the study is over. After you finish the second survey, a \$20 check will be mailed to you.

You will be put into 2 groups. The first group starts in April. The second group starts in June.

Put your initials here to show you have read this page _____

The Auburn University Institutional Review Board has approved this Document for use from 02/04/16 to 02/03/17 Protocol # 16-053 EP 1602

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This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP). USDA is an equal opportunity provider and employer. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!

If you are in the first group, you will get two emails for the online survey. The first email will come in late March or early April. The last survey will come in early June. To keep you on track, you will get 2-3 text messages every day with tips, reminders or questions about exercise and healthy eating. On Sunday, you will text your current weight. During the first 4 weeks, you will be asked to text your step count daily. During weeks 5-12, you will be asked to text your step counts on Monday, Wednesday, and Friday.

You also will get a weekly e-newsletter that contains tips and recipes. You can join a private Facebook group to share tips, and recipes, as well as encourage and support other group members.

If you are in the second group, you will get two emails for the online surveys. The first email will come in late March or early April. You also will get the weekly e-newsletter that contains tips and recipes. The last survey will come in early June. After the second survey you will get all texts, and you can join the private Facebook group.

We will use the information from the surveys and the text message responses for the study. There are no good or bad answers. Everything will be kept private.

Being in this study is up to you. If you start the study and decide not to finish, you can drop out at any time. Just tell Jamie Griffin. You can email her at jbg0011@auburn.edu or reply "STOP" to any text. No one will be angry with you.

Whether or not you are in this study will not make a difference in how you are treated by Auburn University or the Alabama Cooperative Extension System.

If you have questions, contact Jamie Griffin (334-844-5549, jbg0011@auburn.edu), Barb Struempler (struebj@auburn.edu, 334-844-2217) or the Office of Human Subjects Research (334-844-5966, rbadmin@auburn.edu) at Auburn University. You will get a copy of this form to keep.

IF YOU SIGN THIS FORM IT MEANS:

1. YOU UNDERSTAND WHAT IS IN THIS LETTER.
2. YOU WILL BE IN THE STUDY.

Please give your email address so you can get the survey. Please give your cell phone number. Your standard text messaging rates will apply. Your phone number will not be shared with anyone. To stop getting texts at any time, reply STOP after any text.

Sign Your Name **Date**

Jamie B. Griffin 3/22/16

Jamie Griffin, Investigator **Date**

Print Your Name **Date**

Jamie B. Griffin 3/22/16

Printed Name of Investigator **Date**

E-mail address (please print clearly)

The Auburn University Institutional Review Board has approved this Document for use from 02/04/16 to 02/03/17
Protocol # 16-053 EP 1602

Cell Phone Number (please print clearly)

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP). USDA is an equal opportunity provider and employer. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS
RESEARCH PROTOCOL REVIEW FORM
FULL BOARD or EXPEDITED**

For Information or help contact **THE OFFICE OF RESEARCH COMPLIANCE (ORC)**, 115 Ramsay Hall, Auburn University
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** <http://www.auburn.edu/research/vpr/ohs/index.htm>

Revised 2.1.2014

Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

1. PROPOSED START DATE of STUDY: March 15, 2016

PROPOSED REVIEW CATEGORY (Check one): FULL BOARD EXPEDITED

SUBMISSION STATUS (Check one): NEW REVISIONS (to address IRB Review Comments)

2. PROJECT TITLE: Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in Low-Income Women Age 19-49 Years.

<u>Jamie B. Griffin</u>	<u>PhD Student/GRA</u>	<u>ACES/NDHM</u>	<u>jbg0011@auburn.edu</u>
PRINCIPAL INVESTIGATOR	TITLE	DEPT	AU E-MAIL
<u>216 ACES Duncan Hall, Auburn University</u>		<u>844-5549</u>	
MAILING ADDRESS		PHONE	ALTERNATE E-MAIL

4. FUNDING SUPPORT: N/A Internal External Agency: Alabama Dept. Human Resources Pending Received

For federal funding, list agency and grant number (if available). AL DHR-AGREE 4153-FY16; CGA FOP: 376373-403501-3000

5a. List any contractors, sub-contractors, other entities associated with this project:

b. List any other IRBs associated with this project (including Reviewed, Deferred, Determination, etc.):

PROTOCOL PACKET CHECKLIST

All protocols must include the following items:

- Research Protocol Review Form (All signatures included and all sections completed)
(Examples of appended documents are found on the OHSR website: <http://www.auburn.edu/research/vpr/ohs/sample.htm>)
- CITI Training Certificates for all Key Personnel.
- Consent Form or Information Letter and any Releases (audio, video or photo) that the participant will sign.
- Appendix A, "Reference List"
- Appendix B if e-mails, flyers, advertisements, generalized announcements or scripts, etc., are used to recruit participants.
- Appendix C if data collection sheets, surveys, tests, other recording instruments, interview scripts, etc. will be used for data collection. Be sure to attach them in the order in which they are listed in # 13c.
- Appendix D if you will be using a debriefing form or include emergency plans/procedures and medical referral lists (A referral list may be attached to the consent document).
- Appendix E if research is being conducted at sites other than Auburn University or in cooperation with other entities. A permission letter from the site / program director must be included indicating their cooperation or involvement in the project. NOTE: If the proposed research is a multi-site project, involving investigators or participants at other academic institutions, hospitals or private research organizations, a letter of IRB approval from each entity is required prior to initiating the project.
- Appendix F - Written evidence of acceptance by the host country if research is conducted outside the United States.

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: _____ by _____	PROTOCOL # _____
DATE OF IRB REVIEW: _____ by _____	APPROVAL CATEGORY: _____
DATE OF IRB APPROVAL: _____ by _____	INTERVAL FOR CONTINUING REVIEW: _____
COMMENTS:	

6. **GENERAL RESEARCH PROJECT CHARACTERISTICS**

6A. Research Methodology

Please check all descriptors that best apply to the research methodology.

Data Source(s): New Data Existing Data

Will recorded data directly or indirectly identify participants?
 Yes No

Data collection will involve the use of:

- | | |
|---|---|
| Educational Tests (cognitive diagnostic, aptitude, etc.)
Interview
Observation
Location or Tracking Measures
<input checked="" type="checkbox"/> Physical / Physiological Measures or Specimens (see Section 6E.)
<input checked="" type="checkbox"/> Surveys / Questionnaires
Other: <u>Qualtrics surveys, text messages requiring response.</u> | <input checked="" type="checkbox"/> Internet / Electronic
Audio
Video
Photos
Digital images
Private records or files |
|---|---|

6B. Participant Information

Please check all descriptors that apply to the target population.
 Males Females AU students

Vulnerable Populations
 Pregnant Women/Fetuses Prisoners Institutionalized
 Children and/or Adolescents (under age 19 in AL)

Persons with:
 Economic Disadvantages Physical Disabilities
 Educational Disadvantages Intellectual Disabilities

Do you plan to compensate your participants? Yes No

6C. Risks to Participants

Please identify all risks that participants might encounter in this research.

- | | |
|--|--|
| <input checked="" type="checkbox"/> Breach of Confidentiality* | <input checked="" type="checkbox"/> Coercion |
| <input type="checkbox"/> Deception | <input type="checkbox"/> Physical |
| <input type="checkbox"/> Psychological | <input type="checkbox"/> Social |
| <input type="checkbox"/> None | |

Other: Participants will be provided educational reinforcement tools at the beginning of the 12-week education program. Items include scale and pedometer. At the end of the 12-week program, participants will receive \$20 after completion of the post-assessment.

*Note that if the investigator is using or accessing confidential or identifiable data, breach of confidentiality is always a risk.

6D. Corresponding Approval/Oversight

- Do you need IBC Approval for this study?
 Yes No
 If yes, BUA # _____ Expiration date _____
- Do you need IACUC Approval for this study?
 Yes No
 If yes, PRN # _____ Expiration date _____
- Does this study involve the Auburn University MRI Center?
 Yes No
 Which MRI(s) will be used for this project? (Check all that apply)
 3T 7T
 Does any portion of this project require review by the MRI Safety Advisory Council?
 Yes No

Signature of MRI Center Representative: _____
Required for all projects involving the AU MRI Center

Appropriate MRI Center Representatives:
 Dr. Thomas S. Denney, Director AU MRI Center
 Dr. Ron Beyers, MR Safety Officer

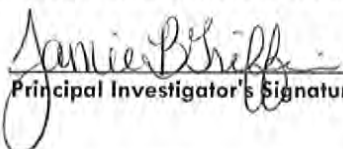
7. PROJECT ASSURANCES Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in Low-Income Women Age 19-49 Years.

A. PRINCIPAL INVESTIGATOR'S ASSURANCES

1. I certify that all information provided in this application is complete and correct.
2. I understand that, as Principal Investigator, I have ultimate responsibility for the conduct of this study, the ethical performance this project, the protection of the rights and welfare of human subjects, and strict adherence to any stipulations imposed by the Auburn University IRB.
3. I certify that all individuals involved with the conduct of this project are qualified to carry out their specified roles and responsibilities and are in compliance with Auburn University policies regarding the collection and analysis of the research data.
4. I agree to comply with all Auburn policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of human subjects, including, but not limited to the following:
 - a. Conducting the project by qualified personnel according to the approved protocol
 - b. Implementing no changes in the approved protocol or consent form without prior approval from the Office of Research Compliance
 - c. Obtaining the legally effective informed consent from each participant or their legally responsible representative prior to their participation in this project using only the currently approved, stamped consent form
 - d. Promptly reporting significant adverse events and/or effects to the Office of Research Compliance in writing within 5 working days of the occurrence.
5. If I will be unavailable to direct this research personally, I will arrange for a co-investigator to assume direct responsibility in my absence. This person has been named as co-investigator in this application, or I will advise ORC, by letter, in advance of such arrangements.
6. I agree to conduct this study only during the period approved by the Auburn University IRB.
7. I will prepare and submit a renewal request and supply all supporting documents to the Office of Research Compliance before the approval period has expired if it is necessary to continue the research project beyond the time period approved by the Auburn University IRB.
8. I will prepare and submit a final report upon completion of this research project.

My signature indicates that I have read, understand and agree to conduct this research project in accordance with the assurances listed above.

Jamie B. Griffin _____
 Printed name of Principal Investigator

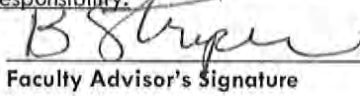

 Principal Investigator's Signature

1/25/16 _____
 Date

B. FACULTY ADVISOR/SPONSOR'S ASSURANCES

1. I have read the protocol submitted for this project for content, clarity, and methodology.
2. By my signature as faculty advisor/sponsor on this research application, I certify that the student or guest investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol.
3. I agree to meet with the investigator on a regular basis to monitor study progress. Should problems arise during the course of the study, I agree to be available, personally, to supervise the investigator in solving them.
4. I assure that the investigator will promptly report significant incidents and/or adverse events and/or effects to the ORC in writing within 5 working days of the occurrence.
5. If I will be unavailable, I will arrange for an alternate faculty sponsor to assume responsibility during my absence, and I will advise the ORC by letter of such arrangements. If the investigator is unable to fulfill requirements for submission of renewals, modifications or the final report, I will assume that responsibility.

Barb Struempler _____
 Printed name of Faculty Advisor / Sponsor


 Faculty Advisor's Signature

1/25/16 _____
 Date

C. DEPARTMENT HEAD'S ASSURANCE

By my signature as department head, I certify that I will cooperate with the administration in the application and enforcement of all Auburn University policies and procedures, as well as all applicable federal, state, and local laws regarding the protection and ethical treatment of human participants by researchers in my department.

Martin O'Neill _____
 Printed name of Department Head


 Department Head's Signature

01/25/2016 _____
 Date

8. PROJECT OVERVIEW: Prepare an abstract that includes:

(350 word maximum, in language understandable to someone who is not familiar with your area of study):

a) A summary of relevant research findings leading to this research proposal:

(Cite sources; include a "Reference List" as Appendix A.)

b) A brief description of the methodology, including design, population, and variables of interest

a.) Obesity prevention is the paramount of public health initiatives in the United State. In the United States, the highest rates of obesity occur among low-income, and minority women (1). Women ages 20 to 59 years have higher rates of class II and class III obesity compared to same age men (1). Alabama is not immune to this epidemic. Currently, Alabama ranks 5th in the nation for obesity (2), and is 6th in the nation for poverty (3). Intervention efforts with this high-risk population are challenging. Promoting weight loss and weight management in this high-risk population presents many challenges (1,4). Text messaging and social media are innovative, cost-effective formats that may overcome many barriers with this high-risk population (4). Cell phone ownership is becoming ingrained in American society. In 2014, 90% of black and 92% of Hispanics, 88% of American adult women, 88% of persons living in rural communities, and 84% of households earning less than \$30,000/year owned cell phones (5). Texting is the dominant way of communicating for Americans under 50. (6) Statistics show that 81% of all cell phone owners use their phone to text and 52% to send/receive e-mail (5). Approximately 64% of cell phone owners own smart phones. (7) Among low-income smart phone owners, 45% use their phone to surf the internet, and 62% use their phone to look up information on medical conditions (7). SMS text message programs have shown to be a promising medium for weight loss interventions and nutrition education programs (8-12). These programs are cost-effective, convenient, have high adherence rates and promote moderate weight loss. With 84% of low-income and 88% of rural individuals owning cell phones, using a text message based program is a feasible way to remove barriers, and reach Alabamians who are female, overweight/obese who live in rural areas, without financial resources, transportation, or the ability to access community centers for an on-site weight loss intervention program.

Several mediators are associated with weight loss and weight management: increased fruit and vegetable, whole grain, low-fat dairy and water consumption, reduce sugar sweetened beverage consumption, calorie balance between intake and output through portion control, increase physical activity, and reduce physical inactivity (13,14).

b.) See attached pages

9. PURPOSE.

a. Clearly state the purpose of this project and all research questions, or aims.

Develop and evaluate an evidence-based, theory driven weight loss intervention in a high-risk population.

Primary Goal: Weight loss of 5% from baseline body weight.

Secondary Goals: Increased water, fruit and vegetable intakes, reduced sugar-sweetened beverage intake, increased daily steps, increased physical activity, knowledge of personal calorie requirement, portion control, reduced screen time, healthy snacking, meal planning and food and exercise journaling.

Research question: Can a 12-week text message delivery of a weight loss based intervention, produce significant weight loss over baseline body weight? Is text message delivery of nutrition and physical activity based health messages able to produce significant, positive behavior changes for 12 mediators known to reduce health risks?

b. How will the results of this project be used? (e.g., Presentation? Publication? Thesis? Dissertation?)

Results from this project will add to the limited body of research for effective weight loss interventions for low-income women. The results will be disseminated through professional presentations and publications, as well as partial fulfillment of my dissertation requirements.

10. KEY PERSONNEL. Describe responsibilities. Include information on research training or certifications related to this project. CITI is required. Be as specific as possible. (Include additional personnel in an attachment.) *All key personnel must attach CITI certificates of completion.*

Principle Investigator Jamie B. Griffin Title: PhD Student/GRA E-mail address jbg0011@auburn.edu
Dept / Affiliation: ACES/NDHM

Roles / Responsibilities:

PI for project. Responsible for data collection, data management, dissemination of pre- and post-assessments, weekly e-newsletter and daily text messages. Coordinates with Nutrition Educators for recruitment activities, and receiving Informed Consent. Prepares reports and publications.

Individual: Barb Struempler Title: Professor E-mail address strueb@auburn.edu
Dept / Affiliation: ACES/NDHM

Roles / Responsibilities:

Faculty Advisor. Responsible for oversight of project development and all project activities.

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

11. LOCATION OF RESEARCH. List all locations where data collection will take place. (School systems, organizations, businesses, buildings and room numbers, servers for web surveys, etc.) Be as specific as possible. Attach permission letters in Appendix E. (See sample letters at <http://www.auburn.edu/research/vpr/ohs/sample.htm>)

PI and Faculty Advisor are located on AU campus. Participants will live in 62 counties throughout Alabama.

12. PARTICIPANTS.

- a. Describe the participant population you have chosen for this project including inclusion or exclusion criteria for participant selection.

Check here if using existing data, describe the population from whom data was collected, & include the # of data files.

Subjects will be female, ages 19-49 years, SNAP-Ed eligible and have low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q), who are trying or want to lose weight. Participants will be excluded if they are high risk for medical complications, pregnant or planning to become pregnant during the study. Participants will be recruited through Alabama Department of Human Resources (DHR) SNAP, DHR JOBS program, Department of Urban Housing (HUD), Alabama Food Banks, Farmer's Markets, or other SNAP-Ed adult contact locations..

- b. Describe, step-by-step, in layman's terms, all procedures you will use to recruit participants. Include in Appendix B a copy of all e-mails, flyers, advertisements, recruiting scripts, invitations, etc., that will be used to invite people to participate. (See sample documents at <http://www.auburn.edu/research/vpr/ohs/sample.htm>.)

Alabama Cooperative Extension System nutrition educators will recruit SNAP-Ed eligible females, age 19-49 years, who have low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q), and are trying or want to lose weight. Eligible participants will be asked if they would like to participate in the study. A recruitment script will be used (Appendix B). Participants interested in joining the study will complete the PAR-Q, and if they are deemed low risk, they will sign an Informed Consent. Consented participants will then opt-in to the text messaging program. Once they are accepted into the program, they will use a scale provided by the SNAP-Ed nutrition educator to weight themselves. This current body weight will be texted to AU. Participants will keep the scale. All Informed Consent and PAR-Q forms will be mailed to AU.

- c. What is the minimum number of participants you need to validate the study? 100
How many participants do you expect to recruit? 230
Is there a limit on the number of participants you will include in the study? No Yes - the # is _____

- d. Describe the type, amount and method of compensation and/or incentives for participants.

(If no compensation will be given, check here:)

- Select the type of compensation: Monetary Incentives
 Raffle or Drawing incentive (Include the chances of winning.)
 Extra Credit (State the value)
 Other

Description:

Each participant will receive a scale after signing the Consent Form, opting-in to the text message program and texting their initial body weight. After completing the pre-assessment, participants will receive a pedometer to keep track of their daily steps. After completing the post-assessment, participants will receive \$20.

13. PROJECT DESIGN & METHODS.

- a. Describe, step-by-step, all procedures and methods that will be used to consent participants. If a waiver is being requested, check each waiver you are requesting, describe how the project meets the criteria for the waiver.

- Waiver of Consent (including using existing data)
- Waiver of Documentation of Consent (use of Information Letter)
- Waiver of Parental Permission (for college students)

An Extension educator script for recruitment will be used to explain about participation in the program. Extension educators will explain in order to participate, a Consent Form, PAR-Q, cell phone with texting, and an active email account will be required. It will be explained that participation is voluntary and whether or not they choose to participate will not affect how they are treated by Auburn University or the Alabama Cooperative Extension System. When the Consent Form is signed, the PAR-Q complete, and the current body weight texted to Auburn, they keep the scale.

Recruitment script attached (Appendix B).

- b. Describe the research design and methods you will use to address your purpose. Include a clear description of when, where and how you will collect all data for this project. Include specific information about the participants' time and effort commitment. *(NOTE: Use language that would be understandable to someone who is not familiar with your area of study. Without a complete description of all procedures, the Auburn University IRB will not be able to review this protocol. If additional space is needed for this section, save the information as a .PDF file and insert after page 7 of this form.)*

The intervention will consist of a treatment group and control group. Participants will be randomly assigned to treatment or control group.

Participants in treatment group will receive a scale, pedometer, text message education intervention, weekly e-newsletter, access to private Facebook group, and both pre- and post-assessments. Participants will be asked to text daily step counts each day during weeks 1-4. Then, three days each week from weeks 5-12. Participants will weight themselves once per week and text weight back. Upon completion of post-assessment, participants will receive \$20.

Participants in control group will receive a scale, pedometer, weekly e-newsletter and complete both pre- and post-assessment. Upon completion of post-assessment, participants will receive \$20. Upon completion of post-assessment, participants will receive text message education and access to private Facebook group.

13. PROJECT DESIGN & METHODS. *Continued*

- c. List all data collection instruments used in this project, in the order they appear in Appendix C. (e.g., surveys and questionnaires in the format that will be presented to participants, educational tests, data collection sheets, interview questions, audio/video taping methods etc.)

Survey- Pre-assessment and Post-assessment. Online through Qualtrics.
Cell Phone- Initial body weight, weekly body weight, step counts, daily text messages.
Scale-Body weight
Pedometer-Daily step counts
e-Newsletter through email

- d. Data analysis: Explain how the data will be analyzed.

Repeated measures ANCOVA analysis for between group changes at pre- and post-assessment. T-tests for within group analysis at pre- and post-assessment. Weight loss and improvement in mediators will be evaluated. Significance level= $p < 0.05$.

14. RISKS & DISCOMFORTS: List and describe all of the risks that participants might encounter in this research. *If you are using deception in this study, please justify the use of deception and be sure to attach a copy of the debriefing form you plan to use in Appendix D. (Examples of possible risks are in section #6D on page 2)*

Increases in physical activity and step counts can initially be mildly discomforting. This discomfort subsides as physical endurance and aerobic capacity improve. The initial discomfort experienced is far outweighed by the health benefits achieved with regular physical activity.

Identifiable data are being used, breach of confidentiality is an inherent risk.

All participants are free to terminate participation at any time during the program.

15. **PRECAUTIONS.** Identify and describe all precautions you have taken to eliminate or reduce risks as listed in #14. If the participants can be classified as a "vulnerable" population, please describe additional safeguards that you will use to assure the ethical treatment of these individuals. Provide a copy of any emergency plans/procedures and medical referral lists in Appendix D. (Samples can be found online at <http://www.auburn.edu/research/vpr/ohs/sample.htm#precautions>)

PAR-Q screening will determine initial health risk. Anyone answering "yes" will be required to provide medical clearance from their Primary Care Manager before they can provide signed consent. Participant names are used when collecting data; therefore, breach of confidentiality is a risk associated with this study. Names and email address will be shown on Consent Forms. Name and health risk will be listed on the PAR-Q form. Consent Forms will be mailed to the PI at Auburn. Consent Forms and PAR-Q forms will be stored in a locked cabinet, and available only to the PI and faculty advisor at Auburn University. Mailing address will be collected on pre- and post-assessment. Information will be used in two ways. First, name and email addresses will be used to send pre- and post-assessment. Second, email will be used to send -newsletters. Mailing address will be used to mail pedometer (after pre-assessment) and \$20 (after post-assessment). Unique identifiers will be used to create a master list before data analysis; names will be removed from data.

Anxiety: Participation in the surveys and text message responses is strictly voluntary. There will be no adverse reactions for dropping out of the program. No one will coerce a participant to participate or remain in the study.

If using the Internet or other electronic means to collect data, what confidentiality or security precautions are in place to protect (or not collect) identifiable data? Include protections used during both the collection and transfer of data.

Qualtrics survey software will be used to capture pre- and post-assessment data. Only the PI and faculty advisor will have access to personal identifying information. For statistical analysis, names will be removed and unique identifiers will be used in their place.

16. **BENEFITS.**

- a. List all realistic direct benefits participants can expect by participating in this specific study.
(Do not include "compensation" listed in #12d.) Check here if there are no direct benefits to participants.

Participants can expect to lose weight, increase weekly physical activity, learn goal setting techniques, and increase health and nutrition knowledge. Participants will learn to make environment changes to promote a healthy lifestyle, and engage in healthy dietary behaviors.

- b. List all realistic benefits for the general population that may be generated from this study.

Weight loss and weight management skills for overweight/obese low-income populations. Increase health and nutrition knowledge. Develop and evaluate an effective evidence-based, theory driven weight loss intervention for a high-risk group (low-income, female). Ability to make healthy environmental changes for weight loss/ weight management and to reduce disease risk.

17. PROTECTION OF DATA.

a. Data are collected:

- Anonymously with no direct or indirect coding, link, or awareness of who participated in the study (Skip to e)
- Confidentially, but without a link of participant's data to any identifying information (collected as "confidential" but recorded and analyzed as "anonymous") (Skip to e)
- Confidentially with collection and protection of linkages to identifiable information

b. If data are collected with identifiers or as coded or linked to identifying information, describe the identifiers collected and how they are linked to the participant's data.

Participant names will be used to mail pedometer and \$20. Participant cell phone numbers will be used to match text responses. Ultimately, names will be stripped from the data sets before analysis.

c. Justify your need to code participants' data or link the data with identifying information.

Matching participant name and phone number is the most accurate way to guarantee data is correctly matched during collection.

d. Describe how and where identifying data and/or code lists will be stored. (Building, room number?) Describe how the location where data is stored will be secured in your absence. For electronic data, describe security. If applicable, state specifically where any IRB-approved and participant-signed consent documents will be kept on campus for 3 years after the study ends.

All study paper documentaton, including Consent Forms, will be kept in a locked file in 207 Duncan Hall, AU Campus.

e. Describe how and where the data will be stored (e.g., hard copy, audio cassette, electronic data, etc.), and how the location where data is stored is separated from identifying data and will be secured in your absence. For electronic data, describe security

Participant information (name, cell number, address) will be placed in a file located on a shared network drive. The shared network drive is permission-based with controlled access. Paper documentation will be kept in a locked file in 207 Duncan Hall.

f. Who will have access to participants' data?

(The faculty advisor should have full access and be able to produce the data in the case of a federal or institutional audit.)

Jamie B. Griffin, MS, RDN, LDN, Principal Investigator
Barb Struempfer, PhD, Faculty Advisor

g. When is the latest date that identifying information or links will be retained and how will that information or links be destroyed? (Check here if only anonymous data will be retained)

All data will be kept for 3 years from end of study. The master list linking identifier codes to names will be destroyed by shredding.

8b. A brief description of the methodology, including design, population and variable of interest.

Health Quest is a 12-week, theory driven adult weight loss intervention for a SNAP-Ed population. It enhances evidence-based weight loss programs using text messaging to promote healthful behaviors and mediators for weight loss and weight management.

SNAP-Ed eligible adult females age 19-49 years will be recruited through SNAP-Ed sites, including Department of Human Resources SNAP program, DHR JOBS program, Department of Urban Development, Alabama Food Banks, Farmer's Markets, or other adult contact locations. Participants must have a cell phone with texting capability, an active email account, and be at low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q).

When written consent is obtained, participants will opt-in to a text messaging program. Participants will provide their initial body weight. They will keep the scale to weight themselves weekly during the 12 week intervention.

Participants will be randomized into two groups: Treatment and Control. Both groups will take a pre- and post-assessment through a Qualtrics web-link emailed to them. Once participants complete the pre-assessment they will be mailed a pedometer. Both treatment and control participants will receive a weekly e-newsletter containing information based on the nutrition goal and objective for the week. At post, treatment and control participants will complete a post-assessment. Once the post-assessment has been completed, treatment and control participants will be mailed \$20 from Auburn University.

Weekly Nutrition Education Themes

Week One-Food Journaling. Goal: Begin using a food journal to monitor food intake. Objective: Introduce the Super Tracker online food journal to participants.

Week Two- Know Your calories. Goal: Know individual calorie intake level. Objective: Introduce the ChooseMyPlate Meal planning for 1600 calories per day.

Week Three-Portion Control. Goal: Know what a standard portion of food looks like. Objective: Know how to reduce portion sizes to reduce calorie intake to help promote weight loss and weight management.

Week Four-Exercise Journal. Goal: Begin using an exercise journal to monitor daily physical activity. Objective: Introduce the Super Tracker online exercise journal to participants.

Week Five-Increasing steps. Goal: Walk 5000 steps each day. Objective: Provide small ways to increase daily step counts.

Week Six-Increasing water. Goal: Know the daily recommended intake amount of water. Choose two ways to increase water each day (take water bottle with you, etc).

Week Seven-Reducing Sugar Sweetened Beverages. Goal: Know what the amount of added sugar and calories in common sugar sweetened beverages. Objective: Replace one sugar sweetened beverage, or one caloric beverage (fruit juice) with water or a zero calorie beverage each day.

Week Eight-Meal Planning. Goal: Develop weekly meal and grocery game plans.

Objective: Plan meals for the week. Make a grocery list of items needed for each meal.

Week Nine-Increase Fruits and Vegetables. Goal: Increase fruit and vegetable intake by one serving each day. Objective: Eat one fruit for snack. Eat one vegetable for snack. Serve one more vegetable than usual for dinner.

Week Ten-Smart Snacking. Goal: Choose fruits, vegetables, low-fat dairy or low-fat whole grain foods as snacks. Objective: Understand hunger cues. Increase knowledge of high fiber, low-fat dairy foods that are good snacks.

Week Eleven-Increase Physical Activity. Goal: Increase time and type of physical activity each day this week. Objective: Increase physical activity by 30 minutes or 3000 additional steps each, or type of physical activity.

Week Twelve- Reduce Screen Time. Goal: Decrease the time spent in front of a screen to no more than 2 hours per day. Objective: When at work, and in front of a computer screen, take hourly screen breaks. Reduce extra-curricular screen time to no more than 2 hours each day.

In treatment, participants will receive 2-3 daily text messages with tips, reminders and questions about exercise or healthy eating. During weeks 1 through 4, participants will receive a prompt to text in their daily step counts from the previous day. From weeks 5-12, treatment participants will receive prompt texts to text step counts on Monday, Wednesday, and Friday. Monday steps counts will include Friday, Saturday and Sunday step counts. Wednesday step counts will include Monday and Tuesday step counts. Friday step counts will include Wednesday and Thursday step counts. Each Sunday, Treatment participants will receive a text prompt to text in their current body weight. Treatment participants will also have the option to join a private Facebook group.

In control, participants will not receive text messages or have access to the private Facebook group until they complete pre and post assessments. These assessments will be given at the same time as treatment. After post assessments, control participants receive all text messages, and have the option to join the private Facebook group.

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)
IRB # 2 SOCIAL AND BEHAVIORAL EMPHASIS - AU PERSONNEL (BLUE) - BASIC/REFRESHER CURRICULUM
COMPLETION REPORT
 Printed on 08/20/2013

LEARNER Jamie Griffin (ID: 3668125)
 216 Duncan Hall
 Auburn
 AL 36849

DEPARTMENT Nutrition Education Program
PHONE 334-8445549
EMAIL jbg0011@auburn.edu
INSTITUTION Auburn University
EXPIRATION DATE 08/19/2016

IRB # 2 SOCIAL AND BEHAVIORAL EMPHASIS - AU PERSONNEL (BLUE) - BASIC/REFRESHER : No direct contact with human subjects.

COURSE/STAGE: Basic Course/1
PASSED ON: 08/20/2013
REFERENCE ID: 11028488

MODULE	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction	08/20/2013	3/3 (100%)
Students in Research	08/20/2013	9/10 (90%)
The Regulations - SBE	08/20/2013	5/5 (100%)
Assessing Risk - SBE	08/20/2013	5/5 (100%)
Informed Consent - SBE	08/20/2013	5/5 (100%)
Privacy and Confidentiality - SBE	08/20/2013	5/5 (100%)
Research with Children - SBE	08/20/2013	4/4 (100%)
Research in Public Elementary and Secondary Schools - SBE	08/20/2013	4/4 (100%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research	08/20/2013	3/3 (100%)

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Paul Braunschweiger Ph.D.
 Professor, University of Miami
 Director Office of Research Education
 CITI Program Course Coordinator

English



Text size: A A

Jamie Griffin ID: 3668125 | [Log Out](#) | [Help](#)

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Auburn University Reports

Curriculum: Course In The Protection Human Subjects

Research in Public Elementary and Secondary Schools - SBR								
Stage	Completion Report #	Passing Score	Your Score	Start Date	Completion Date	Expiration Date	Completed Modules	Completion Report
Basic Course	11028487	80%	100%	08/20/2013	08/20/2013	08/19/2018	View	View

Curriculum: IRB # 2 Social and Behavioral Emphasis - AU Personnel (Blue) - Basic/Refresher

IRB # 2 Social and Behavioral Emphasis - AU Personnel (Blue) - Basic/Refresher								
Stage	Completion Report #	Passing Score	Your Score	Start Date	Completion Date	Expiration Date	Completed Modules	Completion Report
Basic Course	11028488	80%	98%	08/20/2013	08/20/2013	08/19/2016	View	View

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)
COURSE IN THE PROTECTION HUMAN SUBJECTS CURRICULUM COMPLETION REPORT
Printed on 11/19/2014

LEARNER	barbara struempler (ID: 1865401)
DEPARTMENT	Nutrition and Food Science
PHONE	334-844-2217
EMAIL	struebj@auburn.edu
INSTITUTION	Auburn University
EXPIRATION DATE	11/18/2017

RESEARCH IN PUBLIC ELEMENTARY AND SECONDARY SCHOOLS - SBR

COURSE/STAGE:	Basic Course/1
PASSED ON:	11/19/2014
REFERENCE ID:	14393891

REQUIRED MODULES

Research in Public Elementary and Secondary Schools - SBE
Auburn University

DATE COMPLETED

11/19/14
11/19/14

SCORE

5/5 (100%)
No Quiz

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Printed on 11/19/2014

LEARNER	barbara struempler (ID: 1865401)
DEPARTMENT	Nutrition and Food Science
PHONE	334-844-2217
EMAIL	struebj@auburn.edu
INSTITUTION	Auburn University
EXPIRATION DATE	11/18/2017

RESEARCH WITH CHILDREN - SBR

COURSE/STAGE:	Basic Course/1
PASSED ON:	11/19/2014
REFERENCE ID:	14394222

REQUIRED MODULES	DATE COMPLETED	SCORE
Research with Children - SBE	11/19/14	5/5 (100%)
Auburn University	11/19/14	No Quiz

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COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)
COURSE IN THE PROTECTION HUMAN SUBJECTS CURRICULUM COMPLETION REPORT
Printed on 11/19/2014

LEARNER	barbara struempler (ID: 1865401)
DEPARTMENT	Nutrition and Food Science
PHONE	334-844-2217
EMAIL	struebj@aubum.edu
INSTITUTION	Auburn University
EXPIRATION DATE	11/18/2017

RESEARCH WITH PROTECTED POPULATIONS - VULNERABLE SUBJECTS: AN OVERVIEW

COURSE/STAGE:	Basic Course/1
PASSED ON:	11/19/2014
REFERENCE ID:	14393292

REQUIRED MODULES

	DATE COMPLETED	SCORE
Research With Protected Populations - Vulnerable Subjects: An Overview	11/19/14	4/4 (100%)
Auburn University	11/19/14	No Quiz

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CITI Program Course Coordinator

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)
COURSE IN THE PROTECTION HUMAN SUBJECTS CURRICULUM COMPLETION REPORT**
Printed on 11/19/2014

LEARNER barbara struempler (ID: 1865401)
DEPARTMENT Nutrition and Food Science
PHONE 334-844-2217
EMAIL struebj@aubum.edu
INSTITUTION Auburn University
EXPIRATION DATE 11/18/2017

SOCIAL/BEHAVIORAL RESEARCH COURSE : Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in biomedical research with human subjects.

COURSE/STAGE: Refresher Course/2
PASSED ON: 11/19/2014
REFERENCE ID: 14390350

REQUIRED MODULES	DATE COMPLETED	SCORE
SBE Refresher 1 – Defining Research with Human Subjects	11/19/14	2/2 (100%)
SBE Refresher 1 – Privacy and Confidentiality	11/19/14	2/2 (100%)
SBE Refresher 1 – Assessing Risk	11/19/14	2/2 (100%)
SBE Refresher 1 – Research with Children	11/19/14	2/2 (100%)
SBE Refresher 1 – International Research	11/19/14	2/2 (100%)
Biomed Refresher 2 - Instructions	11/19/14	No Quiz
SBE Refresher 1 – History and Ethical Principles	11/19/14	2/2 (100%)
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects	11/19/14	2/2 (100%)
SBE Refresher 1 – Informed Consent	11/19/14	2/2 (100%)
SBE Refresher 1 – Research with Prisoners	11/19/14	2/2 (100%)
SBE Refresher 1 – Research in Educational Settings	11/19/14	2/2 (100%)
SBE Refresher 1 – Instructions	11/19/14	No Quiz
Biomed Refresher 2 – History and Ethical Principles	11/19/14	3/3 (100%)
Biomed Refresher 2 – Regulations and Process	11/19/14	2/2 (100%)
Biomed Refresher 2 – Informed Consent	11/19/14	3/3 (100%)
Biomed Refresher 2 – SBR Methodologies in Biomedical Research	11/19/14	4/4 (100%)
Biomed Refresher 2 – Genetics Research	11/19/14	2/2 (100%)
Biomed Refresher 2 – Records-Based Research	11/19/14	3/3 (100%)
Biomed Refresher 2 - Populations in Research Requiring Additional Considerations and/or Protections	11/19/14	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Prisoners	11/19/14	2/2 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Children	11/19/14	3/3 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Pregnant Women, Human Fetuses, Neonates	11/19/14	2/2 (100%)
Biomed Refresher 2 – Conflicts of Interest in Research Involving Human Subjects	11/19/14	2/3 (67%)
Auburn University	11/19/14	No Quiz

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COURSE IN THE PROTECTION HUMAN SUBJECTS CURRICULUM COMPLETION REPORT
Printed on 11/19/2014

LEARNER	barbara struempler (ID: 1865401)
DEPARTMENT	Nutrition and Food Science
PHONE	334-844-2217
EMAIL	struebj@auburn.edu
INSTITUTION	Auburn University
EXPIRATION DATE	11/18/2017

VULNERABLE SUBJECTS - RESEARCH WITH MINORS

COURSE/STAGE:	Basic Course/1
PASSED ON:	11/19/2014
REFERENCE ID:	14393536

REQUIRED MODULES

Vulnerable Subjects - Research Involving Children
Auburn University

DATE COMPLETED

11/19/14
11/19/14

SCORE

3/3 (100%)
No Quiz

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Recruitment Script

"Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP-Ed Eligible Women Age 19-49 Years."

Hello, my name is _____. I am a Nutrition Educator with the Alabama Cooperative Extension System at Auburn University.

Are you trying to lose weight? Do you want support losing weight? Do you like getting text messages? If so, I would like to invite you to participate in a research study that will determine if text messaging is a good way to help women trying to lose weight. For this study, I am looking for women aged 19-49 years who are trying or want to lose weight.

To be in this study you must meet be:

- Female
- Age 19-49
- Cellular phone with text messaging
- Active email address
- Not pregnant or planning to become pregnant during the study
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

Being in this study is completely voluntary. If you decide to be in this study you will be asked to read and sign an Informed Consent and complete a Physical Activity Readiness Questionnaire (PAR-Q) to determine if you can safely complete this program. When you sign the Informed Consent and opt-in to the text message program, you will receive a free scale to keep.

You will be asked to take two on-line surveys. These will be sent to you at the email address you write down on your Consent Form. Each survey should take no longer than 15 minutes to finish. After you finish the first survey you will receive pedometer in the mail to keep track of your daily steps. When you complete the last survey you will receive a \$20 check from Auburn University. Everything will be kept private.

Initials _____

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP). USDA is an equal opportunity provider and employer. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!

You will need a cellular telephone that can receive and send text messages. You will get 2-3 text messages each day with tips, reminders or questions about exercise and healthy eating. During the first 4 weeks, you text your step count each day. During weeks 5-12, you will text your step counts on Monday, Wednesday, and Friday. On Monday, you will text your step count for Friday, Saturday, and Sunday (Ex: 1000, 1000, 1000). On Wednesday, you will text your step count for Monday and Tuesday (Ex: 1000, 1000). On Friday, you will text your step count for Wednesday and Thursday (Ex: 1000, 1000). On Sunday, you will weigh yourself and text your current body weight (Ex: 145#).

You will get a weekly e-newsletter that contains tips and recipes. Each newsletter will have links to web pages. Click on the [blue web links](#) for helpful web sites to also visit. You can join a private Facebook group to share tips, and recipes, as well as encourage and support other group members.

If you start the study and decide not to finish, you can drop out at any time. Just tell Jamie Griffin. You can email her at jbg0011@auburn.edu or reply "STOP" to any text. No one will be angry with you.

Whether or not you are in this study will not make a difference in how you are treated by Auburn University or the Alabama Cooperative Extension System.

If you have questions, contact Jamie Griffin (334-844-5549, jbg0011@auburn.edu), Barb Struempler (struebj@auburn.edu, 334-844-2217) or the Office of Human Subjects Research (334-844-5966, irbadmin@auburn.edu) at Auburn University.

You will get a copy of this form to keep.

Initials _____

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP). USDA is an equal opportunity provider and employer. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!



Informed Consent for a Research Study Called

“Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP-Ed Eligible Women Age 19-49 Years.”

You are invited to participate in a 3-month research study that will determine if text messaging is a good education and support tool to help women trying to lose weight. You do not have to come to Auburn University to be part of this study.

The purpose of this study is to determine the effectiveness of a text messaging program to promote weight loss and improve dietary behavior in women age 19-49 years.

To be eligible, you must be:

- Female
- Age 19-49
- Have a cellular phone with text messaging
- Active email address
- Not pregnant or planning to become pregnant during the study
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

You must meet all these requirements to be eligible for participation in this study.

During the 3-month study, you will be asked to text the researcher some information each week. This includes your weight and the number of steps you have taken. When you sign the Consent Form, you will be asked for your cell phone number and email address. You also will opt-in to the text messaging program. You will then weigh yourself and text your current weight to 33733. You will take home the scale to weigh yourself each week. You can keep the scale after the study is over.

During this study you complete 2 online surveys. The surveys will be sent to you at the email address you write down on your Consent Form. The surveys should take no longer than 15 minutes to finish. The first survey will arrive in your email box soon after you sign this form. The second survey will arrive in your email inbox in June.

When you finish the first survey, a pedometer will be mailed to you. You will use this pedometer to measure your weekly step count. You can keep the pedometer after the study is over. After you finish the second survey, a \$20 check will be mailed to you.

You will be put into 2 groups. The first group starts in April. The second group starts in June.

Put your initials here to show you have read this page _____

If you are in the first group, you will get two emails for the online survey. The first email will come in late March or early April. The last survey will come in early June. To keep you on track, you will get 2-3 text messages every day with tips, reminders or questions about exercise and healthy eating. On Sunday, you will text your current weight. During the first 4 weeks, you will be asked to text your step count daily. During weeks 5-12, you will be asked to text your step counts on Monday, Wednesday, and Friday.

You also will get a weekly e-newsletter that contains tips and recipes. You can join a private Facebook group to share tips, and recipes, as well as encourage and support other group members.

If you are in the second group, you will get two emails for the online surveys. The first email will come in late March or early April. You also will get the weekly e-newsletter that contains tips and recipes. The last survey will come in early June. After the second survey you will get all texts, and you can join the private Facebook group.

We will use the information from the surveys and the text message responses for the study. There are no good or bad answers. Everything will be kept private.

Being in this study is up to you. If you start the study and decide not to finish, you can drop out at any time. Just tell Jamie Griffin. You can email her at jbg0011@auburn.edu or reply "STOP" to any text. No one will be angry with you.

Whether or not you are in this study will not make a difference in how you are treated by Auburn University or the Alabama Cooperative Extension System.

If you have questions, contact Jamie Griffin (334-844-5549, jbg0011@auburn.edu), Barb Struempfer (struebj@auburn.edu, 334-844-2217) or the Office of Human Subjects Research (334-844-5966, irbadmin@auburn.edu) at Auburn University. You will get a copy of this form to keep.

IF YOU SIGN THIS FORM IT MEANS:

- 1. YOU UNDERSTAND WHAT IS IN THIS LETTER.**
- 2. YOU WILL BE IN THE STUDY.**

Please give your email address so you can get the survey. Please give your cell phone number. Your standard text messaging rates will apply. Your phone number will not be shared with anyone. To stop getting texts at any time, reply STOP after any text.

Sign Your Name Date

Jamie Griffin, Investigator Date

Print Your Name Date

Printed Name of Investigator Date

E-mail address (please print clearly)

Cell Phone Number (please print clearly)

Physical Activity Readiness Questionnaire (PAR-Q) and You

Regular physical activity is fun and healthy. More people are starting to become more active each day. Being more active is very safe for most people. However, some people should check with the doctor before they start becoming more physically active.

If you plan to become more physically active than you are now, start by answering the eight questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answers each one honestly:

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of <u>any other reason</u> why you should not do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	8. Are you pregnant or plan to become pregnant during this study?

<p>If you answered:</p>	<p>YES to one or more questions</p>
<p>NO to all questions</p>	<p>Talk to your doctor BEFORE you start becoming more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.</p> <ul style="list-style-type: none"> You may be able to do any activity you want-as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice. Find out which community programs are safe and helpful for you. <p>Delay becoming much more active:</p> <ul style="list-style-type: none"> If you are not feeling well because of a temporary illness such as a cold or a fever- wait until you feel better; or If you are or may become pregnant-talk to your doctor before you start becoming more active.
<p>If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:</p> <ul style="list-style-type: none"> Start becoming much more physically active-begin slowly and build up gradually. This is the safest and easiest way to go. Take part in a fitness appraisal-this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. 	<p>Please note: If your health changes so that you answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.</p>

Appendix A, "Reference List"

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2. Robert Wood Johnson Foundation. *The State of Obesity: Better Policies for a Healthier America*. 2015. Adult Obesity and Overweight Rates. pg 10. Retrieved from <http://stateofobesity.org/files/stateofobesity2015.pdf>
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5. Pew Research Center. *Mobile Technology Fact Sheet*. 2014. Retrieved from <http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/>
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7. Pew Research Center. *U.S. Smartphone use in 2015*. 2015. Retrieved from <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>
8. Patrick K, Raab F, Adams M, Dillon L, Zabinski M, Rock C, Griswold W, and Norman G. A Text Message-based Intervention for Weight Loss: Randomized Controlled Trial. *J Med Internet Res*. 2009; 11(1): e1. doi: 10.2196/jmir.1100
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13. Centers for Disease Control and Prevention. *State Indicator report on fruits and vegetables*. 2013. Retrieved from <http://www.cdc.gov/nutrition/everyone/fruitsandvegetables/index.htm>.

14. United States Department of Agriculture. *Dietary Guidelines for Americans. Supporting the recommendations*. 2010. Retrieved from <http://www.health.gov/dietaryguidelines/2010.asp>.

Appendix B

- Information letter to Nutrition Education Program Educators
- Instructions to Opt-in to Texting Program

Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP-ED Eligible Women Age 19-49 Years

Adult obesity prevention is a top public health priority in Alabama to reduce health disparities for the 33.5% of overweight Alabamians who are at risk for becoming obese. Education and support programs to aid with weight management are vital for the 33.5% of Alabamians who are obese. Obesity prevention is a top priority for the Alabama Nutrition Education Program (NEP), nationally known as Supplemental Nutrition Assistance Program-Education (SNAP-Ed). Nutrition Education Program paraprofessionals, Nutrition Educators, are a vital component in the charge to reduce obesity rates in Alabama.

NEP will implement an adult obesity prevention campaign in April 2016. This program will test if text messaging is an effective education and support tool to help low-income women trying to lose weight. The primary goal of this study is to reduce body weight in participants. Secondary goals of this study include promoting increased water and fruit and vegetable intakes, reduced sugar-sweetened beverage intake, increased daily steps, increased physical activity, knowledge of personal calorie requirement, portion control, reduced screen time, healthy snacking, meal planning, and food and exercise journaling.

For this study, women aged 19-49 years who are trying or want to lose weight will be recruited to join. To be eligible to participate in this study persons must meet all of the following criteria:

- SNAP-Ed eligible
- Female
- Age 19-49 years
- Cellular phone with text messaging
- Active email address
- Not pregnant or planning to become pregnant during the study
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q).

Nutrition educators will play a key role in recruiting participants for this study. Nutrition educators will recruit 5 participants from SNAP-Ed eligible adult contacts. Nutrition educators in the 14 CDC grant counties are asked to recruit an additional 5 participants. Recruitment can be through the Department of Human Resources (DHR) SNAP, DHR JOBS program, Department of Urban Housing (HUD), Alabama Food Bank, Farmer's Markets, or other adult contact locations. Participants should not be recruited through Body Quest (BQ) schools to reduce the risk of confounding between the two studies.

What you will need with you when recruiting participants:

- Recruitment Script (2 copies per participant)
- PAR-Q Form
- Informed Consent Form (2 copies per participant)
- Text message opt-in sheet
- Scale

NEP educators will recruit participants from March 15 to April 1, 2016. NEP educators will read a standardized script to potential participants. Participants who agree to participate will complete the PAR-Q form.

If a potential participant is pregnant, or plans to become pregnant during the study, they will be unable to sign the Informed Consent.

If a potential participant answers "YES" to any question on the PAR-Q, they will need to get a doctor's statement stating they can participate in this study. This statement will need to be returned to you. Once you have a doctor's statement, scan and email the doctor statement to Jamie Griffin. The participant can sign an Informed Consent form, provide an email address to receive the assessment tool, and e-newsletter, opt-in to the text message program, weigh themselves and text their current body weight. You will send home a copy of the Informed Consent and the scale with the participant.

If a potential participant answers "NO" to all PAR-Q questions, they sign the Informed Consent form, and provide an email address to receive the pre- and post-assessment tool, and e-newsletter. The participant will opt-in to the text message program while with you. Ensure they receive a confirmation text. You will then weigh the

participant on the provided scale. They will immediately text their weight to 33733. The format for texting the body weight is "145#". You will send home a copy of the Recruitment Script, Informed Consent and the scale with the participant.

NEP educators will scan and email signed Consent Forms and PAR-Q to Jamie Griffin each day from March 15 to April 1, 2016.

Participants will be divided into two groups: Treatment (Trmt) and Control (C). Participants will be randomized by Auburn University. This study will be conducted in two phases: Phase 1 (April to June) and Phase 2 (June to August).

During Phase 1, both Trmt and C participants will take a pre-assessment through a web-link that will be emailed to them. Once participants complete the pre-assessment they will receive a pedometer. Beginning, April 10, participants in Trmt will receive 2-3 daily text messages with tips, reminders and questions about exercise or healthy eating. During weeks 1 through 4, Trmt participants will receive a daily prompt to text in their daily step counts from the previous day. From weeks 5-12, Trmt participants will receive prompts to text step counts on Monday, Wednesday, and Friday. On Sunday, Trmt participants will text their current body weight. Trmt participants will also have the option to join a private Facebook group. Both Trmt and C participants will receive a weekly e-newsletter. In June, Trmt and C participants will complete the post-assessment. Post-assessments will be conducted from June 4 to Jun 17, 2016. Once the post-assessment has been completed, the participant will received a \$20 check from Auburn University.

During Phase 2, C participants will receive all text messages, and have the option to join the private Facebook group. No assessments will be conducted during Phase 2.

		Phase 1 March 15, 2016 to June 17, 2016	
Group Code		Treatment (Trmt)	Control (C)
Nutrition Educators			
Recruitment		<p>Each NEP educator should recruit 5 participants.</p> <p>NEP educators from the 14 CDC grant counties should recruit an additional 5 participants.</p>	
		<p>Consent form and PAR-Q are required for all participants.</p> <p>Collect Consent forms from March 15 to April 1.</p> <p>Mail Consent Forms and PAR-Q to Jamie Griffin</p>	
Participants			
Assessments		<p><i>Pre-assessment</i> (Once complete, pedometer will be mailed)</p> <p><i>Text Weight Weekly</i></p> <p><i>Text Step Count Weekly</i></p> <p><i>Post-assessment</i> (Once complete, \$20 check will be mailed)</p>	<p><i>Pre-assessment</i> (Once complete, pedometer will be mailed)</p> <p><i>Text Weight Weekly</i></p> <p><i>Text Step Count Weekly</i></p> <p><i>Post-assessment</i> (Once complete, \$20 check will be mailed)</p>
Auburn			
Education		<p>e-newsletter</p> <p>Text messages</p>	<p>e-newsletter</p>

Phase 2

June 18, 2016 to August 31, 2016

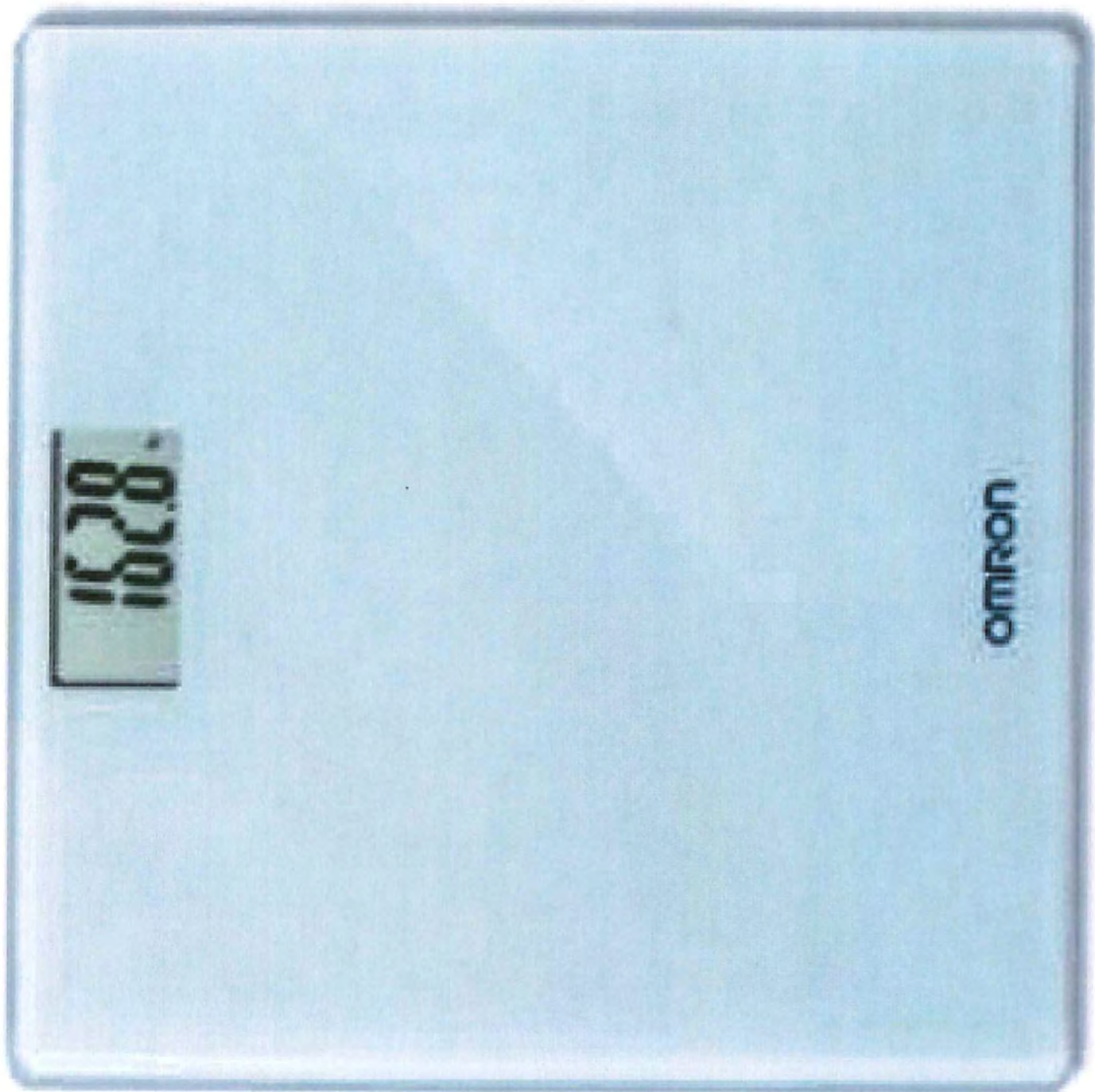
Group Code	Treatment (Trmt)	Control (C)
Assessments	<i>None</i>	<i>None</i>
Education		Text messages

**Instructions to Opt-In for a Text Message Program
from the
Nutrition Education Program**



Appendix C

- Scale
 - Omcron SC-100 Slim Digital Scale
- Pedometer
 - Yamax Digi-walker SW-200
- Qualtrics Survey-Screenshots
- Weekly Text Message Schedule
- Weekly e-Newsletters



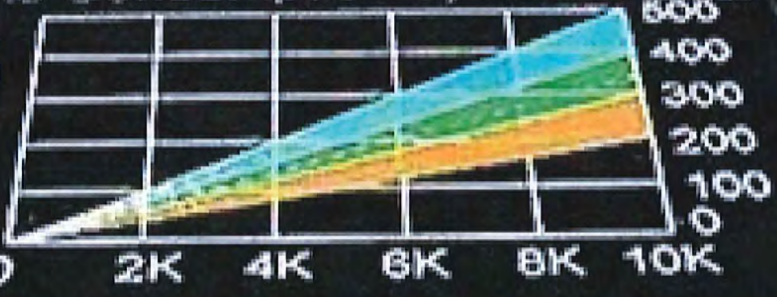
12345

STEP

SW
200

RESET

Table of Standard
Calorie Consumption by Walking



APPENDIX B
RECRUITMENT FORMS

My Quest

May 1, 2016

To

July 23, 2016



Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP Eligible Women Age 19-49 Years

Nutrition Educator Recruitment Directions

Alabama Cooperative Extension System
Auburn University, Alabama

Jamie B. Griffin, MS, RDN, LDN
Dissertation Research Project

Barb Struempler, PhD
Faculty Advisor

Introduction

Adult obesity prevention is a top public health priority in Alabama to reduce health disparities for the 2 out of 3 Alabamians who are overweight or obese. Obesity prevention is also a top priority for the Alabama Extension nutrition education programs. Nutrition educators are a vital component in the charge to reduce obesity rates in Alabama.

The Alabama Cooperative Extension System will implement an adult weight management and weight loss campaign, *My Quest*, in May 2016. This program will test if text messaging is an effective education and support tool to help low-income women trying to lose weight. The primary goal of this study is to reduce body weight in participants. Secondary goals of this study include promoting increased water and fruit and vegetable intakes, increased food and exercise journaling, increased daily steps, increased physical activity, increased knowledge of personal calorie requirement, increased meal planning, improved portion control and healthy snacking, reduced sugar-sweetened beverage intake, and reduced screen time,.

For this study, women ages 19-49 years who want to lose weight will be recruited to join. To be eligible to participate in this study women must meet all of the following criteria:

- SNAP eligible
- Female
- Age 19-49 years
- Cellular phone with text messaging
- Active email address
- Have not lost weight, or tried to lose weight, within the past 3 months.
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q).

Nutrition educators will be key in recruiting participants for this study. **Nutrition educators will recruit 5 participants per county from SNAP eligible adult contacts. Nutrition educators in the 14 ALProHealth counties are asked to recruit an additional 5 participants.** Recruitment can be through the Department of Human Resources (DHR) SNAP, DHR JOBS program, Department of Housing and Urban

Development (HUD), Alabama Food Bank, Farmer's Markets, or other adult contact locations. Participants should not be recruited through *Body Quest* (BQ) schools to reduce the risk of confounding between the two studies.

As a result of the *My Quest* intervention, the following changes will be measured through participant assessment.

1. Body weight change from pre- to post-assessment.
2. Behavior change in 12 known predictors of change for weight loss and weight management.
 - a. Food journaling
 - b. Calorie needs and requirements
 - c. Portion control
 - d. Exercise journaling
 - e. Increasing daily steps
 - f. Increasing water intake
 - g. Reducing sugar-sweetened beverage intake
 - h. Meal planning
 - i. Increasing fruit and vegetable intake
 - j. Smart snacking, using the 10-10-5 "Good Choice" criteria
 - k. Increasing physical activity
 - l. Reducing screen time

As outlined in the Protocol Table on pages 14-15, *My Quest*, will be implemented in 2 phases: Phase 1: May 1- July 23, 2016 and Phase 2: August 7- October 29, 2016.

Participants will be randomized by Auburn University into two groups: Treatment (T) and Control (C).

Before Phase 1 begins (April 4-22): The most important aspect before Phase 1 begins is recruiting participants for this study.

Nutrition educators are responsible for:

- Purchasing scales for participants (see page 16).
- Recruiting 5 participants per county; 10 per ALProHealth county using the recruitment script.
- Completing the Eligibility Checklist.
- Collecting Physical Activity Readiness Questionnaire (PAR-Q) and signed Consent Forms.
- Collecting completed Informed Consent forms.
- Obtaining an accurate cell phone number on the Informed Consent form.
- Obtaining an initial body weight using the scale purchased for participants, and recording this body weight on the Informed Consent form.
- Assisting participants in opting-in to text message program and sending initial weight followed by the # sign (Ex: 145#) to 33733.
- Writing down the make and model of the scale given to each participant on the Informed Consent form.
- Giving participants the scale they weighed themselves on to take home to weigh themselves each week during the intervention.
- Giving participants a copy of the Recruitment Script and Informed Consent form.
- Scanning and emailing all forms immediately to Jamie Griffin.

Jamie Griffin is responsible for:

- Emailing consenting participants the online Qualtrics pre-assessment survey to the email address provided on the Informed Consent form.
- Mailing a pedometer to consenting participants who complete a pre-assessment. They will use this pedometer to measure daily step counts during the intervention.
- Creating a private Facebook page for (T) group. The Facebook page is available to provide social support, recipes and an outlet for group members to share their successes and struggles. Joining the Facebook group will be encouraged, but optional, for T participants.

Participants are responsible for:

- Answering question 1 on the Eligibility Checklist.
- If eligible, completing the PAR-Q.
- If low-risk on the PAR-Q, signing the Informed Consent form.
- Providing a working cell phone number on the Informed Consent form for the text messaging program.
- Providing an active email address on the Informed Consent form to receive the pre- and post-assessment.
- Providing a postal mailing address on the pre-assessment to receive the pedometer they will use to measure their daily step counts.
- Weighing themselves each Sunday using the scale provided by the Nutrition educator.
- Opting-in to the text message program, and texting their initial body weight followed by a # sign (Ex: 145#) to 33733.
- Completing the pre-assessment through a Qualtrics web-link that will be emailed to them from Jamie Griffin (jbg0011@auburn.edu).

The Qualtrics pre-assessment will close on April 22. No pre-assessments will be completed after this day. A lag-time from April 25-29 will occur between the close of pre-assessment and the beginning of the intervention. This will allow time for pedometers to arrive in the mail to participants who completed the pre-assessment near or on April 22.

During Phase 1 (May 1-July 23) : Education will be provided to (T) group during Phase 1.

Nutrition educators will have no further responsibilities.

Jamie Griffin is responsible for:

- Sending 2-3 short daily text messages to (T) group.
- Sending a prompt text to (T) group to respond with daily step counts.
 - Weeks 1-4, (T) group will receive a text prompt each evening to respond with their step counts for the day (Ex: 1000).
 - Weeks 5-12, (T) group will receive a text prompt on Monday, Wednesday, and Friday evenings to respond with their step counts.
 - Monday-Respond with step counts from Saturday, Sunday and Monday (Ex: 1000, 1000, 1000).
 - Wednesday-Respond with step counts from Tuesday and Wednesday (Ex: 1000, 1000).
 - Friday-Respond with step counts from Thursday and Friday (Ex: 1000, 1000).
- Inviting (T) group to join private Facebook page for social support, and to share recipes and successes with others in the (T) group.
- Monitoring Facebook page for accuracy of information posted by (T) group.
- Posting credible nutrition and exercise resources on the Facebook page for (T) group members.
- Emailing the e-newsletter to both (T) and (C) groups each Sunday.
- Sending a prompt text each Sunday morning for (T) and (C) groups to respond with their current body weight.
- Emailing post-assessments to (T) and (C) groups to the email address provided on the Informed Consent form.
- Mailing participants who completed both pre-and post-assessments a \$20 check.

Participants are responsible for:


- Treatment group-**
 - Using the provided pedometer to record daily step counts.
 - Weighing themselves each Sunday morning and recording their body weight.
 - Responding to all prompt texts (Ex: step counts and body weight).

- Reading the weekly e-newsletter.
 - Joining the private Facebook page (optional) for social support, and to share recipes and successes with others in the group.
 - Completing the post-assessment through a Qualtrics web-link that will be emailed to them from Jamie Griffin (jbq0011@auburn.edu).
 - Providing a postal mailing address on the post-assessment to receive the \$20 check.
- **Control group-**
- Weighing themselves each Sunday morning and recording their body weight.
 - Responding to prompt texts (body weight).
 - Reading the weekly e-newsletter.
 - Completing the post-assessment through a Qualtrics web-link that will be emailed to them from Jamie Griffin (jbq0011@auburn.edu).
 - Providing a postal mailing address on the post-assessment to receive the \$20 check.

During Phase 2 (August 7-October 29): No assessments will be given during Phase 2. Education will be provided to those who did not receive it during Phase 1. Participants also will gain access to the private Facebook page.

What you will need with you when recruiting participants:

- Recruitment Script (2 copies per participant)

 **Recruitment Script**

"Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP Eligible Women Age 19-49 Years."

Hello, my name is _____ I am a Nutrition Educator with the Alabama Cooperative Extension System at Auburn University.

Are you trying to lose weight? Do you want support losing weight? Do you like getting text messages? If so, I would like to invite you to participate in a research study that will determine if text messaging is a good way to help women trying to lose weight. For this study, I am looking for women aged 19-49 years who are trying or want to lose weight.

To be in this study you must be:

- Female
- Age 19-49
- Have a cellular phone with text messaging
- Have an active email address
- Not pregnant or planning to become pregnant during the study
- Have not lost weight, or tried to lose weight, within the past three months.
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

Being in this study is completely voluntary. If you decide to be in this study you will be asked to read and sign an Informed Consent form and complete a Physical Activity Readiness Questionnaire (PAR-Q) to determine if you can safely complete this program. When you sign the Informed Consent form and opt-in to the text message program, you will receive a free scale to keep.

You will be asked to take two on-line surveys. These will be sent to you at the email address you write down on your Informed Consent form. Each survey should take no longer than 15 minutes to finish. After you finish the first survey, you will receive a pedometer in the mail to keep track of your daily steps. When you complete the last survey, you will receive a \$20 check from Auburn University. Everything will be kept private.

Initials _____

The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!

- Eligibility check list (1 copy per participant)

Eligibility Checklist

Ask potential participants the following questions and fill in their answers.

1. Have you tried to lose weight in the past 3 months? Or, have you been enrolled in a weight loss program such as Scale Back Alabama, Weight Watchers, etc. in the past 3 months?
 - No (Go to the PAR-Q Questionnaire)
 - Yes (Stop. The person does not meet eligibility criteria for this study)
2. Did person check "Yes" to any PAR-Q questions?
 - No (Proceed to Informed Consent form)
 - Yes. (Stop. The person does not meet eligibility criteria for this study)
3. Did person provide Informed Consent?
 - No (Stop. Without a signed Informed Consent form, the person is not eligible for this study.)
 - Yes (Proceed to number 4.)
4. Did participant opt-in to the text message program?
 - No (Make sure CELL PHONE number is written on the Informed Consent form; Go to number 5.)
 - Yes (Capture initial body weight using provided scale. Have participant immediately text their body weight.)
5. Capture initial body weight using provided scale. Write down initial body weight on the Informed Consent form near participant's signature. Make sure CELL PHONE number and email address is legibly written on the Informed Consent form.
6. Send home with participant one copy of the Recruitment Script, Informed Consent, Opt-in directions, and the scale.

Keep ALL Eligibility Checklists for participants who are not eligible for this study. These forms will be emailed to Jamie Griffin (jbg0011@auburn.edu).

□ PAR-Q Form (1 copy per participant)

Physical Activity Readiness Questionnaire (PAR-Q) and You

Regular physical activity is fun and healthy. More people are starting to become more active each day. Being more active is very safe for most people. However, some people should check with the doctor before they start becoming more physically active.

If you plan to become more physically active than you are now, start by answering the eight questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly:

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of <u>any other reason</u> why you should not do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	8. Are you pregnant or plan to become pregnant during this study?

	YES to one or more questions
If you answered:	<p>Talk to your doctor BEFORE you start becoming more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.</p> <ul style="list-style-type: none"> You may be able to do any activity you want as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice. Find out which community programs are safe and helpful for you.
NO to all questions	<p>Delay becoming much more active:</p> <ul style="list-style-type: none"> if you are not feeling well because of a temporary illness such as a cold or a fever- wait until you feel better; or if you are or may become pregnant-talk to your doctor before you start becoming more active. <p style="text-align: center; font-size: small;">Please note: if your health changes so that you answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.</p>
<p>If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:</p> <ul style="list-style-type: none"> Start becoming much more physically active—begin slowly and build up gradually. This is the safest and easiest way to go. Take part in a fitness appraisal—this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. 	

Informed use of the PAR-Q: From ACSM's Health/Fitness Facility Standards and Guidelines, 1997 by American College of Sports Medicine

□ Informed Consent form (2 copies per participant)

Do not sign this form unless an IRB approval stamp with current dates is on this form.

Informed Consent for a Research Study Called

"Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behavior in SNAP-Ed Eligible Women Age 19-49 Years."

You are invited to participate in a 3-month research study that will determine if text messaging is a good education and support tool to help women trying to lose weight. You do not have to come to Auburn University to be part of this study.

The purpose of this study is to determine the effectiveness of a text messaging program to promote weight loss and improve dietary behavior in women age 19-49 years.

To be eligible, you must be:

- Female
- Age 19-49
- Have a cellular phone with text messaging
- Active email address
- Not pregnant or planning to become pregnant during the study
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

You must meet all these requirements to be eligible for participation in this study.

During the 3-month study, you will be asked to text the researcher some information each week. This includes your weight and the number of steps you have taken. When you sign the Consent Form, you will be asked for your cell phone number and email address. You also will opt-in to the text messaging program. You will then weigh yourself and text your current weight to 33723. You will take home the scale to weigh yourself each week. You can keep the scale after the study is over.

During this study you complete 2 online surveys. The surveys will be sent to you at the email address you write down on your Consent Form. The surveys should take no longer than 15 minutes to finish. The first survey will arrive in your email box soon after you sign this form. The second survey will arrive in your email inbox in June.

When you finish the first survey, a pedometer will be mailed to you. You will use this pedometer to measure your weekly step count. You can keep the pedometer after the study is over. After you finish the second survey, a \$20 check will be mailed to you.

You will be put into 2 groups. The first group starts in April. The second group starts in June.

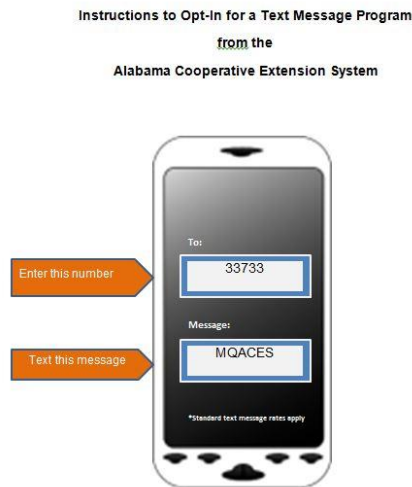
Put your initials here to show you have read this page _____

The Auburn University Institutional Review Board has approved this document for use from 05/04/16 to 05/07/17 Protocol # 13-311 PFS 302

Page 1 of 2

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP). USDA is an equal opportunity provider and employer. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcomed!

- Text message opt-in sheet (1 copy per participant)



- Scale-one for each eligible and consenting participant.

Nutrition educators will recruit participants from April 4-22. Nutrition educators will read a standardized recruitment script to potential participants. Educators will complete an Eligibility Checklist for each person interested in joining the study to determine if they meet all criteria for participation.

Recruitment Script

- Read aloud the Recruitment Script to each potential participant.
- Is the woman interested in the study?
 - No? Ask her to initial the recruitment script. Write “NO” on the top of the Recruitment Script. This will be emailed to Jamie Griffin.
 - Yes? Complete the Eligibility Checklist.

Eligibility Checklist and Physical Activity Readiness Questionnaire (PAR-Q)

- Complete the Eligibility Checklist and PAR-Q for each potential participant.
- **If a potential participant answers “YES” to Question 1, losing weight and/or enrolling in a weight loss program such as Scale Back Alabama, Weight Watchers, etc.** within the past 3 months, they will not be able to complete the PAR-Q, sign the Informed Consent form or join the study.
- Participants who meet eligibility criteria and agree to participate will complete the PAR-Q form.
- **If a potential participant is pregnant, or plans to become pregnant during the study,** they will not be able to sign the Informed Consent form or join the study.
- **If a potential participant answers “NO” to all PAR-Q questions,** they then sign the Informed Consent form and provide a working cell phone number and an email address to receive the pre- and post-assessment tool and e-newsletters. The participant will opt-in to the text message program while with you. Ensure they receive a confirmation text. You then will weigh the participant on the provided scale. The participant will immediately text their weight to 33733. The format for texting the body weight is “145#”. It will be very important for the participant to provide a working cell phone number on the Informed Consent form. Write the initial body weight on the Informed Consent form near their signature. You will send home with the participant a copy of the Recruitment Script, Informed Consent form, and the scale. Inform the participant to use THIS scale to weigh themselves each week.

Please write the scale make and model given to the participant on the signed Informed Consent form. You can write this on the bottom of page 2.

If a potential participant answers “YES” to any question on the PAR-Q, they will need to get a written doctor’s statement stating they can participate in this study. This statement will need to be returned to the nutrition educator. Once the doctor’s statement is received, immediately scan and email it to Jamie Griffin. The participant can sign an Informed Consent form to provide a cell phone number, along with an email address to receive the assessment

tools and e-newsletter. The participant will opt-in to the text message program, weigh themselves and text their current body weight before leaving. Send home with participant a copy of the Informed Consent form and a new scale.

Please write the scale make and model given to the participant on the signed Informed Consent form. You can write this on the bottom of page 2.

Sending Informed Consent forms to Auburn

Forms will be organized by county. Write the county name where the participant lives on the top of the Informed Consent form. Forms should be placed in the following order from top to bottom for each participant:

- Eligibility Checklist
- PAR-Q Form
- Informed Consent form

Nutrition educators will **immediately scan and email** the Eligibility Checklist for EACH contact, and ALL signed Informed Consent forms and PAR-Q forms for eligible participants to Jamie Griffin (jbg0011@auburn.edu) **each day** from **April 4-22**.

It is VERY important signed Informed Consent forms and PAR-Q forms are immediately scanned and emailed each day to Jamie Griffin at jbg0011@auburn.edu. Once these documents are received, Jamie Griffin will email the participant the pre-assessment survey. Once a pre-assessment is complete and a mailing address is provided, Jamie Griffin will mail the participant a pedometer. There is a **7-day window** after the recruitment period to give participants who joined closer to, or on April 22, time to complete the pre-assessment survey and receive their pedometer in the mail. On May 1, Phase 1 starts; text messages begin, and all participants will need to have a pedometer to report daily step counts.

It is also VERY important to scan and email ALL Recruitment Scripts and Eligibility Checklist forms to Jamie Griffin for those individuals who did not meet the study criteria. When reporting data in journal articles or for yearly USDA reports, it is

important to know how many persons were recruited and wanted to join the program, but did not meet the eligibility criteria.

If you have any questions, please call (334-844-5549, 850-686-3962) or email Jamie Griffin (jbg0011@auburn.edu). Thank you for all you do!

Protocol Table

		Phase 1 May 1- July 23, 2016	
		Treatment (T)	Control (C)
Nutrition Educators	Recruitment April 4-22	<p>Each nutrition educator should recruit 5 participants per county.</p> <p>Nutrition educators from the 14 AL ProHealth counties should recruit an additional 5 participants, for a total of 10 participants per county.</p> <p style="text-align: center; background-color: #e74c3c; color: white;">Eligibility Checklist, Informed Consent form and PAR-Q are required for all participants.</p> <p style="text-align: center; background-color: #e74c3c; color: white;">Collect signed forms from April 4-22.</p> <p style="text-align: center; background-color: #e74c3c; color: white;">Email Eligibility Checklist, Informed Consent forms and PAR-Q immediately to Jamie Griffin.</p>	
Participants	Assessments April 4-22 May 1- July 23 July 24 – August 6	<p><i>Pre-assessment</i></p> <p><i>Text Weight Weekly</i></p> <p><i>Text Step Counts</i></p> <p><i>Post-assessment</i> (Once complete, \$20 check will be mailed)</p>	<p><i>Pre-assessment</i></p> <p><i>Text Weight Weekly</i></p> <p><i>Post-assessment</i> (Once complete, \$20 check will be mailed)</p>
Auburn	Education May 1 – July 23	<p>e-newsletter</p> <p>Text messages</p> <p>Facebook (optional)</p>	<p>e-newsletter</p>

Phase 2 August 7 – October 29, 2016

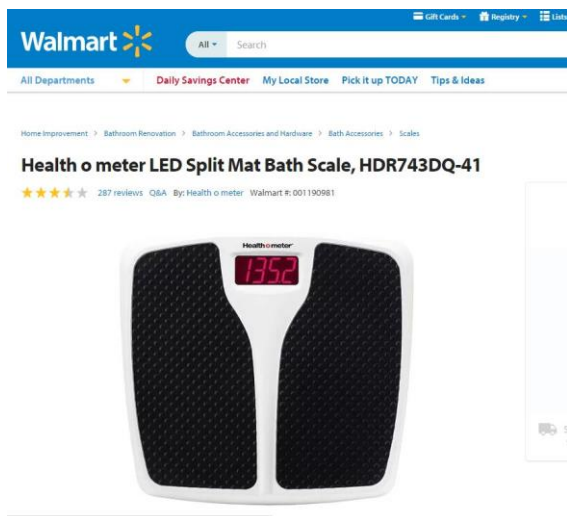
	Treatment (T)	Control (C)
Participants		
Assessments	<i>None</i>	<i>None</i>
Jamie Griffin		
Education		Text messages Facebook (optional)

Purchasing Scales

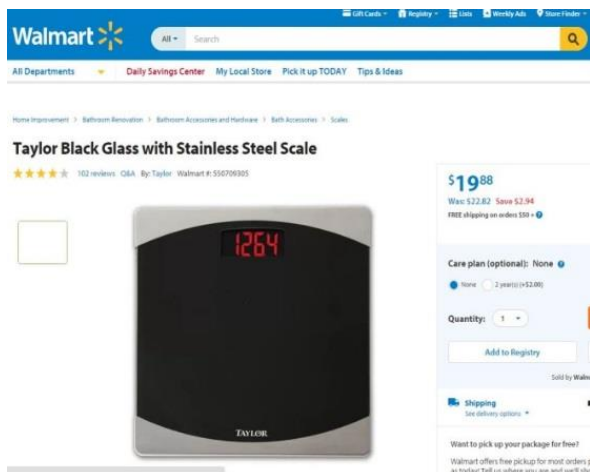
Before recruiting any participants, nutrition educators will need to buy the scales that will be provided to participants. Scales will be purchased from Wal-Mart. Two options are available. If neither scale is available in the store, you can purchase it online and have it shipped to your local Wal-Mart. The scale will range in price from \$17-\$20.

If you cannot find either of these options, please call Jamie Griffin for guidance.

Option 1: Health-o-Meter Bath Scale. Item #: HDR743DQ-41.



Option 2: If option 1 is not available, you can purchase the option 2 scale, Taylor Black Glass with Stainless Steel Scale, Item #: 550709305.



The Visa form for these purchases will include the following business purpose: “Scales purchased for Extension weight loss/weight management education.” Use the **indirect account code: 104002 404613 70940 3000.**

MAKE A COPY OF YOUR PURCHASE RECEIPTS. If you have extra scales after the recruitment period, they will need to be returned to Wal-Mart. Use the copy of the purchase receipt to return unused scales to Wal-Mart for a refund.



The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!

Recruitment Script

“Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP Eligible Women Age 19-49 Years.”

Hello, my name is _____. I am a Nutrition Educator with the Alabama Cooperative Extension System at Auburn University.

Are you trying to lose weight? Do you want support losing weight? Do you like getting text messages? If so, I would like to invite you to participate in a research study that will determine if text messaging is a good way to help women trying to lose weight. For this study, I am looking for women aged 19-49 years who are trying or want to lose weight.

To be in this study you must be:

- Female
- Age 19-49
- Have a cellular phone with text messaging
- Have an active email address
- Not pregnant or planning to become pregnant during the study
- Have not lost weight, or tried to lose weight, within the past three months.
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

Being in this study is completely voluntary. If you decide to be in this study you will be asked to read and sign an Informed Consent form and complete a Physical Activity Readiness Questionnaire (PAR-Q) to determine if you can safely complete this program. When you sign the Informed Consent form and opt-in to the text message program, you will receive a free scale to keep.

You will be asked to take two on-line surveys. These will be sent to you at the email address you write down on your Informed Consent form. Each survey should take no longer than 15 minutes to finish. After you finish the first survey, you will receive a pedometer in the mail to keep track of your daily steps. When you complete the last survey, you will receive a \$20 check from Auburn University. Everything will be kept private.

Initials _____

You will need a cellular telephone that can receive and send text messages. You will get 2-3 short text messages each day with tips, reminders or questions about exercise and healthy eating. During the first 4 weeks, you will text your step count each day. During weeks 5-12, you will text your step counts on Monday, Wednesday, and Friday. On Monday, you will text your step count for Saturday, Sunday and Monday (Ex: 1000, 1000, 1000). On Wednesday, you will text your step count for Tuesday and Wednesday (Ex: 1000, 1000). On Friday, you will text your step count for Thursday and Friday (Ex: 1000, 1000). On Sunday, you will weigh yourself using the provided scale and text your current body weight followed by the # sign (Ex: 145#).

You will get a weekly e-newsletter that contains tips and recipes. Each newsletter will have links to web pages. Click on the [blue web links](#) for helpful web sites to visit. You can join a private Facebook group to share tips and recipes, as well as encourage and support other group members.

If you start the study and decide not to finish, you can drop out at any time. Just tell Jamie Griffin. You can email her at jbg0011@auburn.edu or reply "STOP" to any text. No one will be angry with you.

Whether or not you are in this study will not make a difference in how you are treated by Auburn University or the Alabama Cooperative Extension System.

If you have questions, contact Jamie Griffin (334-844-5549, jbg0011@auburn.edu), Barb Struempfer (struebj@auburn.edu, 334-844-2217) or the Office of Human Subjects Research (334-844-5966, irbadmin@auburn.edu) at Auburn University.

You will get a copy of this form to keep.

Initials _____

Eligibility Checklist

Ask potential participants the following questions and fill in their answers.

1. Have you tried to lose weight in the past 3 months? Or, have you been enrolled in a weight loss program such as Scale Back Alabama, Weight Watchers, etc. in the past 3 months?
 - No (Go to the PAR-Q Questionnaire)
 - Yes (Stop. The person does not meet eligibility criteria for this study)
2. Did person check “Yes” to any PAR-Q questions?
 - No (Proceed to Informed Consent form)
 - Yes, (Stop. The person does not meet eligibility criteria for this study)
3. Did person provide Informed Consent?
 - No (Stop. Without a signed Informed Consent form, the person is not eligible for this study.)
 - Yes (Proceed to number 4.)
4. Did participant opt-in to the text message program?
 - No (Make sure CELL PHONE number is written on the Informed Consent form; Go to number 5.)
 - Yes (Capture initial body weight using provided scale. Have participant immediately text their body weight.)
5. Capture initial body weight using provided scale. Write down initial body weight on the Informed Consent form near participant’s signature. Make sure CELL PHONE number and email address is legibly written on the Informed Consent form.
6. Send home with participant one copy of the Recruitment Script, Informed Consent, Opt-in directions, and the scale.

Keep ALL Eligibility Checklists for participants who are not eligible for this study. These forms will be emailed to Jamie Griffin (jbg0011@auburn.edu).

Physical Activity Readiness Questionnaire (PAR-Q) and You

Regular physical activity is fun and healthy. More people are starting to become more active each day. Being more active is very safe for most people. However, some people should check with the doctor before they start becoming more physically active.

If you plan to become more physically active than you are now, start by answering the eight questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answers each one honestly:

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of <u>any other reason</u> why you should not do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	8. Are you pregnant or plan to become pregnant during this study?

<p>If</p> <p>you</p> <p>answered:</p>	YES to one or more questions
NO to all questions	<p>Talk to your doctor BEFORE you start becoming more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.</p> <ul style="list-style-type: none"> • You may be able to do any activity you want-as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice. • Find out which community programs are safe and helpful for you. <p>Delay becoming much more active:</p> <ul style="list-style-type: none"> • If you are not feeling well because of a temporary illness such as a cold or a fever- wait until you feel better; or • If you are or may become pregnant-talk to your doctor before you start becoming more active.
<p>If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:</p> <ul style="list-style-type: none"> • Start becoming much more physically active-begin slowly and build up gradually. This is the safest and easiest way to go. • Take part in a fitness appraisal-this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. 	<p>Please note: If your health changes so that you answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.</p>

Do not sign this form unless an IRB approval stamp with current dates is on this form.



Informed Consent for a Research Study Called

“Effectiveness of a Text Messaging Program to Promote Weight Loss and Improve Dietary Behaviors in SNAP-Ed Eligible Women Age 19-49 Years.”

You are invited to participate in a 3-month research study that will determine if text messaging is a good education and support tool to help women trying to lose weight. You do not have to come to Auburn University to be part of this study.

The purpose of this study is to determine the effectiveness of a text messaging program to promote weight loss and improve dietary behavior in women age 19-49 years.

To be eligible, you must be:

- Female
- Age 19-49
- Have a cellular phone with text messaging
- Active email address
- Not pregnant or planning to become pregnant during the study
- Have a low risk for medical complications as determined by the Physical Activity Readiness Questionnaire (PAR-Q)

You must meet all these requirements to be eligible for participation in this study.

During the 3-month study, you will be asked to text the researcher some information each week. This includes your weight and the number of steps you have taken. When you sign the Consent Form, you will be asked for your cell phone number and email address. You also will opt-in to the text messaging program. You will then weigh yourself and text your current weight to 33733. You will take home the scale to weigh yourself each week. You can keep the scale after the study is over.

During this study you complete 2 online surveys. The surveys will be sent to you at the email address you write down on your Consent Form. The surveys should take no longer than 15 minutes to finish. The first survey will arrive in your email box soon after you sign this form. The second survey will arrive in your email inbox in June.

When you finish the first survey, a pedometer will be mailed to you. You will use this pedometer to measure your weekly step count. You can keep the pedometer after the study is over. After you finish the second survey, a \$20 check will be mailed to you.

You will be put into 2 groups. The first group starts in April. The second group starts in June.

Put your initials here to show you have read this page _____

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Page 1 of 2

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP). USDA is an equal opportunity provider and employer. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome!

If you are in the first group, you will get two emails for the online survey. The first email will come in late March or early April. The last survey will come in early June. To keep you on track, you will get 2-3 text messages every day with tips, reminders or questions about exercise and healthy eating. On Sunday, you will text your current weight. During the first 4 weeks, you will be asked to text your step count daily. During weeks 5-12, you will be asked to text your step counts on Monday, Wednesday, and Friday.

You also will get a weekly e-newsletter that contains tips and recipes. You can join a private Facebook group to share tips, and recipes, as well as encourage and support other group members.

If you are in the second group, you will get two emails for the online surveys. The first email will come in late March or early April. You also will get the weekly e-newsletter that contains tips and recipes. The last survey will come in early June. After the second survey you will get all texts, and you can join the private Facebook group.

We will use the information from the surveys and the text message responses for the study. There are no good or bad answers. Everything will be kept private.

Being in this study is up to you. If you start the study and decide not to finish, you can drop out at any time. Just tell Jamie Griffin. You can email her at jbg0011@auburn.edu or reply "STOP" to any text. No one will be angry with you.

Whether or not you are in this study will not make a difference in how you are treated by Auburn University or the Alabama Cooperative Extension System.

If you have questions, contact Jamie Griffin (334-844-5549, jbg0011@auburn.edu), Barb Struempler (struebj@auburn.edu, 334-844-2217) or the Office of Human Subjects Research (334-844-5966, rbadmin@auburn.edu) at Auburn University. You will get a copy of this form to keep.

IF YOU SIGN THIS FORM IT MEANS:

1. YOU UNDERSTAND WHAT IS IN THIS LETTER.
2. YOU WILL BE IN THE STUDY.

Please give your email address so you can get the survey. Please give your cell phone number. Your standard text messaging rates will apply. Your phone number will not be shared with anyone. To stop getting texts at any time, reply STOP after any text.

Sign Your Name **Date**

Jamie B. Griffin 3/22/16

Jamie Griffin, Investigator **Date**

Print Your Name **Date**

Jamie B. Griffin 3/22/16

Printed Name of Investigator **Date**

E-mail address (please print clearly)

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Cell Phone Number (please print clearly)

**Instructions to Opt-In for a Text Message Program
from the
Alabama Cooperative Extension System**



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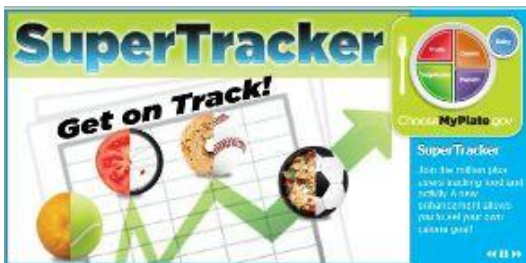
APPENDIX C
NEWSLETTER EDUCATION

My Quest

Week 1



Food Journaling: Stay on Track!



People are more successful losing weight and maintaining weight loss when they write down the food and beverages they eat and drink each day. Writing down what you eat and drink is called journaling. Keeping a food journal is a great way to make yourself accountable for what you eat and drink. Be honest, and write down

every food or beverage you put into your mouth. The easiest way to keep a food journal is to write down everything you eat and drink into a notebook. It is important to write down how much of each food or beverage you drink. Most people eat or drink large portions of food or beverages. This leads to a lot of extra calories each day. To lose weight, you must keep track of how many calories you eat or drink. Eating or drinking too many calories leads to weight gain. If you like to use a smartphone or computer to keep track of your food and beverage intake use the USDA [SuperTracker](https://www.supertracker.gov) website. Create a profile, then begin logging in ALL foods and beverages you eat each day. SuperTracker will tell you how many calories, grams of fat, grams of saturated fat, and added sugars you eat each day. Keep your calorie intake between 1200 to 1600 calories each day.

QUOTE OF THE WEEK

“Let food be thy medicine and medicine be thy food.”

-Hippocrates

TIP OF THE WEEK

Most juices and sports drinks are loaded with sugar and calories. When you're thirsty, water should be your drink of choice.

Recipe: Chicken Stew Serves 4

Ingredients

- 1 Tbsp Vegetable Oil
- 1 Onion, chopped
- 1 can Chicken broth, 14. Oz.
- 2 cups Chicken, cooked and diced
- 1 can Tomatoes, 14 oz. diced
- 1 can Diced tomatoes and green chiles
- 1 can Lima beans, 14 oz. drained
- 1 can Corn, 14 oz., drained

Directions

1. Heat oil in large pan. Add onion and cook until tender.
2. Add all remaining foods. Bring to simmer for 30 minutes.



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My Quest

Week 2



Reading the Food Label: Know the Facts.

Nutrition Facts			
Serving Size 1 cup (228g) Servings Per Container 2		Start here	
Amount Per Serving			
Calories 250	Calories from Fat 110	Check Calories	
		Quick Guide to % DV	
	% Daily Value*	5% or less is low 20% or more is high	
Total Fat 12g	18%	Limit these	
Saturated Fat 3g	15%		
Trans Fat 3g			
Cholesterol 30mg	10%		
Sodium 660mg	28%	Limit these	
Potassium 700mg	20%		
Total Carbohydrate 31g	10%	Get enough of these	
Dietary Fiber 0g	0%		
Sugars 5g			
Protein 5g			
Vitamin A 4%	Vitamin C 2%	Footnote	
Calcium 15%	Iron 4%		
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Want to eat better, and balance your calorie intake by choosing lower calorie, lower fat foods? Use the Nutrition Fact Label found on food and drink packages to make better food choices. Use these tips when using the Food Label to make food and drink choices. Keep these numbers low: total fat, saturated fat, Trans fat, cholesterol and sodium. Get enough of these: potassium, fiber, vitamins A and C, calcium and iron. Use the %Daily Value (%DV) when possible; 5% DV or less is low, 20% DV or more is high. Visit the [Smart Food Shopping](#) page to learn more about using the Food Label to choose foods lower in calories, fat and added sugar to help maintain weight. Remember, keep your calorie intake between 1200 to 1600 calories each day.

QUOTE OF THE WEEK

“Sometimes the smallest step in the right direction ends up being the biggest step of your life. Tip toe if you must, but take the step.”

~Creatively Lu.”

TIP OF THE WEEK

When grocery shopping or out running errands, don't park at the front of the parking lot. Park further away, or near the back of the parking lot. You will walk twice as many steps.

Recipe: Pasta Salad

Ingredients

- ½ cup no-fat Italian dressing
- ¼ cup green onions, chopped
- 2 medium tomatoes, chopped
- 1 cucumber, chopped
- 1 small bell pepper, chopped
- 1 (7 oz) pack of whole-wheat Rotini noodles, cooked

A 1 ¼ cup serving has:
225 calories, 0 grams fat, 0 mg cholesterol,
300 mg sodium

Directions

1. Mix all ingredients in a large bowl.
2. Chill overnight and serve



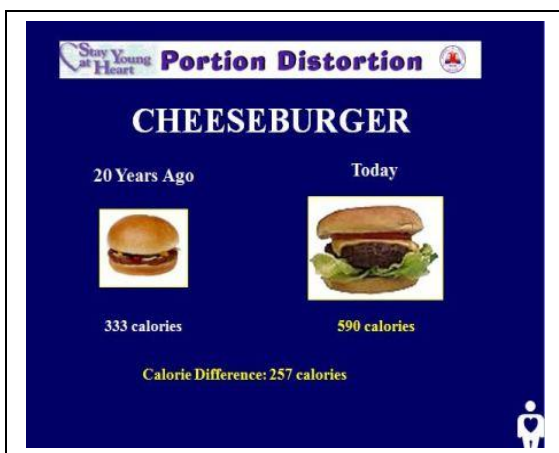
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My Quest

Week 3



Portion Control: Avoiding Portion Distortion



Super-size, Big Gulp, King Size...these all mean larger portions, and a lot of extra calories and/or fat. Portion size is not the same as serving size. A portion is the amount of food you choose to eat or drink. You decide how much to eat for each meal or snack. A serving is a measured amount of food or drink, such as one slice of bread, 3 oz. meat, 8 oz. (1 cup) milk. Large food packages and containers can lead to overeating. Overeating leads to weight gain, and obesity.

Remember: keep an eye on your portion sizes. Use the Nutrition Fact label to keep calories within your daily calorie limit. As you see in the picture above, portion sizes have gotten much bigger over the past 20 years. This increase in size contributes to weight gain and obesity. A good rule to follow is to avoid portions larger than your fist. Avoid [portion distortion](#) to keep on the path to weight loss and better health.

QUOTE OF THE WEEK

"The doctor of the future will no longer treat the human frame with drugs, but rather will cure and prevent disease with NUTRITION."

-Thomas Edison

TIP OF THE WEEK

Keep track of what you eat and drink each day. Don't forget to log drinks, sauces, spreads, and sides. These all count toward your total calorie intake.

Recipe: One Pot Vegetable Stew

Ingredients

- 1 tsp vegetable oil
- 1 medium onion, chopped
- 1 medium green bell pepper, chopped
- 3 cloves garlic, finely chopped
- 1 can diced tomatoes, 14 oz.
- 2 cups fresh or frozen corn
- 1 can low-sodium chicken broth
- 2 tsp chili powder
- 2 tsp dried oregano
- 1 can black beans, 15 oz., drained and rinsed
- 1 can red beans, 15 oz., drained and rinsed

Directions

1. In a large pot, heat oil over medium heat.
2. Sauté onion, bell pepper, and garlic until tender.
3. Add tomatoes, corn, chicken broth, chili powder, oregano, and beans. Stir well.
4. Cover and simmer until thoroughly heated. About 15 minutes.
5. Spoon into 8 bowls. If desired, serve with whole wheat rolls.



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My Quest

Week 4



Fitness Tracker: Just Get Moving!



Tracking your exercise helps monitor the amount of time and intensity of your physical activity. For weight loss, 30 to 60 minutes of moderate to strenuous exercise three times or more each week is needed. Haven't exercised in a while? Start slow. Use the 1 mile walk test to determine the intensity of your exercise. Light exercise: In 30 minutes you complete 1 mile. Moderate exercise: In 15 minutes you complete 1 mile. Strenuous exercise: In 15 minutes you complete 2 miles. Make a goal to increase your exercise intensity over time. Using the USDA [Physical Activity Tracker](#) is a great way to

keep track of the amount of time and the intensity of your daily exercise. The most important goal is to "just get moving!" So, strap on your pedometer and start tracking.

QUOTE OF THE WEEK
"Obstacles don't have to stop you. If you run into a wall, don't turn around and give up. Figure out how to climb it, go through it, or work around it."
 -Michael Jordan

TIP OF THE WEEK
 Don't shop when you're hungry. Shopping after eating makes it easier to stick to your grocery list.

Recipe: Sautéed Spinach Serves 4

Ingredient

- 1 Tbsp olive oil
- 3 Cloves garlic, chopped
- 1 bag spinach, 9 oz.

Per ¼ recipe:
 50 calories, 3.5 grams of fat, 0 mg cholesterol,
 55 mg sodium

Directions

1. Preheat large skillet on medium. Place olive oil and garlic in pan.
2. Cook olive oil and garlic 1 minute.
3. Add spinach. Cook 3-5 minutes or until spinach is wilted



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My Quest

Week 5



Pedometers: Keeping You In Step!

STEPS	MILES	STEPS	MILES
500	.25	5000	2.5
1000	.50	5500	2.75
2000	1.0	6000	3.0
2500	1.25	7000	3.5
3000	1.5	8000	4.0
3500	1.75	9000	4.5
4000	2.0	10000	5.0

Walking is a great way to begin getting more exercise, especially if you have not been physically active in a while. Keeping track of your daily steps is one way to increase the amount of physical activity you get each day. Begin a walking program. It can help you increase the frequency and amount of time you are physically active, improve your health and help you lose weight. Use your pedometer to measure your daily steps. If you haven't been physical active in a while, make an initial goal to walk 2000 steps each day. If you are more active, make a goal of 5000 steps each day. Each

week, slowly increase the number of steps you walk each day. Make your long term goal to walk 10000 steps each day by the end of the twelve weeks. Use the step conversion chart above to keep track of your distance. Remember to chart your steps and all other exercise you do each day in [Fitness Tracker](#).

QUOTE OF THE WEEK

"To maintain good health requires good nutrition and a healthy dose of exercise."

-DeBarra Mayo

TIP OF THE WEEK

Animal meats such as beef, hot dogs, sausage and bacon have high amounts of saturated fats. Replace with lean meats such as chicken breast, roast beef and fish. Trim all visible fat before cooking. Limit portions to 3 ounces or less.

Recipe: Baked Tilapia Serves 4

Ingredients

Cooking spray
 1 ½ pounds tilapia fillets
 ½ tsp Italian seasoning
 ¼ tsp garlic powder

Per ¼ recipe:
 100 calories, 1 gram fat, 25 mg cholesterol,
 30 mg sodium

Directions

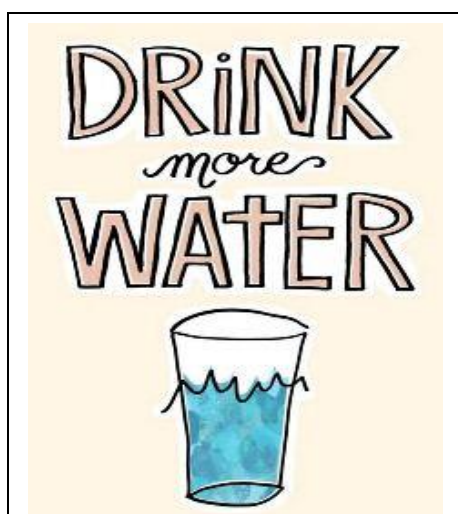
1. Preheat oven to broil.
2. Coat baking sheet with cooking spray.
3. Add fish in single layer and lightly spray with cooking oil.
4. Sprinkle on Italian seasoning and garlic powder
5. Broil 5-6 minutes or until fish is opaque and separates easily.

My Quest

Week 6



Rethink Your Drink: Drink More Water



water? [Click here](#) for more fruit-infused water recipes.

Your body needs water to digest food, eliminate waste and transport nutrients. Water can give you a feeling of fullness, reducing how much you eat so you eat less caloric foods and beverages. This can help you manage your weight. Make a goal to drink 64 oz (10 glasses) of water or more each day. Here are some simple tips to get you started. Carry a refillable water bottle with you everywhere. Drink water from an attractive or special container. When you crave junk food or sweets, drink a glass of water instead. Sip water through a straw. It may help you drink more. If you find it hard to drink plain water, add bits of lemon, lime or oranges to cool water. Still need some pizzazz for your

QUOTE OF THE WEEK

"My motto in our household is that if 90% of our diet is healthy, that 10% just doesn't kill you."

-Michelle Obama

TIP OF THE WEEK

Focus on eating more healthy carbohydrates, such as fruits, vegetables, whole-grains, legumes (beans, peas and lentils) and low-fat dairy products.

Recipe: Bean and Rice Tortillas *Makes 10 tortillas*

Ingredients

2 cups Brown rice, cooked
1 can Pinto beans, 14 oz., drained
1 can Corn, 14 oz., drained
2 cups Salsa
2 cups Reduced fat cheese, grated
10 Flour tortillas, medium

Directions

1. Mix together rice, pinto beans, corn, salsa, and cheese.
2. Put $\frac{1}{2}$ cup of the mixture in a tortilla
3. Fold tortilla in half and brown on each side in a warm skillet until cheese is melted.

My Quest

Week 7



Sugar Sweetened Beverages: Hidden Sugar



Sugar sweetened beverages (sugary drinks) are a major source of added sugar and extra calories in the US diet. Most Americans drink sugary drinks each day. Drinking sugary drinks daily causes weight gain, and increases your risk for developing obesity, diabetes, and heart disease. What is a sugar sweetened beverage? It's a beverage with added sucrose (table sugar), high fructose corn syrup, honey, etc. Examples are sweet tea, fruit drinks, soda and sports drinks. Make a goal to reduce your sugar

sweetened beverage intake. One small step each day can be to replace one sugar sweetened beverage with a no-calorie or diet version. The best choice is to choose water. [Click here](#) to learn how much added sugar is found in common American beverages.

QUOTE OF THE WEEK

"He who has health has hope; and he who has hope has everything."

-Arabian Proverb

TIP OF THE WEEK

Cut the calories but keep the calcium. Switch from a cup of whole milk (150 cals) to a cup of low-fat milk (100 cals) or fat-free (80 cals). Lactose intolerant? Try Light Soymilk instead.

Recipe: Broccoli Salad *Makes 8 servings*

Ingredients

4 cups broccoli, chopped
¼ cup walnuts, sliced/chopped
¼ cup raisins
¼ cup mayonnaise, reduced fat
1 container vanilla yogurt, low-fat, 6 oz.
¼ cup red onion, thinly sliced.

Directions

1. Mix together all ingredients and refrigerate overnight.



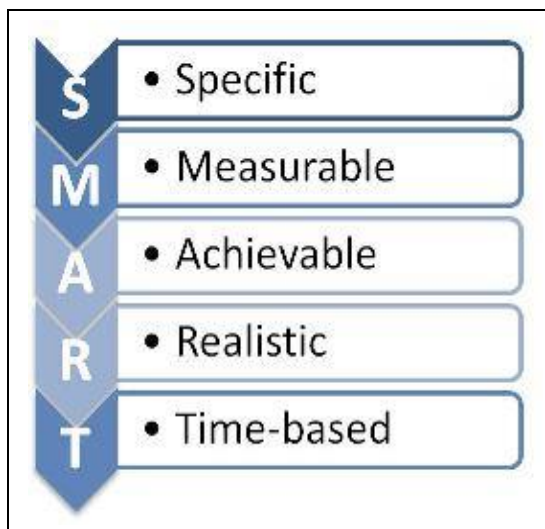
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My Quest

Week 8



SMART GOALS: Pathway to Success



Without a goal, you are like a bus leaving the station without a destination. Setting goals challenges you to work hard to achieve them, and make your dreams a reality. SMART goals are straight forward and emphasize what you want to happen, and how you plan to make it happen. Each letter has meaning. **S**pecific: what, why and how. Example: Instead of setting a goal to cook more, set a goal to cook a home meal two days this week. **M**easurable: If you can't measure it, you can't manage it. Ex: Make a goal to walk one mile in 12 minutes by the end of this month.

Achievable: Set goals that you are able to stick to and reach. Ex: Losing 20 pounds this month is not achievable. Losing ½ to 1 pound each week for a 20 pound weight loss in a year is. **R**ealistic: Doesn't mean easy, it means "do-able". Ex: A goal to never eat sweets isn't realistic. Eating a piece of fruit each day in place of a sweet is, and it's do-able. **T**ime-based: You need a deadline to give you a clear target to work toward. Ex: I want to walk 5000 steps in 30 minutes without being tired within three weeks.

QUOTE OF THE WEEK

"Nothing is impossible. The word itself says I'm possible."

-Audrey Hepburn

TIP OF THE WEEK

Plan out your meals ahead of time and make a [grocery list](#). Buying for the week means you will make fewer shopping trips and buy only what you need. Make a SMART goal this week to cook and eat three home cooked meals that include one vegetable side dish.

Recipe: Easy Ratatouille

Ingredients

Medium zucchini squash, thinly sliced
1 medium eggplant, thinly sliced
1 can diced tomatoes, 14 oz
½ tsp salt
½ tsp black pepper

Directions

1. Preheat oven to 400°F.
2. Layer slices of zucchini and eggplant in a 9x9 baking dish. Top slices with tomatoes, salt and pepper.
3. Bake 15-17 minutes or until vegetables are tender.



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My Quest

Week 9



Fruits and Veggies: 5 a day the color way!



Eating more fruits and vegetables is an important part of the diet. They contain vitamins, minerals, and antioxidants that help keep you healthy. The Centers for Disease Control (CDC) says to eat 5 fruits and vegetables each day and choose different colors to get the most nutrients. Make a goal to eat a fruit or vegetable each time you eat a meal or snack. Try fruits and vegetables of different colors to get the most benefit. Don't eat fruits or vegetables? Tastes change over time. Be brave! Try an apple, or taste some green beans. Start slow. Keep

trying new fruits and vegetables. Buy fresh fruits and vegetables [in season](#). They cost less and are likely to be at their peak flavor. Or, look for frozen or canned fruits and vegetables without added sugar or salt. Here are a few more tips to increase your fruits and vegetables. Eat a salad as a snack. Add fruits and vegetables to foods you cook or bake. Mix vegetables with pasta sauce, casseroles and soups. Mix berries into pancakes, waffles or muffins. Eat vegetables in different ways: raw, steamed, roasted, grilled or baked.

Recipe: Easy Fruit Salad. Yummy, Yummy! Serves 14

Ingredients

- 1 can fruit cocktail, 16 oz. in 100% juice or water
- 2 bananas, sliced
- 2 oranges, cut into bite size pieces
- 2 apples, cut into bite size pieces
- 1 piña colada yogurt, 8 oz., fat-free or low-fat

Directions

1. Mix fruit in large bowl.
2. Add yogurt and mix well.
3. Chill in refrigerator before serving.

QUOTE OF THE WEEK

*"No matter how slow you go,
you are still lapping everybody
on the couch."*

-Unknown

TIP OF THE WEEK

How many steps did you walk each day last week? Make a goal to walk 500 MORE steps each day this week than last week. Keep it up! Before you know it you will be at 10000 steps each day.

My Quest

Week 10



Healthy Snacking: **Make the Good Choice**



Snacking isn't "bad" if you make healthy choices. Snacks can help reduce binge eating at meals. The goal of a snack is to satisfy your hunger until your next meal, without adding extra calories to your daily calorie intake. Healthy snacks can fit into your weight loss plan. Some good snack choices include fresh fruits and vegetables, frozen or canned fruits and vegetables (in 100% juice or water), air-popped popcorn, whole grain crackers, dried fruits and nuts, low-fat cheese sticks, low-fat or fat-free vanilla yogurt and fresh or

canned fruit (in 100% juice, not syrup). The Alabama Department of Public Health has created the Good Choice [10-10-5 guidelines](#) to help Alabamians make better vending machine snack choices. If you're not sure if your snack choice is a good choice, use this [list](#). Stick to two "Good Choice" snacks each day to keep hunger at bay. Keep candy, chips and other high-calorie, high-fat snacks out of the house.

QUOTE OF THE WEEK

"Health: It's not a short term diet. It's a long term lifestyle change."

-Unknown

TIP OF THE WEEK

Small diet changes add up. Make your goal to eat breakfast every day. You will eat less during the day and it will help you reach your weight loss goals.

Recipe: **Tasty Taco Dip** Serves 4

Ingredients

- 1 can black beans, 14 oz., drained
- 1 can corn, 14 oz., drained
- 1 can diced tomatoes and green chilies, 14 oz., drained
- 1 package taco seasoning

Directions

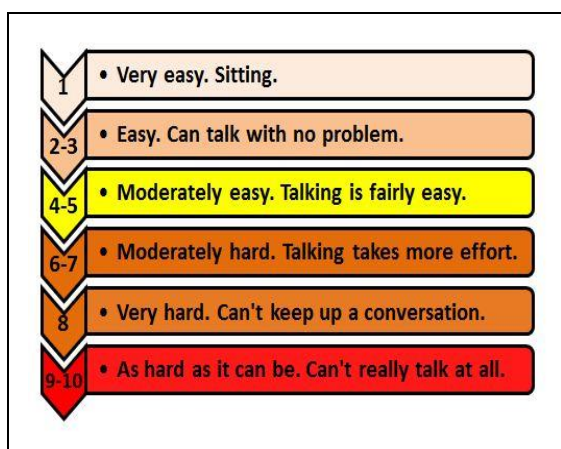
1. Mix all ingredients together in a bowl.
2. Serve with whole-grain chips or whole-grain crackers.

My Quest

Week 11



Rate of Perceived Exertion: The talk test.



Rate of perceived exertion (RPE) is a scale from 1 to 10 that helps understand how physically active you are. Using the RPE scale can help you know how hard you are working when you exercise. The higher the number on the scale, the harder your body is working. You can use the talk test when you exercise to keep track of the type of exercise you do: Mild, Moderate or Strenuous.

Mild exercise falls between 1 to 3 on the RPE scale. Activities include casual walking, bowling,

gardening, cleaning house, bowling, and golf. **Moderate exercise** falls between 4 to 6 on the RPE scale. Activities include walking quickly, dancing, team sports and weight lifting. **Strenuous exercise** falls between 7-8 on the RPE scale. Activities include biking fast, aerobic dancing, running, jogging, and swimming laps. For better health and weight loss, make a goal to work at an RPE of 5 to 8. Try to get 75 to 150 minutes per week of Moderate to Strenuous exercise.

QUOTE OF THE WEEK
“Sometimes the smallest step in the right direction ends up being the biggest step of your life. Tip toe if you must, but take the step.”
~Creatively Lu.”

TIP OF THE WEEK
Fun stuff counts as exercise—dance to music, march in place while watching TV, do push-ups or sit-ups during commercial breaks!

Recipe: Skillet Spaghetti Serves 6

Ingredients

- 1 jar pasta sauce, 28 oz.
- 2½ cups water
- 12 oz. whole-wheat spaghetti, broken in half
- 2 medium zucchini, peeled and diced very small
- 1 cup low-fat mozzarella cheese, shredded

Add cooked hamburger for a meal with meat.

Directions

1. In a large skillet, mix pasta sauce and water. Bring to a boil.
2. Add spaghetti and zucchini. Stir well. Make sure spaghetti is covered by the sauce. Add water if needed.
3. Bring to a boil. Cover and simmer for 25 minutes.
4. Stir often. Add water if needed.
5. Top with cheese.

My Quest

Week 12



Screen Time= Sedentary Time



Sedentary time = inactive time, and this leads to weight gain. Every 2 hours spent watching TV increases a person's risk of developing diabetes, heart disease and chance of dying early. People who spend more time being sedentary, such as watching TV or playing video games, are also more likely to be overweight and obese. This happens because we are not being physically active, and we also mindlessly overeat when we

are in front of the screen. Screen time includes using your cellphone, tablet, computer, watching TV, movies or playing video games. Limit screen time outside of school or work to no more than 2 hours each day. Do something active when you spend time in front of the screen. During commercial breaks, do push-ups, jumping jacks, leg lifts, stretch or yoga. At home, during meals turn off the TV, silence cell phones and tablets. Enjoy family time together. At work, take breaks to reduce your time in front of the computer. Take a walk or stand and stretch each hour. Make a goal to walk 200 steps or more each break. Limit screen time and increase physical activity time!

Recipe: Fruit Parfait

Ingredients

2 cups vanilla yogurt, low-fat or fat-free
1 cup bananas, sliced
½ cup blueberries
½ cup strawberries, sliced
1 cup granola

Directions

1. Mix together bananas, blueberries, and strawberries.
2. Line up 4 tall glasses.
3. Spoon ¼ cup yogurt into each glass.
4. Top with ¼ cup of fruit.
5. Sprinkle 2 tbsp. of granola on top.
6. Repeat steps 2 through 5.

QUOTE OF THE WEEK

"The greatest wealth is health"

-Virgil

TIP OF THE WEEK

Always on the go? Fruits and veggies make good "grab and go" snacks. Pack bananas or baby carrots in your bag.

My Quest

Weeks 1-4



Week 1- Food Journaling: Stay on Track!

People are more successful losing weight and maintaining weight loss when they write down the food and beverages they eat and drink each day. Use the USDA Super Tracker to keep track of your food and beverage intake. Keep your calorie intake around 1600 calories each day.

Week 2- Reading the Food Label: Know the Facts.

Use the Nutrition Fact Label found on food and drink packages to make better choices. Keep the % Daily Value (%DV) for these low: total fat, saturated fat, trans-fat, cholesterol and sodium. Get enough of these: fiber, potassium, calcium, iron, vitamins A and C.

Week 3- Avoiding Portion Distortion.

Portion size is not the same as serving size. A portion is the amount of food you choose to eat or drink. A serving is a standard, measured amount of food or drink. Large food packages and containers lead to larger portions, larger portions can lead to overeating. Over eating increases your risk of gaining weight and/or becoming obese.

Week 4- Fitness Tracker: Just Get Moving!

Tracking your exercise helps you know how much time, and the intensity of your physical activity. For weight loss, 30-60 minutes of moderate to strenuous exercise, three days each week is needed. Moderate activity includes walking quickly, dancing, team sports, and weight lifting. Strenuous activity includes biking fast, running, jogging, and swimming laps. Use Super Tracker to keep track of your daily exercise.



The Alabama Cooperative Extension System (Alabama A&M University and Auburn University), is an equal opportunity educator and employer. Everyone is welcome!

My Quest

Week 5-8



Week 5- Pedometers: Keeping You In Step!

Walking is a great way to begin getting more exercise, especially if you have not been physically active in a while. Use a pedometer to keep track of your daily steps. Slowly increase the number of steps you walk each day. Make your goal to walk 10,000 steps each day by the end of *My Quest*.

Week 6- Rethink Your Drink- Drink More Water.

Drinking water can give you a feeling of fullness, reducing how much you eat so you eat less calories from foods and drinks. This can help you manage your weight. Make a goal to drink 64 ounces of water each day. Carry a refillable water bottle with you everywhere you go. Refill it often!

Week 7- Sugar Sweetened Beverages: Hidden Sugar.

Sugar sweetened beverages are a major source of added sugar and extra calories in the US diet. Drinking sugar sweetened beverages daily can lead to weight gain and increase your risk for obesity, diabetes, and heart disease. Make a goal to reduce your sugar sweetened beverage intake. Replace one sugar sweetened beverage each day with a no-calorie or diet version.

Week 8- SMART Goals: Pathway to Success.

Setting goals challenges you to work hard to achieve them, and makes your dreams a reality. Without a goal, you are like a bus leaving the station without a destination. Make goals that are SMART: **S**pecific, **M**easureable, **A**chievable, **R**ealistic and **T**ime-based.

My Quest

Week 9-12



Week 9- Fruits and Veggies: 5 a day the color way!

Eating more fruits and vegetables is an important part of your diet. According to the Centers for Disease Control, we should eat 5 fruits and vegetables each day. Make a goal to eat a fruit or vegetable each time you eat a meal. Fruits and vegetables also are great snacks. Try fruits and vegetables of different colors to get the most benefit.

Week 10- Healthy Snacking: Make the Good Choice.

Snacks can reduce eating too much at meals. The goal of a snack is to satisfy your hunger until your next meal, without adding a lot of extra calories to your daily calorie intake. Use the Alabama Department of Public Health's 10-10-5 guidelines to make better snack choices.

Week 11- Rate of Perceived Exertion: The talk test.

Rate of Perceived Exertion (RPE) is a scale from 1 to 10. The higher the number, the harder you are working. Using the talk test to measure your RPE can help you know how hard you are working when you exercise. The harder you work during exercise, the more calories you burn. For better health and weight loss, make a goal to work at an RPE of 5 to 9 for a total of 75 to 150 minutes each week.

Week 12- Screen Time = Sedentary Time.

Sedentary time = inactive time, and this leads to weight gain. People, who spend more time being sedentary, such as watching TV or playing video games, are also more likely to be overweight and obese. Make a goal to reduce screen time outside of school or work, to less than 2 hours each day. Limit screen time and increase physical activity time!

APPENDIX D
TEXT MESSAGE DATABASE

Food Journaling

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
7:00am	<p>Weekly weight</p> <p>Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)</p>	<p>Weekly topic-tip</p> <p>The secret to weight loss and weight management success is find out what you eat and drink, then learn to make better choices. Use SuperTracker https://www.supertracker.usda.gov/ to keep you on track. If you don't have a computer, use a paper journal to write down what you eat.</p>	<p>Energy balance tip</p> <p>Most people underestimate their food intake and overestimate their physical activity level. Write yours down to know for sure you are meeting your goals!</p>	<p>Weekly topic-question/feedback</p> <p>Remember to keep track of what you eat and drink today. Don't forget to log drinks, sauces, spreads and sides. These all count toward your total calorie intake.</p>	<p>Weekly tip</p> <p>Use SuperTracker to know your numbers. It will show how much carbohydrate, sugar, fat, saturated fat and calories you ate that day.</p>	<p>Energy balance question</p> <p>Cut the calories but keep the calcium. Switch from whole milk (150 calls) to low-fat (100 calls) or fat-free (80 calls). Lactose intolerant? Try Light Soy milk instead.</p>	<p>Weekly topic-tip</p> <p>Saturday morning chores? Crank up the radio and dance around while you're cleaning for some extra cardio!</p>
11:00 AM	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>
8:00 PM	<p>Energy balance tip</p> <p>Put washed and cut fruits and vegetables on a shelf in your refrigerator where you can see them.</p>	<p>Weekly goal</p> <p>Most juices and sports drinks are loaded with sugar and calories—even 100% is. When you're thirsty, water should be your drink of choice.</p>	<p>It is important to set small goals each week. Make a goal to write down everything you eat and drink.</p>	<p>Balance your calories. Go to the MyPlate website and find out how many calories you ate today. Balance your food intake and your energy output to help you manage a healthy weight.</p>	<p>Don't shop when you are hungry. Shopping after eating makes it easier to stick to your grocery list.</p>	<p>Don't forget to track your food on weekends! Most people eat different on days off than on work days.</p>	<p>Weekly Goal-Question</p> <p>Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).</p>

Know Your Calories

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly weight Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Weekly topic-tip Small diet changes add up. Make your goal to eat breakfast every day. You will eat less during the day and it will help you reach your weight loss goals.	Energy balance tip Did you know some packages have multiple servings? Read the Nutrition Facts Label to see how many servings are in a container. You may be getting more calories than you realize.	Weekly topic-question/feedback Choose lower-calorie, nutrient rich foods first to help manage your weight.	Weekly tip Add a piece of fruit, a glass of low-fat or fat-free milk and/or a whole grain food with breakfast each morning.	Energy balance question Need ideas for recipes using the foods you have on hand? Visit the USDA Mixing Bowl at http://www.whatscooking.fns.usda.gov/	Weekly topic-tip Fun stuff counts as exercise- try to complete physical activity in at least 10-minute blocks. Dance to music, march in place while watching TV, take a brisk walk in your neighborhood.
What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?
Energy balance tip It takes about 15 minutes for your stomach to tell your brain you are full. Wait 15 minutes before going back for seconds. Your brain may say, "No, you are full!"	Weekly goal Keep your calories in check. Stick to 1600 calories each day. Click here <LINK> for help creating a 1600 calorie meal plan.	Decrease saturated fat and calories in meals by using cooking spray instead of butter or oil.	Keep it lean. Use turkey, roast beef or chicken breast for sandwiches instead of higher fat meats like bologna or salami.	Avoid extra fat. Using heavy gravies or sauces will add fat and calories to otherwise healthy choices. For example, steamed broccoli is great, but avoid topping it with cheese sauce. Try other options, like a sprinkling of low-fat parmesan cheese or a squeeze of lemon.	Choose vegetable toppings on pizza and avoid extra cheese! Sop off the extra grease with a napkin to reduce fat calories.	Weekly Goal-Question Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Portion Control

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>Weekly weight</p> <p>Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)</p>	<p>Weekly topic-tip</p> <p>Enjoy your food, but eat less and avoid oversized portions to keep calories in check. Avoid portion distortion. To see how portion sizes have increased over 20 years visit: http://www.nhlbi.nih.gov/health/educational/weight/portion/documents/PD1.pdf</p>	<p>Energy balance tip</p> <p>Sweets are high in fat and sugar, so keep portions sizes small. Eat sweets that are sugar-free and always ask for the small serving size.</p>	<p>Weekly topic-question/feedback</p> <p>Use the 10-10-5 rule to make good snack choices. 10% or less Daily Value total Fat. 10% or less Daily Value of total carbohydrate. 5% or more Daily Value of at least one: fiber, vitamin D, calcium, potassium, or iron.</p>	<p>Weekly tip</p> <p>Enjoy your food but avoid oversized portions. Pay attention to hunger and fullness cues to recognize when you've had enough.</p>	<p>Energy balance question</p> <p>Use lean meats such as chicken breast, roast beef and fish. Trim all visible fat before cooking. Limit portions to 3 ounces or less.</p>	<p>Weekly topic-tip</p> <p>High-fat dairy products such as beef, hot dogs, sausage and bacon contain high amounts of saturated fats. Get no more than 12 grams (or 7% of your calories) from saturated fat.</p>
<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>	<p>What is your step count from yesterday?</p>
<p>Energy balance tip</p> <p>Keep track of the amount of food you eat. This can help you be more aware of your serving sizes, calories and fat intake.</p>	<p>Weekly goal</p> <p>Cut out 100 calories a day from your diet. You could see a weight loss of 10 pounds in a year. Cut out 500 calories a day from your diet. You could lose up to one pound in a week.</p>	<p>Don't shop on an empty stomach! When you're hungry, you tend to crave the most calorically dense foods...and they end up in your shopping cart!</p>	<p>Pay attention to portion sizes on snack foods like chips, crackers and cookies. They are smaller than you think. Eating too many portions can add up to a lot of extra calories.</p>	<p>A 16.9 oz. soft drink contains 192 calories and 44.5 grams of sugar. Cut back one soft drink each day to save 1300 calories this week!</p>	<p>On a budget? Create a grocery game plan. Let ChooseMyPlate help. Visit http://www.choosemyplate.gov/budget-weekly-meals</p>	<p>Weekly Goal-Question</p> <p>Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).</p>

Exercise Journal

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly weight	Weekly topic-tip	Energy balance tip	Weekly topic-question/feedback	Weekly tip	Energy balance question	Weekly topic-tip
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Start your week off right by being active today. Take a walk or turn up the music and dance!	At breakfast, top your cereal off with strawberries or peaches; add frozen blueberries to pancakes, or make a smoothie with all your favorite fruits.	Fun stuff counts as exercise—dance to music, march in place while watching TV, do push-ups or sit-ups during commercial breaks!	Start a physical activity challenge. Use SuperTracker to set up a challenge to see if you are meeting your physical activity goals. Visit www.presidentschallenge.org for more information.	Foods with fiber help keep you full longer. Try adding fruits, veggies and whole grains to snacks or meals to feel the benefit.	Yard work counts! Sweep the garage or carport, wash the floors, vacuum the rugs or trim the shrubs.
What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?	What is your step count from yesterday?
Energy balance tip	Weekly goal	Weekly goal	Weekly goal	Weekly goal	Weekly goal	Weekly goal
Here's a tip: put your workout clothes in front of your door this evening so you don't forget to work out tomorrow.	Log each activity you do for at least 10 minutes at a time. Every bit count! Physical Activity Tracker https://www.supertracker.usda.gov/physicalactivitytracker.aspx can help keep you on target and meet your physical activity goal this week!	A fitness plan is easier to stick to if you have a partner. Recruit a friend to join you on your journey.	Log your steps at the end of each day. Keeping track of your steps is a great way to know how much physical activity you get. For example 2000 steps=20 minutes or 1 mile! Work up to 5000 steps, which is 50 minutes or 2.5 miles!	When you don't feel like working out, bargain with yourself to exercise for just 10 minutes then see how you feel. Log your activity on SuperTracker to keep motivated!	Log your steps at the end of each day. Keeping track of your steps is a great way to know how much physical activity you get. For example 2000 steps=20 minutes or 1 mile! Work up to 5000 steps, which is 50 minutes or 2.5 miles!	Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Increasing Steps

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly weight	Weekly topic-tip	Energy balance tip	Weekly topic-question/feedback	Weekly tip	Energy balance question	Weekly topic-tip
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Make a goal of 5000 steps each day this week. Challenge yourself to walk 1000 steps several times throughout the day. You'll make your step goal before you know it! Already walk 5000 steps each day? Then add 500 more steps each day this week.	Break your step goal into small goals throughout the day: A 2000 step morning walk, 1000 step lunch walk, and a 2000 step evening walk.	Park your car further away when at work or the store. You will walk more, get in more steps and burn more calories.	Compare sodium in foods. Check the nutrition facts label and choose the item with less sodium.	Have you been wearing your pedometer? If not, remember to clip it on and count your daily steps.	Satisfy your sweet tooth in a healthy way. Indulge in a naturally sweet dessert dish-fruit! Serve a fresh fruit cocktail or a fruit parfait made with yogurt. For a hot dessert, bake apples and top with cinnamon.
	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip	What is your step count from Monday and Tuesday? Separate by commas.	Tip	What is your step count from Wednesday and Friday? Separate by commas.	
Try a veggie pita. Fill it with spinach, tomatoes, shredded carrots, black beans and yellow peppers. Add a medium apple with 2 tablespoons of all-natural peanut butter for a healthy lunch!		Fish can be a good alternative to high-fat meats. For example, cod, tuna, and halibut have less total fat, saturated fat and cholesterol than do meat and poultry.		A fitness plan is easier to stick to if you have a partner. Recruit a friend to join you on your journey.		Remember to keep track of what you eat and drink today. Don't forget to log drinks, sauces, spreads and sides. These all count toward your total calorie intake.
Energy balance tip	Weekly goal	Are you wearing your pedometer each day? Wearing your pedometer and recording your daily step count is a great way to track your physical activity progress.	Drain loose meats and rinse with hot water to remove more fat before adding to sauces or casserole dishes.	Exercise regularly. Exercise will maintain a healthy weight, blood pressure and reduce problems with diabetes.	Don't forget to track your food on weekends! Most people eat different on days off than on work days.	Weekly Goal-Question
Fresh, frozen, and canned fruits and vegetables are all smart choices. Buy some of each to last until your next shopping trip.	Just walk! It's the safest form of exercise. Get a minimum of 30 minutes each day. Short on time? Break it into 3 10-minute sessions. Get your steps and your exercise in at the same time!					Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Increase H2O Intake

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly weight Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Weekly topic-tip Set a goal to drink 8-10 cups of water each day this week.	Energy balance tip Drink a large glass of water at certain times during the day when you get up in the morning, before leaving home, when you arrive at work. Are there other times you can drink a glass of water?	Weekly topic-question/feedback Stay on track with your health goals when dining out. Ask for dressings and sauces on the side so you can control how much you use!	Weekly tip Add berries, citrus fruit and melons to water. They are great flavor enhancers.	Energy balance question Remember to fill your refillable water bottle. Take it with you everywhere you go today.	Weekly topic-tip Popcorn, rice cakes, and whole wheat crackers are convenient on-the-go whole grain snacks. Be sure to make at least half your grains whole.
Energy balance tip How many steps did you walk each day last week? Make a goal to walk 500 MORE steps this week than last week. Next week 500 more steps than this week. Keep it up. Before you know it you will be at 10,000 steps each day.	What is your step count from Friday, Saturday, and Sunday? Separate by commas. Tip	Tip Good tasting water is easier to drink than tap water; treat yourself to a charcoal filter pitcher, or faucet filter.	What is your step count from Monday and Tuesday? Separate by commas. Tip	Keep hydrated. Drink a glass of water now.	What is your step count from Wednesday and Friday? Separate by commas.	Add lots of vegetables to sandwiches. Lettuce, tomatoes, cucumbers, bell peppers, and avocado slices are flavorful choices.
Weekly goal Need a sweet treat? Skip the candy and go for dried fruits like raisins & apricots. Add nuts for a little crunch.	Weekly goal Carry a refillable water bottle everywhere- walking, shopping, driving, watching television, doing laundry.	Do you find water to be too blah? Add fruit to give it zip. Visit http://fh.ext.wvu.edu/r/download/192010 for tasty ideas.	Tomorrow, drink one glass of water each hour on the hour.	Focus on healthy carbohydrates, such as fruits, vegetables, whole-grains, legumes (beans, peas and lentils) and low-fat dairy products.	Think small when it comes to meat. Get the flavor you crave from a smaller burger or steak, and fill up on veggies.	Weekly Goal-Question Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Reduce SSB

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly weight	Weekly topic-tip	Energy balance tip	Weekly topic-question/feedback	Weekly tip	Energy balance question	Weekly topic-tip
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Soda, energy drinks, and sports drinks are a major source of added sugar and extra calories. Cut calories by drinking water or unsweetened beverages.	Did you know popcorn is a whole grain? Try natural popcorn and add nuts or dried fruit instead of butter and salt.	Rethink your drink. There are plenty of options to reduce the number of calories you drink each day. Visit http://www.cdc.gov/healthy_eating/drinks.html for ideas.	Most juices and sports drinks are loaded with sugar and calories. When you're thirsty, make water your drink of choice.	Most sports drinks have 3.5 teaspoons of sugar per 8 ounces. Choose the zero calorie, zero sugar version the next time you buy a sports drink.	At breakfast, top your cereal off with strawberries or peaches; add frozen blueberries to pancakes.
	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip	What is your step count from Monday and Tuesday? Separate by commas.	Tip	What is your step count from Wednesday and Friday? Separate by commas.	
Foods with fiber help keep you full longer. Try adding more fruits, veggies and whole grains to feel the benefit.		Most fruit drinks have lots of added sugar. If you love juice, buy 100% fruit juice, but limit to 1 cup a day.		Calories in drinks aren't hidden. Read the Nutrition Facts label to see how many calories are in your favorite beverage. You may be surprised.		Make salad your main dish by adding protein. Try grilled chicken, hard cooked eggs, tuna or black beans.
Energy balance tip	Weekly goal					Weekly Goal-Question
Stay on track with your health goals when dining out. Ask for dressing and sauces on the side so you can control how much you use.	Set one goal this week. (For example: try adding a calorie-free flavor enhancer to water instead of drinking a regular soda.) What is your goal? Please respond.	Want to reduce your risk for obesity, diabetes and heart disease? Choose calorie free, sugar free beverages instead of sugary drinks.	Types of sugary drinks include: sweet tea, soda, sports drinks, flavored milk, coffee drinks, and mocha.	The Dietary Guidelines for Americans recommend 10% or less of calories come from added sugar. That's no more than 200 calories, or 12 tsp, each day for a 2000 calorie diet.	A typical 20 oz. soda bottle contains 15 to 18 tsp of sugar and about 240 calories. Next time you want a soda, grab a zero calorie, zero sugar version instead to quench your thirst.	Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Meal Planning

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly weight	Weekly topic-tip	Energy balance tip	Weekly topic-question/feedback	Weekly tip	Energy balance question	Weekly topic-tip
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Plan out your meals ahead of time and make a grocery list. Buying for the week means you'll make fewer shopping trips and buy only the items you need.	Create a healthy breakfast. Try whole-wheat pancakes, one piece of fruit, and 6 ounces of nonfat vanilla yogurt.	Make dinner and serve it twice. Roast a larger cut of lean meat. Make a second meal using what's left over.	Convenience foods like frozen dinners, fresh pre-cut vegetables, and instant rice, oatmeal, or grits can cost more than if you were to make them from scratch.	Boost your vegetable intake by planning a veggie-packed dinner. Vegetables provide fiber and important vitamins and nutrients.	Want a big calories savings? Switch to low-fat salad dressing. Low-fat dressings have 3 grams of fat or less per serving.
	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip	What is your step count from Monday and Tuesday? Separate by commas.	Tip	What is your step count from Wednesday and Friday? Separate by commas.	
One 12-ounce can of regular soda has about 150 calories and 40 grams of carbohydrate. This is the same amount of carbohydrate in 10 teaspoons of sugar.	Can't decide what to cook for dinner? Use MyPlate to plan a meal.			Cook once, eat twice. Make extra vegetables and save some for later. Use them in stew, soup or a pasta dish.		Fish can be a good alternative to high-fat meats. For example, cod, tuna, and halibut have less total fat, saturated fat and cholesterol than do meat and poultry.
Energy balance tip	Weekly goal	Do you skip breakfast? Make a baked omelet in bulk and freeze it in separate pieces. Heat up a piece in the morning for a quick and delicious breakfast.	Learn quick ways to cook foods. Ex: cook fresh or frozen vegetables in the microwave for a quick and easy side dish to add to any meal.	Create a list of recipes to try. Visit the USDA Mixing Bowl at http://www.whatscooking.fns.usda.gov/ for healthy and low-cost meals based on what you have on hand, foods you enjoy, and foods that are good buys.	Stock up on frozen vegetables for quick side dishes. Buy them without creamy or cheesy sauces that add fat and calories.	Weekly Goal-Question
Remember: Small changes make a BIG difference over time.	On a budget? Create a grocery game plan. Let MyPlate help. Visit. Http://www.choosemyplate.gov/budget-weekly-meals					Keep a running list of items you need and bringing it to the store will minimize the number of items you buy and the size of your bill.

Increase Fruits and Vegetables

Weekly weight	Weekly topic-tip	Energy balance tip	Weekly topic-question/feedback	Weekly tip	Energy balance question	Weekly topic-tip
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	It is important to set small goals each week. This week try eating one extra serving of fruit or vegetables at most meals.	Try adding fruit to your breakfast cereal-you could try raspberries, strawberries, chopped apple or banana.	Make mini pizzas with open face whole wheat English muffins. Top with sauce, veggies and low-fat cheese for a tasty treat.	Switch it up and cook your veggies in new ways. Steam, grill, stir-fry, roast or stew your veggies for a change.	There's more than only pepperoni pizza. For a new taste, add vegetables like peppers, spinach and broccoli.	Store brands=savings. Opt for store brands when possible. You will get the same or similar product for a cheaper price. If your grocery store has a membership card, sign up for even more savings.
Don't shop when you're hungry. Shopping after eating will make it easier to pass on the tempting snack foods.	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip	What is your step count from Monday and Tuesday? Separate by commas.	Tip	What is your step count from Wednesday and Friday? Separate by commas.	
		Use raw vegetables for dipping, like sweet bell pepper strips, in place of chips.		Add extra vegetable such as grated zucchini or carrots, spinach and bell peppers to pasta sauces and soups.		Fire up the grill! Cut veggies like peppers, onions and potatoes. Toss in oil and spices. Wrap in foil and cook until tender.
Energy balance tip	Weekly goal					Weekly Goal-Question
Keep it simple. Buy fruits and vegetables in their simplest form. Pre-cut, pre-washed, ready-to-eat, and processed foods are convenient, but often cost much more than when purchased in their basic form.	Buy canned fruits packed in 100% juice or water to cut down added sugar. Fruit is sweet enough all by itself!	Put out cut veggies to snack on while you are cooking dinner. Get the good study in while you're hungry!	Need a sweet treat? Skip the candy and go for dried fruits like raisins or apricots. Add nuts for a little crunch.	Steam fresh or frozen carrots or broccoli in the microwave. Just cook in a bowl with a little water. Zap! Ready in minutes!	Choose fruit! Ask for fruit, like sliced apples or a fruit cup, at fast food restaurants instead of fried foods.	Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

SMART Snacking

Weekly weight	Weekly topic-tip	Energy balance tip	Weekly topic-question/feedback	Weekly tip	Energy balance question	Weekly topic-tip
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Snacks can help satisfy hunger until your next meal. Fresh, dried, or canned fruits in 100% juice are good snack choices.	Control your portions by setting aside a large snack package into smaller bags or buy 100 calories snack packs!	Watch the fat in your diet, and you will also limit your calorie intake.	In a rush? Buy pre-cut vegetables like carrots, celery, and mushrooms for a quick, easy, and low-calorie snack!	High-fat dairy products and animal proteins such as beef, hot dogs, sausage and bacon contain high amounts of saturated fats. Get no more than 7% of your calories (or 12 grams total) from saturated fat.	Did you know some packages have multiple servings? Read the Nutrition Facts Label to see how many servings are in a container. You may be getting more calories than you realize.
Try swapping potatoes for cauliflower for a low-carb meal. Mash then, broil them, or make a cauliflower "potato" salad	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip	What is your step count from Monday and Tuesday? Separate by commas.	Tip	What is your step count from Wednesday and Friday? Separate by commas.	Any amount of activity improves health. Walk with a co-worker during lunch, or a neighbor to get active!
Energy balance tip	Weekly goal	Want to cut back on chips? Raw veggies like sweet bell pepper strips, snow peas and carrot sticks make fun little dippers.	Pay attention to portion sizes on snack foods like chips, crackers and cookies. They are smaller than you think. Eating too many portions can add a lot of extra calories.	Need help choosing a healthy snack? Use the 10-10-5 rule to make a Good Choice.	Add flavor to meals by using herbs and spices. Chili powder, garlic, ginger, basil, oregano, curry or cilantro are great ways to replace salt and saturated fat.	Weekly Goal-Question
Don't have too many snacks around while watching TV. Eating while distracted can cause you to overeat a lot of calories.	Set one goal this week. What is it? Please respond.	Always on the go? Fruits and veggies make good "grab and go" snacks. Pack bananas or baby carrots in your bag.				Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Increase Physical Activity

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Start your week off right by being active. Remember to clip on your pedometer before leaving the house.	Challenge yourself to walk 1000 steps several times throughout the day.	You deserve at least 20 minutes a day to refresh yourself. Go for a walk outside, do yoga, or meditate.	Try a new exercise. Jumping rope is a cheap, easy, at-home exercise option.	Did you know stair climbing is one of the best exercises to get your heart rate up? It also burns a lot of calories and tones muscles. Try it!	Yard work counts! Sweep the garage, wash the floors, vacuum the rugs, or trim the shrubs.
	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip	What is your step count from Monday and Tuesday? Separate by commas.	Tip	What is your step count from Wednesday and Friday? Separate by commas.	
Don't load your potatoe! Loaded potatoes with butter, sour cream, cheese and bacon can have over 500 calories!		Get your 30 minutes of daily exercise by doing it the easy way: in three 10 minute segments spread over the day.		Increase the intensity of your exercise. If you walk 1 mile in 20 minutes, make a goal to walk one mile in 15 minutes.		Remember, make a grocery list. You will save money by buying only what you need.
Here's a tip: put your workout clothes in front of your door this evening so you don't forget to work out tomorrow.	Set one goal this week. What is it? Please respond with your goal.	Rinse canned beans and vegetables with cold water to make them lower in salt.	Put out cut fruits and vegetables to snack on while you're cooking dinner. Get them in while you're hungry!	Exercise lifts your mood by releasing endorphins-your body's natural "HAPPY" chemical!	Be brave and try a new veggie!	Overall, how well do you think you did with your goal this week? Reply with number from 1 (not well at all) to 10 (very successful).

Reducing Screen Time

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Remember to weigh yourself this morning. Respond with your current weight. (Ex: 145#)	Track how much time you spend in front of a screen at home and work. Ex: TV, movie watching, video games, computer/tablet.	Make a goal to take a walk break. Walk 200 steps or more each break.	Don't sit for long periods of time. Get up each hour and take a short walk or climb stairs.	Go ahead: Step away from the computer at work for 10 minutes.	Frozen vegetables have as many vitamins and minerals as fresh. Choose packages that contain vegetables and nothing else-no added fat, salt, or sugars.	Don't eat in front of the TV! It's easy to overeat when your attention is focused on something else.
	What is your step count from Friday, Saturday, and Sunday? Separate by commas.	Tip Make screen time active time. During commercials, do yoga, stretch, lift weights, do push-ups, jumping jacks or leg lifts.	What is your step count from Monday and Tuesday? Separate by commas.	Tip Every 2 hours spent watching TV increases a person's risk of developing diabetes, heart disease, and chance of dying early.	What is your step count from Wednesday and Friday? Separate by commas.	
Add pureed vegetables like cooked carrots and spinach to spuds or sauces for extra nutrition.						To beat the heat, freeze grapes or berries and serve with a little low-fat yogurt for dipping
	Make a goal to limit non-work screen time to no more than 2 hours each day.	Turn off the TV during meals. Eat at the table instead. Have a family dinner and enjoy talking to each other.	Flavor meat, poultry and seafood with herbs and spices instead of sauces or gravies.	Use beans, peas and soy proteins in side dishes or as a main dish. They are naturally low in fat and packed with iron and protein.	Sit less and move more to stay at a healthy weight.	Overall, how well do you think you did with your goal (from Tuesday) this week? Reply with number from 1 (not well at all) to 10 (very successful).

APPENDIX E
QUALTRICS SURVEY QUESTIONS

Author	Domain	Q# in Qualtrics	Original Question	Scale	Modified Question	Scale	Statistics
KK	Attitude		Eating vegetables is enjoyable.	SD->SA	Eating fruits and vegetables is enjoyable.	SD-->SA	
KK	Attitude		Eating vegetables is necessary.	SD->SA	Eating fruits and vegetables is needed for good health.	SD-->SA	
Robinson-O'Brien and Cullen	Availability		How often are the following true? In my home, there are vegetables to have as a snack.	NSOA	How often do you do the following? Have fruits and vegetables ready to eat as a snack?	NSOA	
Townsend	Availability		Do you buy Kool-Ade, Gatorade, Sunny Delight or other fruit drink/punch?	Definitely do not->Definitely do	Have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks) in your home?	NSOA	
Townsend???	Availability		How often do you have fruits and vegetables in your home? NOT IN THE ASSESSMENT... WAS IT KICKED OUT AT SOME POINT?	NSOA			
NHANES Food Questionnaire	Behavior Self-control		How often do you drink other fruit drinks (such as cranberry cocktail, Hi-C, lemonade or Kool-Ade, diet or regular)?	Never-> 6 or more times per day (given 10 answer choices)	Drink water instead of sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks)?	NSOA	
Robinson-O'Brien and Cullen	Behavior		How many servings of vegetables do you usually eat each day?	None; 1 servings; 2 servings; 3 servings; 4 servings; 5 or more servings	How many servings of vegetables do you eat each day?	Servings	
Robinson-O'Brien and Cullen	Behavior		How many servings of fruit do you usually eat each day?	None; 1 servings; 2 servings; 3 servings; 4 servings; 5 or more servings	How many servings of fruit do you eat each day?	Servings	
NHANES Physical Activity Questionnaire	Behavior		The following question is about sitting at work, at home, getting to and from places, or with friends, including time spent sitting at a desk, traveling in a car or bus, reading, playing cards, watching television, or using a computer. How much time do you usually spend sitting on a typical day?	Open ended question	Think about the time you spend sitting (such as at work, home or traveling). In a typical day, how much time do you spend sitting?	Open ended question	
JBG/NEP	Behavior		Yesterday, I exercised 30 minutes	Yes; No			
JBG/NEP	Behavior		I know the number of steps I walked yesterday	Yes; No			
JBG/NEP	Behavior		Yesterday, I wrote down what I ate and drank	Yes; No			
NHANES Food Questionnaire	Behavior		Question 6 and 9		How many sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) do you drink each day?	None; 1-2 per day; 3-4 per day; 5 or more per day	
NHANES Food Questionnaire	Behavior		Question 72, 77 and 84		How often do you eat high-fat meats (such as hot dogs, bologna, bnacon, sausage, pepperoni, BBQ or fried chicken)?	None; 1-2 per day; 3-4 per day; 5 or more per day	

Modified Question after Pilot Pre-assessment	Scale
How often do you do the following? Have fruits and vegetables ready to eat as a snack?	Never, Less than Once a Month; Once a Month; 2-3 Times a Month; Once a Week; 2-3 Times a Week; Daily
Have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sport drinks) in your home?	Never, Less than Once a Month; Once a Month; 2-3 Times a Month; Once a Week; 2-3 Times a Week; Daily

NHANES Food Questionnaire	Behavior		Question 13, 14 and 58		How often do you eat grains (such as white bread, white rice or pasta)?	None; 1-2 per day; 3-4 per day; 5 or more per day	
FVC/BQP	Behavior		How often do you eat fruits and vegetables as a snack?	NOSA	How often do you do the following? Eat fruits and vegetables as a snack?	NSOA	
Project EAT	Behavior??		How much time do you spend watching TV, playing video games, or searching the internet (computer, tablet or cell phone)?	None>1/2 hr per day>1 hour per day>2 hours per day>3 hours per day>4 hours per day>5 or more hours per day	How much time do you usually spend sitting watching television, playing video games or searching the internet (computer, tablet or cell phone)?	Less than 1 hour per day; 1-2 hours/d;3-4 hrs/d; 5-6 hrs/d; 7-8hr;d; 9 or more hrs/d	
FVC	Behavioral capacity		Do you eat fruits and vegetables as snacks?	No; Yes, sometimes; Yes, often; Yes, everyday	Eat fruits and vegetables as a snack?	NSOA	
Contento	BI		My goal is to eat five fruits and vegetables a day.	Definitely do not->Definitely do SA->SD (4 point scale)	I want to eat more fruits and vegetable each day.	SD-->SA	
Contento	BI		I intend to each five fruits and vegetables a day.		I want to exercise 30 minutes or more each day.		
2010 DGA-Consumer Research	BI/Goals		I can select foods from all food groups that are rich in nutrients and lower in calories.	Not sure at all-> Extremely Sure	I can select foods from all food groups that are rich in nutrients and lower in calories (such as fruits, and vegetables, whole grains, lean meats, low-fat dairy).	Not sure at all->Extremely Sure	
DPP Leader's Guide	BI/Goals		I am confident I can be more physically active.	SA->SD	I know how to set goals to increase my physical activity.	Not sure at all->Extremely Sure	
JBG/NEP	BI/Goals		I want to walk 10,000 steps each day	SD->SA			
2010 DGA-Consumer Research	BI/Goals		Know your number. Learning how many calories you should consume in a day is a critical first step in managing your weight.		I want to write down my foods each day to know how many calories I am eating.	Yes; No	
Project EAT			In a usual week, how many hours do you spend doing the following?		In the next week, how many hours do you plan to do the following?		
	Goal Setting/ Action Plan		Strenuous exercise (heart beats rapidly) Ex: biking fast, aerobic dancing, running, jogging, swimming laps, soccer, basketball football	None>Less than 1/2hr a week>1/2-2 hours a week>2 1/2-4 hrs a week> 4 1/2-6 hours a week> More than 6 hours a week	Strenuous exercise (heart beats rapidly) Ex: biking fast, aerobic dancing, running, jogging, swimming laps	None; Less than 1 hr/week; 1-2 hrs/wk; 3-4 hrs/wk; 5-6 hrs/wk; > 6hrs/wk	
Project EAT	Goal Setting/ Action Plan		Moderate exercise (not exhausting) Ex: walking quickly, dancing, baseball/softball, volleyball, strength training, skiing	None>Less than 1/2hr a week>1/2-2 hours a week>2 1/2-4 hrs a week> 4 1/2-6 hours a week> More than 6 hours a week	Moderate exercise (not exhausting) Ex: walking quickly, dancing, team sports, weight lifting	None; Less than 1 hr/week; 1-2 hrs/wk; 3-4 hrs/wk; 5-6 hrs/wk; > 6hrs/wk	
Project EAT	Goal Setting/ Action Plan		Mild exercise (little effort) Ex: walking slowly, bowling, golf, fishing, yoga	None>Less than 1/2hr a week>1/2-2 hours a week>2 1/2-4 hrs a week> 4 1/2-6 hours a week> More than 6 hours a week	Mild exercise (little effort) Ex: walking slowly, gardening, cleaning house, vacuuming, bowling, golf, fishing, yoga	None; Less than 1 hr/week; 1-2 hrs/wk; 3-4 hrs/wk; 5-6 hrs/wk; > 6hrs/wk	

Patrick	GS/AP		How often do you meal plan?	Every day; Every now and then; Never	How often do you do the following? Plan your meals ahead?	NSOA	
Contento	GS/AP		I will exercise 30 minutes each day next week.	SA->SD	Next week, I will exercise 30 minutes each day.	Yes; No	
Contento	GS/AP		I will log # steps each day next week.	SA->SD	Next week, I will walk 500 more steps each day.	Yes; No	
Contento	GS/AP		I will exercise 30 minutes each day next week.	SA->SD	Next week, I will write down what I eat and drink each day.	Yes; No	
JBG/NEP	GS/AP		Next week, I will write down my steps each day.	Yes; No			
DPP Leader's Guide	Knowledge		I understand what a single serving for my favorite food.	SA->SD	I know what a single serving is for my favorite food.	Not sure at all- >Extremely Sure	
DPP Leader's Guide	Knowledge		I understand how to read food labels to choose foods lower in fat.	SA->SD	I know how to read food labels to pick foods lower in calories.	Not sure at all- >Extremely Sure	
Resnick	OE		Makes me feel better physically.	SA->SD	Exercise makes me feel better physically.	SD-->SA	
Resnick	OE		Is an activity I enjoy doing.	SA->SD	Exercise is an activity I enjoy doing.	SD-->SA	
Resnick	OE		Improves my endurance in performing daily activities (such as personal care, cooking, shopping, light cleaning, taking out garbage).	SA->SD (4 point scale)	Exercise improves my ability to perform daily activities (such as cooking, shopping or light cleaning).	SD-->SA	
JBG/NEP	OE		Walking an extra 500 steps each day will help me lose weight.	SD->SA			
JBG/NEP	OE		Writing down the foods I eat will help me lose weight.	SD->SA			
JBG/NEP	OE		Replacing one sugar-sweetened beverage (such as sweet tea, soft drinks, fruit drinks or sports drinks) a day with water will help me lose weight.	SD->SA			
DPP Leader's Guide	OE or PC		I am confident I can take small steps in healthy eating that will lead to a big reward of improved health.	Not sure at all-> Extremely Sure	I know I can make small changes in my eating to make my health better.	Not sure at all- >Extremely Sure	
KK	PC		I have complete control of what foods are served at my house.	SD-->SA	I have control over what foods are served in my house.	SD-->SA	
KK	PC		It is mostly up to me what to make for supper.		It is mostly up to me what to make for meals.		
Sechrist	PC		Exercising lets me have contact with friends and persons I enjoy.	SA->SD (4 point scale)	Exercise lets me have contact with friends and people I enjoy	SD-->SA	
Sechrist	PC		It costs too much to exercise.	SA->SD (4 point scale)	It costs too much to exercise.	SD-->SA	
FV Screener/Nutrition Quest	PC		I can eat fiber cereal like Raisin Bran, Shredded Wheat or Fruit n Fiber.	Not sure at all-> Extremely Sure	I can eat high fiber foods.	Not sure at all- >Extremely Sure	
2010 DGA-Consumer Research	PC		I can make conscious decisions to manage my weight by controlling portions at meals and snacks.	Not sure at all-> Extremely Sure	I can control my food portions to manage my weight.	Not sure at all- >Extremely Sure	
Contento	SE		I can eat three fruits and vegetables each day when nervous, upset, etc.		I can eat fruits and vegetables each day when I'm nervous, upset or stressed.	SD	
Contento	SE		I can eat three fruits and vegetables each day when nervous, upset, etc.		I can exercise 30 minutes or more each day when I'm tired, upset or stressed.		
TFVS	SE		I can eat 5 servings of fruits and vegetables most days.	Not sure at all-> Extremely Sure	I can eat 5 servings of fruits and vegetables most days.	Not sure at all- >Extremely Sure	
KK	SN		Family members think I should offer vegetables more often.	SD-->SA	My family members think I should offer fruits and vegetables more often.		

PILOT STUDY QUESTIONNAIRE

Q1_1	Q1_2	Q1_3	Q2_1	Q2_2
For these questions, think about your feelings toward exercise. How much do you agree with the fo...-Exercise lets me have contact with friends and people I enjoy.	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-Exercise makes me feel better physically.	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-Walking an extra 500 steps each day will help me lose weight.	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-It costs too much to exercise.	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-Exercise is an activity I enjoy doing.

Q2_3	Q3_1	Q3_2	Q3_3	Q4_1
For these questions, think about your feelings toward exercise. How much do you agree with the fo...-Exercise improves my ability to perform daily activities (such as cooking, shopping or light cleaning).	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-I want to exercise 30 minutes or more each day.	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-I can exercise 30 minutes or more each day when I'm tired, upset or stressed.	For these questions, think about your feelings toward exercise. How much do you agree with the fo...-I want to walk 10,000 steps each day.	Now, think about the foods you eat. How much do you agree with the following statements?-I have control over what foods are served in my home.

Q4_2	Q4_3	Q4_4	Q4_5	Q4_6
<p>Now, think about the foods you eat. How much do you agree with the following statements?-Writing down the foods I eat will help me lose weight.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-My family members think I should offer fruits and vegetables more 3.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-I want to eat more fruits and vegetables each day.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-It is mostly up to me what to make for meals.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-Eating fruits and vegetables is enjoyable.</p>

Q5_1	Q5_2	Q5_3	Q5_4	Q6_1
<p>Now, think about the foods you eat. How much do you agree with the following statements?-I want to write down my foods each day to know how many calories I am eating.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-I can eat fruits and vegetables each day when I'm nervous, upset or stressed.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-Replacing one sugar-sweetened beverage (such as sweet tea, soft drinks, fruit drinks or sports drinks) a day with water will help me lose weight.</p>	<p>Now, think about the foods you eat. How much do you agree with the following statements?-Eating fruits and vegetables is needed for good health.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I know how to set goals to increase my physical activity.</p>

Q6_2	Q6_3	Q6_4	Q6_5	Q6_6
<p>For the next few questions, think about how sure you are of the following statements.-I can have fruits and vegetables when I am in a rush.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I can eat 5 servings of fruits and vegetables most days.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I can eat high fiber foods.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I know how many calories I should eat each day to manage my weight.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I can select foods from all food groups that are rich in nutrients and lower in calories (such as fruits and vegetables, whole grains, lean meats, low-fat dairy).</p>

Q7_1	Q7_2	Q7_3	Q7_4	Q8_1
<p>For the next few questions, think about how sure you are of the following statements.-I can control my food portions to control my weight.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I know what a single serving is for my favorite food.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I know how to read food labels to pick foods lower in calories.</p>	<p>For the next few questions, think about how sure you are of the following statements.-I know I can make small changes in my eating to make my health better.</p>	<p>How 3 do you do the following? -----LOOK AT THIS LIKERT SCALE..DO WE LIKE THIS ONE BETTER??-Make a grocery shopping list?</p>

Q8_2	Q8_3	Q9_1	Q9_2	Q9_3
<p>How 3 do you do the following? -----LOOK AT THIS LIKERT SCALE..DO WE LIKE THIS ONE BETTER??-Plan your meals ahead?</p>	<p>How 3 do you do the following? -----LOOK AT THIS LIKERT SCALE..DO WE LIKE THIS ONE BETTER??-Have fruits and vegetables ready to eat as a snack?</p>	<p>How often do you do the following?-Make a grocery shopping list?</p>	<p>How often do you do the following?-Plan your meals ahead?</p>	<p>How often do you do the following?-Have fruits and vegetables in your home?</p>

Q9_4	Q10_1	Q10_2	Q10_3	Q11_1
<p>How often do you do the following?-Have fruits and vegetables ready to eat as a snack?</p>	<p>How often do you do the following?-Have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) in your home?</p>	<p>How often do you do the following?-Eat fruits and vegetables as a snack?</p>	<p>How often do you do the following?-Drink water instead of sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks)?</p>	<p>Respond "yes" or "no" to the following questions.-Yesterday, I exercised 30 minutes.</p>

Q11_2	Q12_1	Q12_2	Q12_3	Q13_1
Respond “yes” or “no” to the following questions.-Next week, I will exercise 30 minutes each day.	Respond “yes” or “no” to the following questions.-I know the number of steps I walked yesterday.	Respond “yes” or “no” to the following questions.-Next week, I will walk 500 more steps each day.	Respond “yes” or “no” to the following questions.-Next week, I will write down my steps each day.	Respond “yes” or “no” to the following questions.-Yesterday, I wrote down what I ate and drank.

Q13_2	Q14	Q15	Q16_1	Q42_1
Respond “yes” or “no” to the following questions.-Next week, I will write down what I eat and drink each day.	Now, think about the foods you usually eat and drink. How many servings of fruits do you eat each...	How many servings of vegetables do you eat each day? (A serving of vegetables me...	Now, think about the foods you usually eat and drink.-How many sugar-sweetened beverages (such as sports drinks, soft drinks, sweet tea, or fruit drinks) do you drink each day?	Think about the foods you usually eat and drink.-How often do you eat high-fat meats (such as hot dogs, bologna, bacon, sausage, pepperoni, BBQ or fried chicken)?

Q42_2	Q18	Q17_1	Q19_1	Q19_2
Think about the foods you usually eat and drink.-How often do you eat grains (such as white bread, white rice or pasta)?	Think about the time you spend sitting (such as at work, home or traveling). In a typical day,...	Think about the time you spend sitting (such as at work, home or traveling).-How much time do you usually spend sitting watching television, playing video games or searching the internet (computer, tablet or cell phone)?	In the next week, how many hours do you plan to do the following?-Strenuous exercise (heart beats rapidly) / Ex: biking fast, aerobic dancing, running, jogging, swimming laps	In the next week, how many hours do you plan to do the following?-Moderate exercise (not exhausting) / Ex: walking quickly, dancing, team sports, weight lifting

Q19_3	Q20	Q22	Q23	Q24
In the next week, how many hours do you plan to do the following?-Mild exercise (little effort) / Ex: walking slowly, gardening, cleaning house, vacuuming, bowling, golf, fishing, yoga	You are almost finished. This is the last set of questions. Make sure you complete the survey so...	When were you born? (Month, Day, Year or MMDDYYYY)	What is your height? (In feet and inches) Example: If you are 5 feet and 3 inches, you will enter...	What is your weight? (In pounds)

Q25	Q26	Q27_1	Q27_2	Q27_3
Are you? Married	Are you? Single	What is your race? (Check all that apply)-White/Caucasian	What is your race? (Check all that apply)-Black/African American	What is your race? (Check all that apply)-American Indian/Alaska Native

Q27_4	Q27_5	Q27_6	Q28	Q29
What is your race? (Check all that apply)-Native Hawaiian or Other Pacific Islander	What is your race? (Check all that apply)-Asian	What is your race? (Check all that apply)-Other	Including yourself, how many adults (over 19 years old) live with you?	How many children (18 years or younger) live with you?

Q30	Q31	Q32	Q35	Q38_1
How much education do you have?	For work, are you employed?	What is your income?	Thank you for your time. You are eligible to receive a pedometer / (\$20 value). Please type your na...	Friends, thank you for taking this survey. Please take just a few more minutes to give me overall...-How easy was it to read this survey?

Q38_2	Q42	Q39	Q40	Q41
Friends, thank you for taking this survey. Please take just a few more minutes to give me overall...-How easy was it to understand what the question was asking?	If you found questions hard to understand, which question(s) were they?	Do you think the survey questions were appropriate?	Are there questions you found to be offensive?	If so, which questions did you find to be offensive?

Q43	Q44	Q45
How many minutes did it take you to complete questions 1-35 on the survey?	Do you think the survey was an appropriate length?	Any other feedback is appreciated.

PILOT STUDY STATISTICAL ANALYSIS

Jamie Griffin Project

Method

I used Principal Component Analysis (PCA) to determine which items would make up each scale. PCA is a data reduction technique that allows me to combine severable items into distinct components. Another way to interpret the results of PCA is to say that items in the same component are “measuring the same thing (statistically speaking)”. All analyses were conducted in SAS 9.4.

When creating each scale, I first applied PCA to similar items with identical scales (e.g., PC_1 and PC_2). Then I averaged the items in each component to create one scale. The Cronbach’s alpha (α), Mean (M), and standard deviation (s) for each scale are reported.

***Note:* the following results were derived from a small sample so they should be interpreted with caution as PCA is sensitive to sample size; the larger the sample size, the more reliable the findings. Also, keep in mind that some measures may need to be transformed because of skewed distributions.

Measures

PC. One item (PC_2) was reversed so that high numbers indicated more positive outcomes (1= Strongly Agree to 5=Strongly Disagree).

First_PC includes these items: PC_1 and PC_2. $\alpha = .64, M = 3.90, s = .83.$

Second_PC includes these items: PC_3 and PC_4. $\alpha = .75, M = 4.5, s = .62.$

Third_PC includes these items: PC_5, PC_6, and OEPC. $\alpha = .62, M = 4.23, s = .64$

OE. OE_7 has a different scale than all the other items; OE_3 did not fall into the same component as the rest.

OE includes these items: OE_1 OE_2 OE_4 OE_6 OE_5. $\alpha = .72, M = 4.15, s = .66$

OE_3 $M = 3.65, s = 1.09$

OE_7 $M = 3.84, s = 1.12$

BI.

First_BI includes these items: BI_1 BI_2 BI_3 BI_4. $\alpha = .67, M = 3.74, s = .68.$

Second_BI includes these items: BI_5 BI_6. $\alpha = .69, M = 4.22, s = .79.$

SE. SE_3 has a different scale than the others.

SE includes these items: SE_1 SE_2.

$\alpha = .60$, $M = 3.53$, $s = .88$.

SE_3

$M = 3.63$, $s = 1.13$

SN. SN_1 and SN_2 have different scales.

SN_1

$M = 3.14$, $s = 1.08$

SN_2

$M = 3.90$, $s = 1.01$

ATTITUDE.

ATTITUDE includes these items: ATT_1 ATT_2.

$\alpha = .45$, $M = 4.62$, $s = .47$.

KNOWLEDGE.

KNOWLEDGE includes these items: Kno_1 and Kno_2.

$\alpha = .82$, $M = 4.30$, $s = .81$.

GSAP.

First_GSAP includes these items: GSAP_1 and GSAP_2.

$\alpha = .67$, $M = 4.78$, $s = 1.22$.

Second_GSAP includes these items: GSAP_3 GSAP_4 GSAP_5 and GSAP_6. $\alpha = .63$, $M = .40$, $s = .33$.

Third_GSAP includes these items: GSAP_7 GSAP_8 and GSAP_9. $\alpha = .51$, $M = 3.11$, $s = .96$.

AVAILABILITY. AVAILABILITY_1 and AVAILABILITY_2 have different scales.

AVAILABILITY_1

$M = 5.67$, $s = 1.53$.

AVAILABILITY_2

$M = 2.27$, $s = 1.08$.

BEHAVIOR.

First_BEH includes these items: BEH_1 and BEH_2.

$\alpha = .30$, $M = 3.17$, $s = .55$.

Second_BEH includes these items: BEH_3 BEH_4 and BEH_5. $\alpha = .38$, $M = .23$, $s = .27$.

Third_BEH includes these items: BEH_8 BEH_9 and BEH_10 $\alpha = .59$, $M = 2.14$, $s = .81$.

BEHAVIOR_6

$M = 2.51$, $s = 1.78$.

BEHAVIOR_7

$M = 2.65$, $s = 1.18$.

BEHAVIOR_11

$M = 5.69$, $s = 2.89$.

BEHAVIOR_12

$M = 2.86$, $s = 1.21$.

Demographics

Age. M = 46.39, s = 12.67 (min = 24, max = 69).

Ht. M = 64.45, s = 2.58.

Wt. M = 165.55, s = 39.88 (min = 98, max = 273).

Sex. All female

Education. M = 3.55, s = .58

Employment. M = 1.60, s = 1.08.

Salary. M = 3.36, s = 1.26.

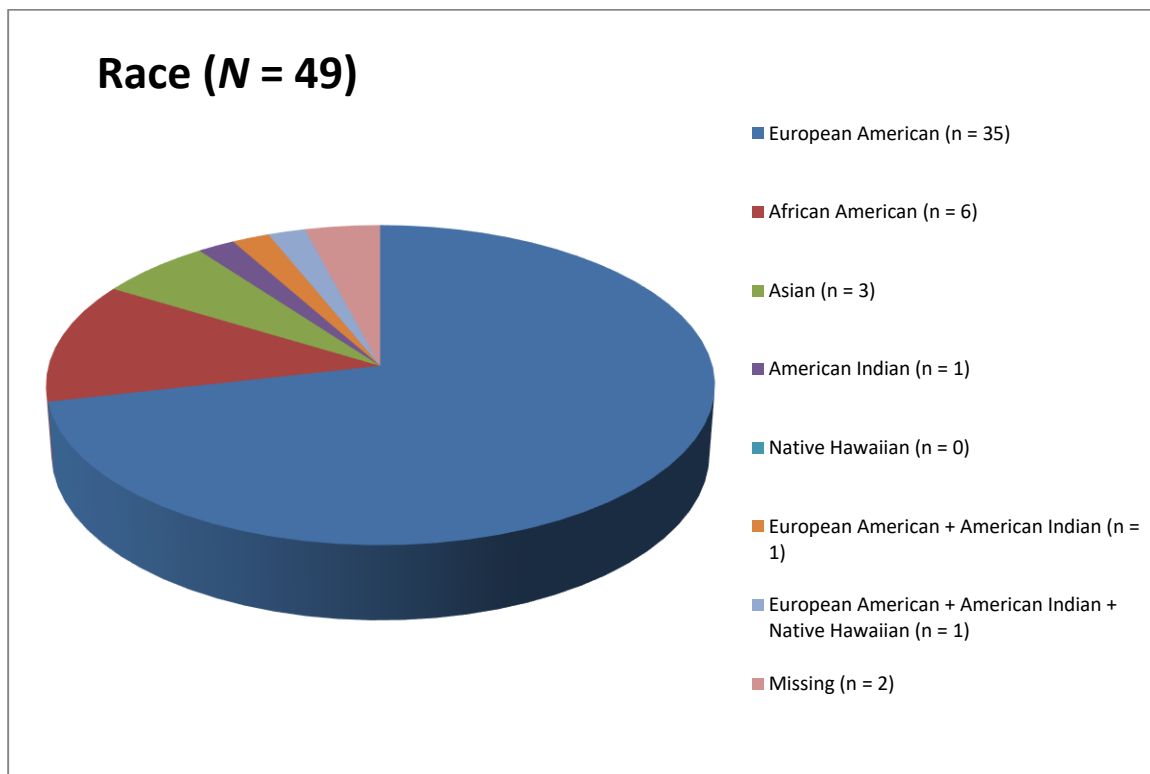
Marital Status. M = .77, s = .42.

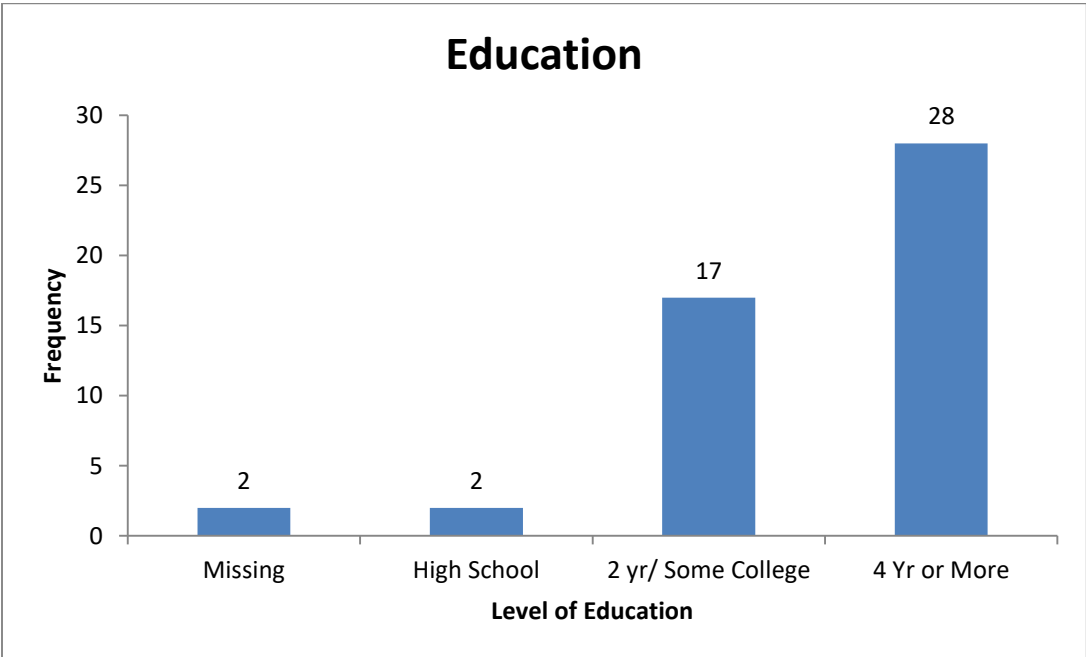
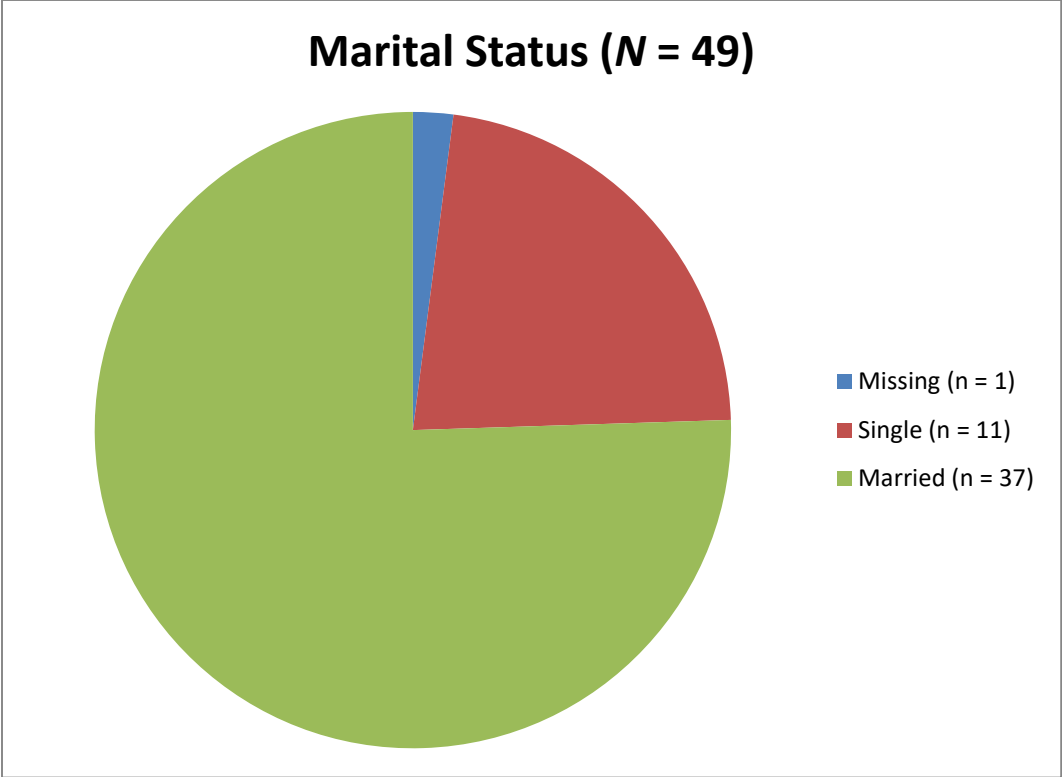
Adults. M = 1.72, s = .83.

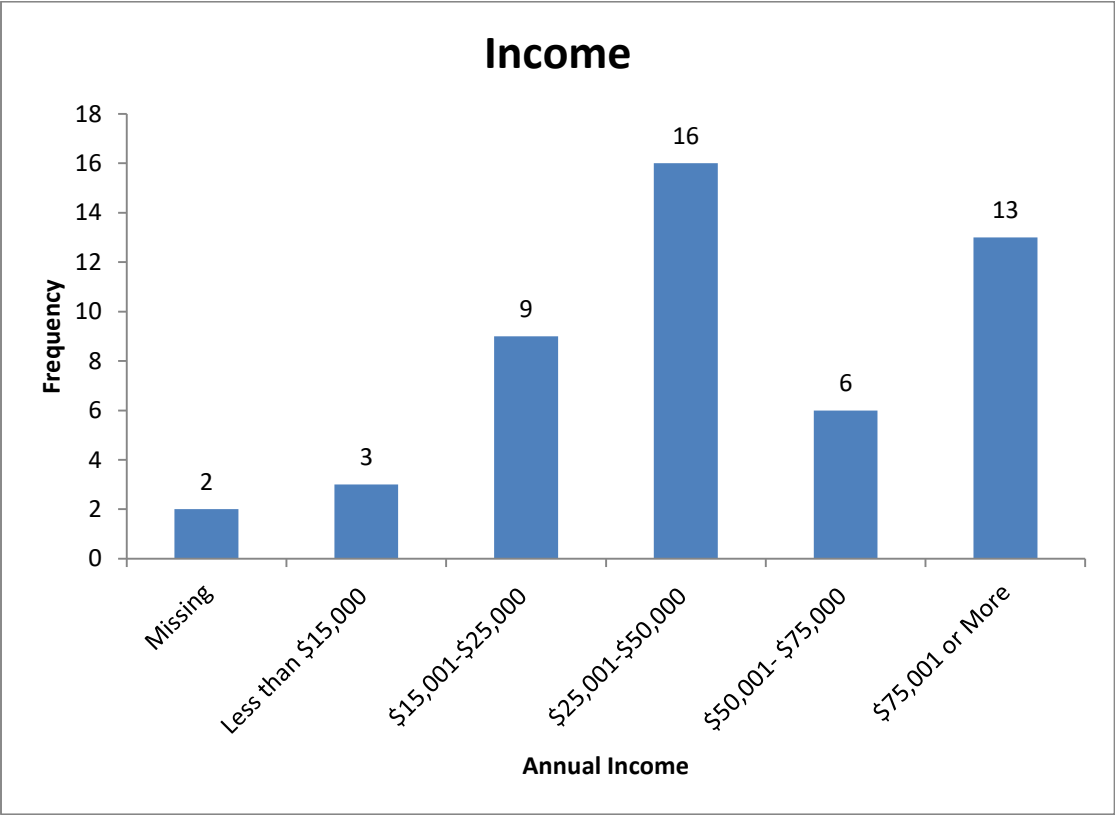
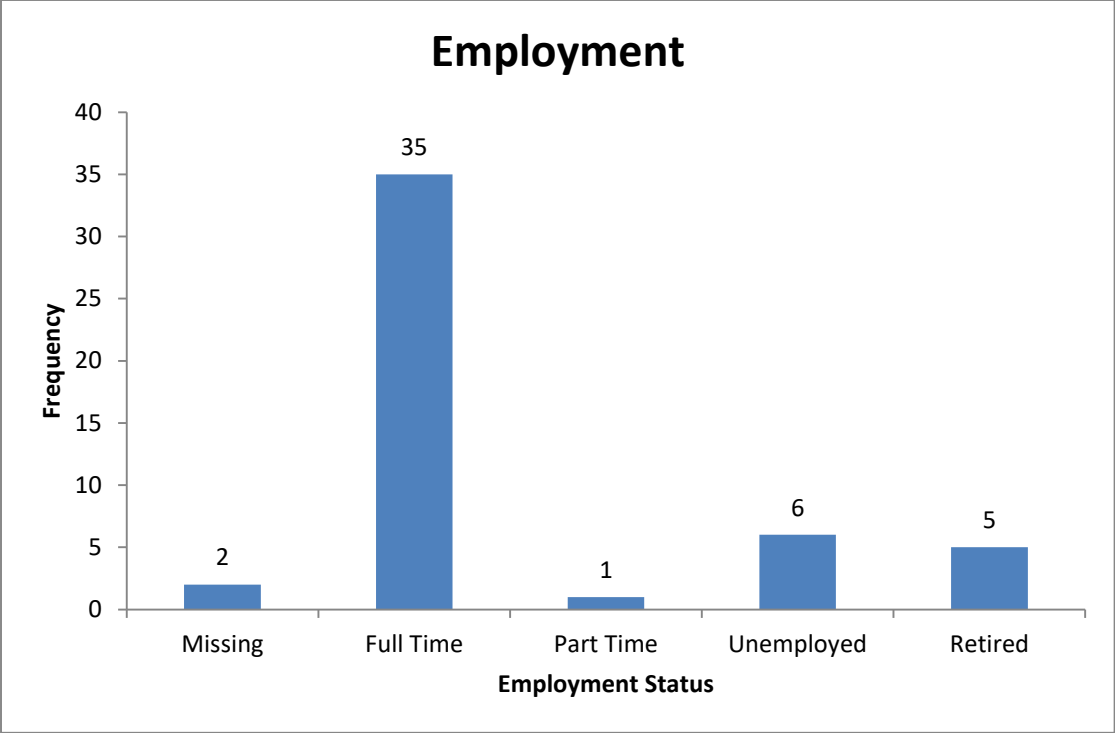
Children. M = 1.11, s = 1.56

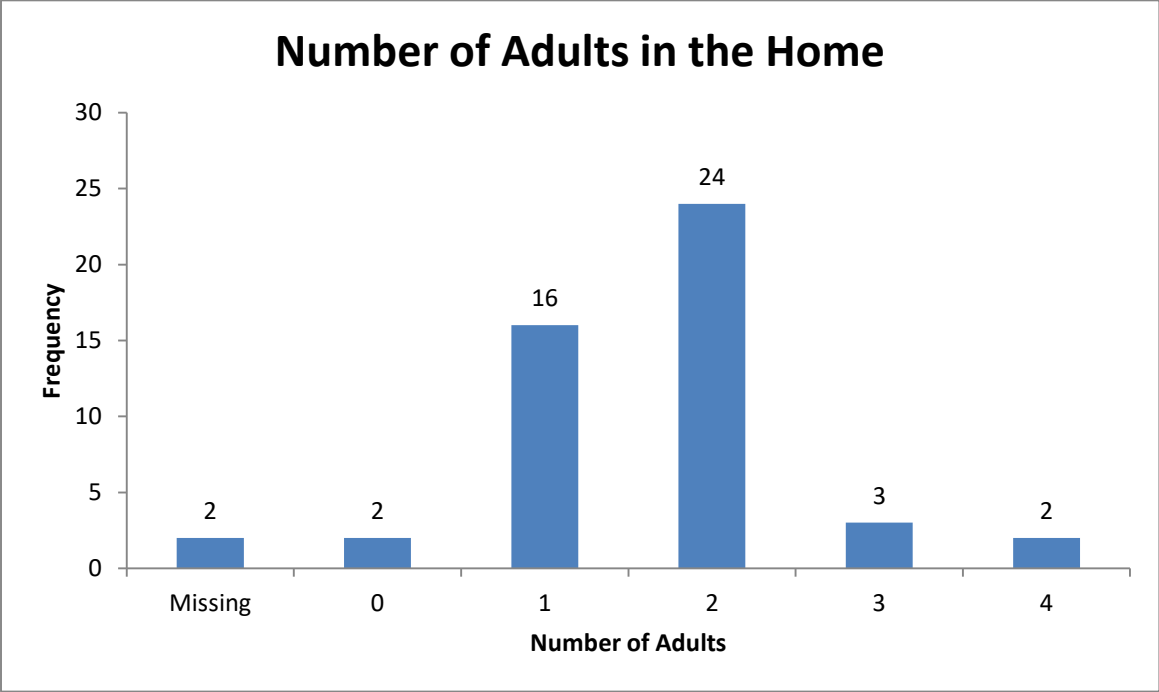
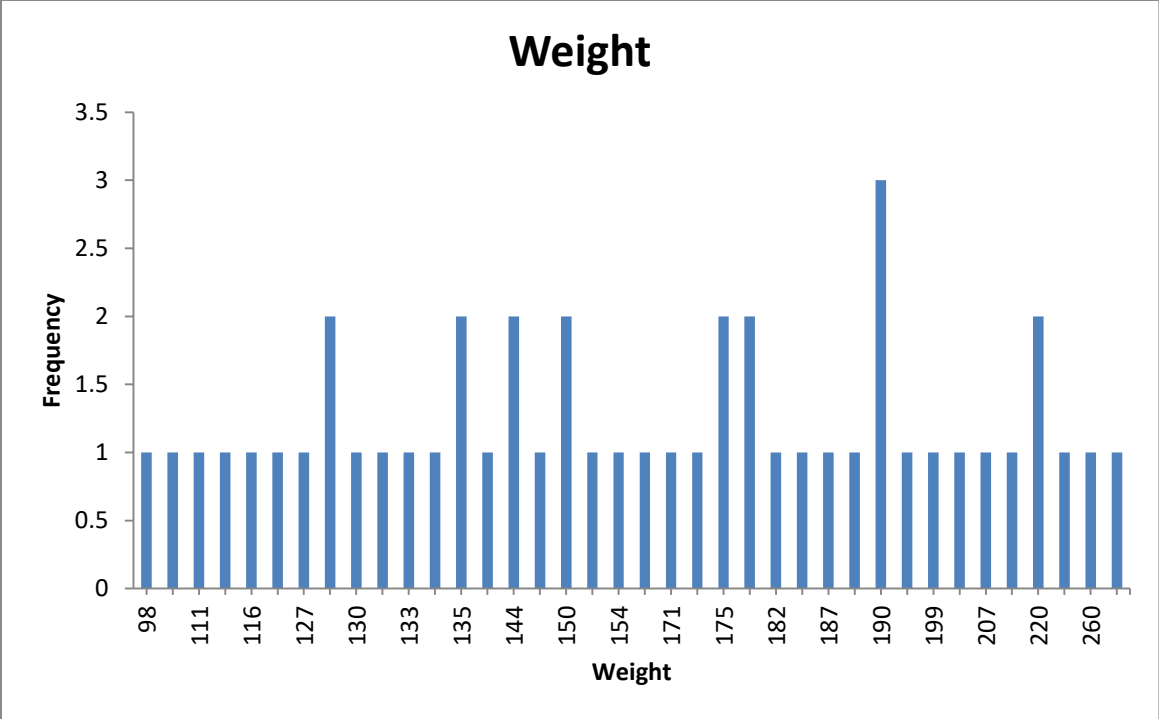
Race. European American = 71.43%, African American = 12.24%, Asian = 6.12%, Others / Mixed Race= 10.2%

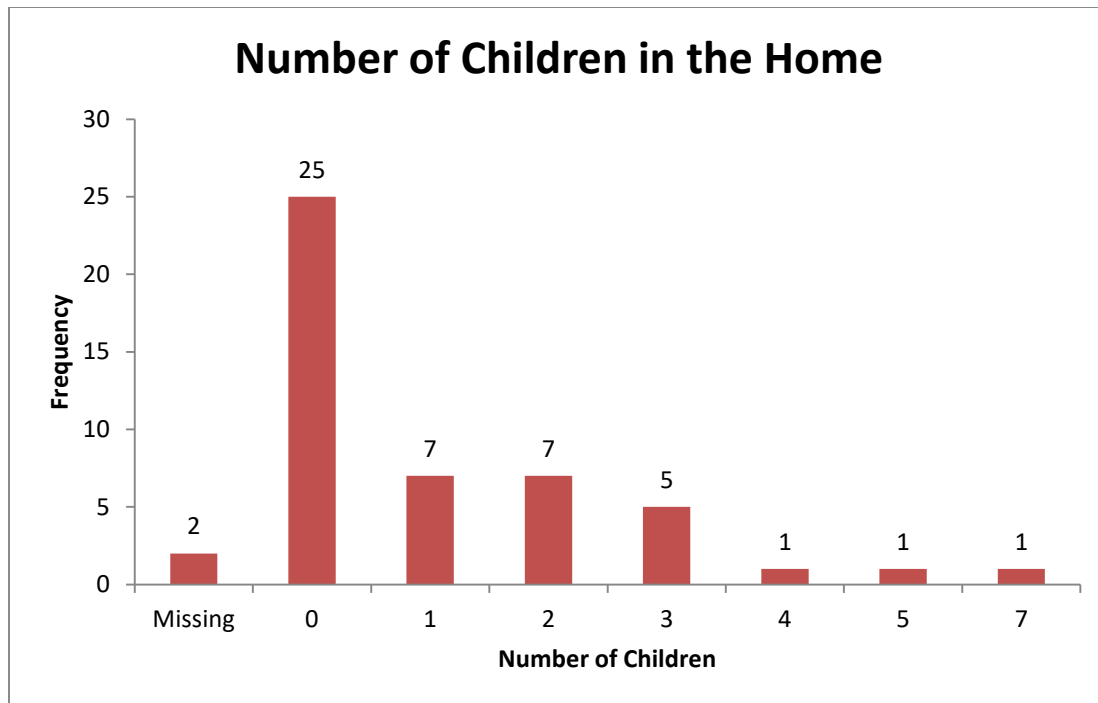
Figures











Pearson Correlations of Items Used to Create Composites

<u>PC ITEMS</u>: Pearson Correlation Coefficients, N = 49							
Prob > r under H0: Rho=0							
	PC_1	PC_2	PC_3	PC_4	PC_5	PC_6	OEPC
PC_1	1.00000						
PC_2	0.47045 0.0006	1.00000					
PC_3	0.15637 0.2833	0.32145 0.0243	1.00000				
PC_4	0.05419 0.7115	0.35686 0.0118	0.60529 <.0001	1.00000			
PC_5	0.23164 0.1093	0.31277 0.0287	0.38738 0.0060	0.37832 0.0074	1.00000		
PC_6	0.21713 0.1340	0.23449 0.1049	0.58353 <.0001	0.50832 0.0002	0.34350 0.0157	1.00000	

PC ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0							
	PC_1	PC_2	PC_3	PC_4	PC_5	PC_6	OEPC
OEPC	0.10782	0.18013	0.43883	0.31126	0.33452	0.44045	1.00000
	0.4609	0.2155	0.0016	0.0295	0.0188	0.0015	

OE ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0					
	OE_1	OE_2	OE_4	OE_6	OE_5
OE_1	1.00000				
OE_1					
OE_2	0.66649	1.00000			
OE_2	<.0001				
OE_4	0.52033	0.25142	1.00000		
OE_4	0.0001	0.0814			
OE_6	0.18387	0.32268	0.44997	1.00000	
OE_6	0.2060	0.0237	0.0012		
OE_5	0.27034	0.20703	0.31275	0.23338	1.00000
OE_5	0.0603	0.1535	0.0287	0.1066	

BI ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0						
	BI_1	BI_2	BI_3	BI_4	BI_5	BI_6
BI_1	1.00000					
BI_1						
BI_2	0.39177	1.00000				
BI_2	0.0054					
BI_3	0.26306	0.49144	1.00000			
BI_3	0.0678	0.0003				
BI_4	0.32884	0.27041	0.31090	1.00000		
BI_4	0.0211	0.0602	0.0297			

BI ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0						
	BI_1	BI_2	BI_3	BI_4	BI_5	BI_6
BI_5	0.64936	0.46228	0.21083	0.31741	1.00000	
BI_5	<.0001	0.0008	0.1459	0.0263		
BI_6	0.45519	0.29182	0.09332	0.27251	0.53414	1.00000
BI_6	0.0010	0.0419	0.5236	0.0582	<.0001	

SE ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0		
	SE_1	SE_2
SE_1	1.00000	0.43159
SE_1		0.0020
SE_2	0.43159	1.00000
SE_2	0.0020	

ATTITUDE ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0		
	ATTITUDE_1	ATTITUDE_2
ATTITUDE_1	1.00000	
ATTITUDE_1		
ATTITUDE_2	0.35143	1.00000
ATTITUDE_2	0.0133	

KNOWLEDGE ITEMS: Pearson Correlation Coefficients, N = 49 Prob > r under H0: Rho=0		
	KNOWLEDGE_1	KNOWLEDGE_2
KNOWLEDGE_1	1.00000	
KNOWLEDGE_1		
KNOWLEDGE_2	0.71891	1.00000
KNOWLEDGE_2	<.0001	

GSAP ITEMS: Pearson Correlation Coefficients, N = 49									
Prob > r under H0: Rho=0									
	GSAP_1	GSAP_2	GSAP_3	GSAP_4	GSAP_5	GSAP_6	GSAP_7	GSAP_8	GSAP_9
GSAP_1 GSAP_1	1.00000								
GSAP_2 GSAP_2	0.50868 0.0002	1.00000							
GSAP_3 GSAP_3	0.30556 0.0328	0.21081 0.1460	1.0000 0						
GSAP_4 GSAP_4	0.27778 0.0533	0.14206 0.3302	0.3333 3	1.0000 0					
GSAP_5 GSAP_5	- 0.01704 0.9075	- 0.09279 0.5260	0.1278 3	0.4985 3	1.0000 0				
GSAP_6 GSAP_6	- 0.03043 0.8356	0.04518 0.7579	0.1825 7	0.1825 7	0.4620 9	1.00000			
GSAP_7 GSAP_7	0.26501 0.0657	0.20091 0.1663	0.3768 3	0.2022 0	0.1600 2	0.27688 0.0541	1.0000 0		
GSAP_8 GSAP_8	0.11665 0.4248	0.18258 0.2092	0.4127 6	0.2781 6	0.1169 9	0.22608 0.1183	0.3137 2	1.0000 0	
			0.0032	0.0530	0.4234		0.0282		

GSAP ITEMS: Pearson Correlation Coefficients, N = 49									
Prob > r under H0: Rho=0									
	GSAP_1	GSAP_2	GSAP_3	GSAP_4	GSAP_5	GSAP_6	GSAP_7	GSAP_8	GSAP_9
GSAP_9	0.18660	-	0.2651	0.2062	0.0632	-	0.1706	0.2998	1.0000
	0.1992	0.01134	0.07	0.04	0.07	0.03227	0	0	0
GSAP_9		0.9383	0.0656	0.1551	0.6658	0.8258	0.2412	0.0364	

BEHAVIOR ITEMS: Pearson Correlation Coefficients, N = 43								
Prob > r under H0: Rho=0								
	BEHAVI OR_1	BEHAVI OR_2	BEHAVI OR_3	BEHAVI OR_4	BEHAVI OR_5	BEHAVI OR_8	BEHAVI OR_9	BEHAVI OR_10
BEHAVI OR_1	1.00000							
BEHAVI OR_1								
BEHAVI OR_2	0.09475	1.00000						
BEHAVI OR_2	0.5456							
BEHAVI OR_3	0.09683	0.20600	1.00000					
BEHAVI OR_3	0.5368	0.1851						
BEHAVI OR_4	0.26902	-0.11740	0.03749	1.00000				
BEHAVI	0.0811	0.4534	0.8113					

BEHAVIOR ITEMS: Pearson Correlation Coefficients, N = 43								
Prob > r under H0: Rho=0								
	BEHAVI OR_1	BEHAVI OR_2	BEHAVI OR_3	BEHAVI OR_4	BEHAVI OR_5	BEHAVI OR_8	BEHAVI OR_9	BEHAVI OR_10
OR_4								
BEHAVI OR_5 BEHAVI OR_5	0.24503 0.1133	0.09841 0.5301	0.45259 0.0023	0.10210 0.5147	1.00000			
BEHAVI OR_8 BEHAVI OR_8	-0.42212 0.0048	-0.25845 0.0943	-0.12794 0.4136	-0.24167 0.1185	-0.27209 0.0775	1.00000		
BEHAVI OR_9 BEHAVI OR_9	-0.21683 0.1625	-0.04393 0.7797	-0.30867 0.0440	-0.08396 0.5925	-0.23527 0.1288	0.54196 0.0002	1.00000	
BEHAVI OR_10 BEHAVI OR_10	-0.17894 0.2509	-0.10088 0.5198	-0.19412 0.2123	-0.13221 0.3981	0.03232 0.8370	0.25884 0.0937	0.33498 0.0281	1.00000

FINALIZED QUALTRICS ASSESSMENT

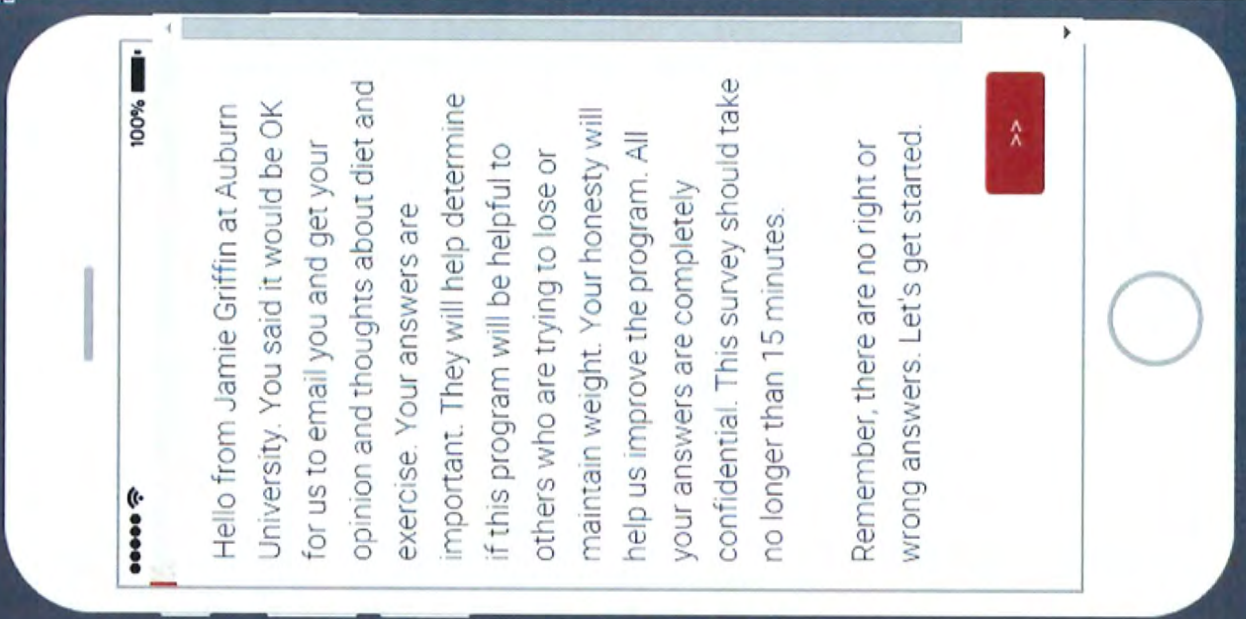


Hello from Jamie Griffin at Auburn University. You said it would be OK for us to email you and get your opinion and thoughts about diet and exercise. Your answers are important. They will help determine if this program will be helpful to others who are trying to lose or maintain weight. Your honesty will help us improve the program. All your answers are completely confidential. This survey should take no longer than 15 minutes.

Remember, there are no right or wrong answers. Let's get started.

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For these questions, think about your feelings toward exercise. How much do you agree with the following statements?

Exercise lets me have contact with friends and people I enjoy.

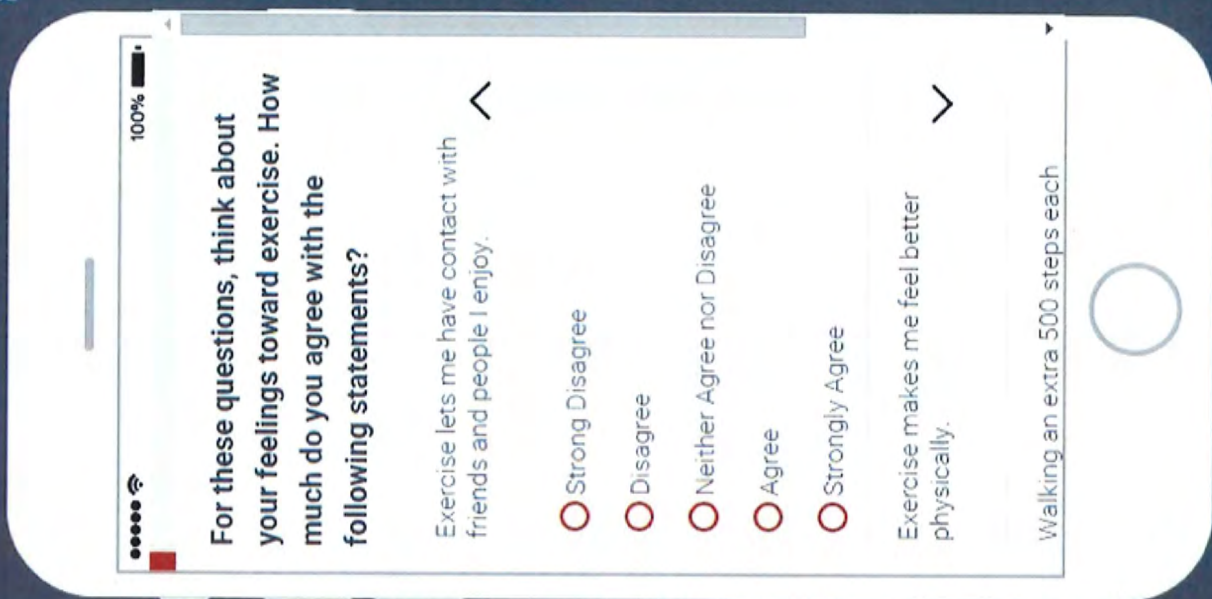
Exercise makes me feel better physically.

Walking an extra 500 steps each day will help me lose weight.

	Strong Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Exercise lets me have contact with friends and people I enjoy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercise makes me feel better physically.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking an extra 500 steps each day will help me lose weight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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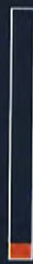
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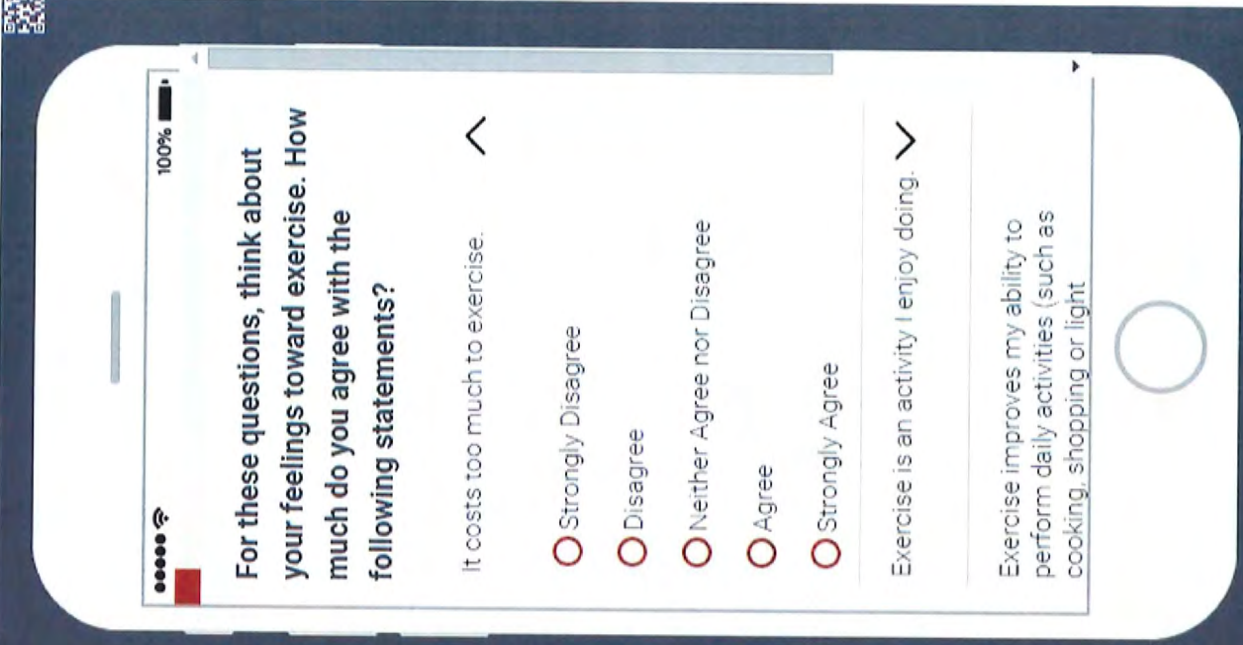
For these questions, think about your feelings toward exercise. How much do you agree with the following statements?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
It costs too much to exercise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercise is an activity I enjoy doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercise improves my ability to perform daily activities (such as cooking, shopping or light cleaning).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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For these questions, think about your feelings toward exercise. How much do you agree with the following statements?

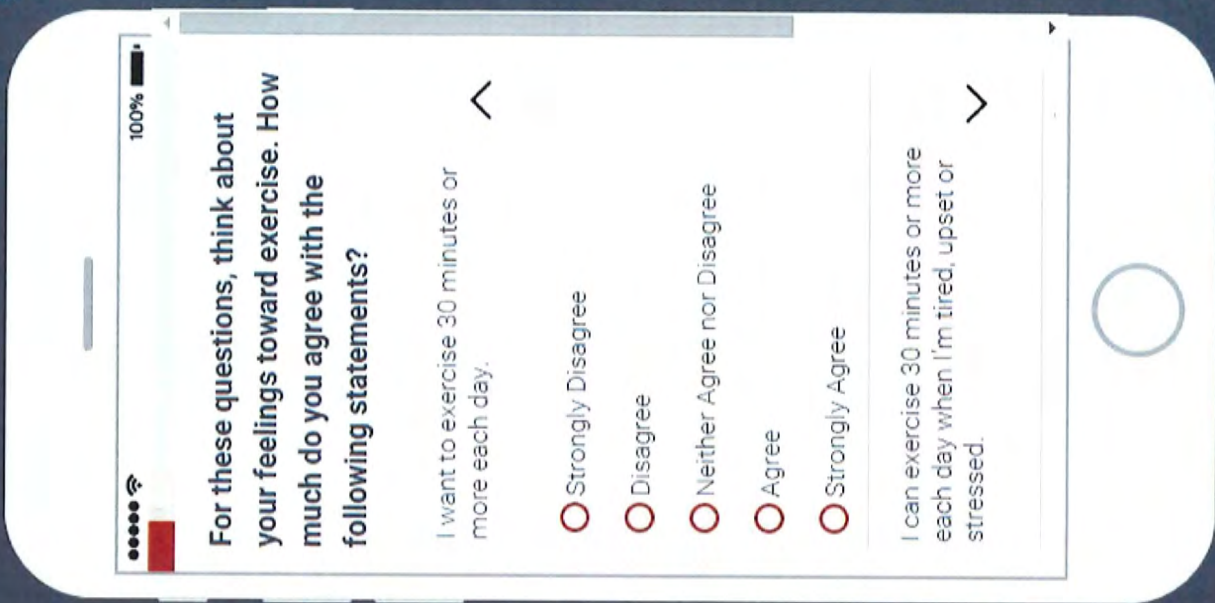
- I want to exercise 30 minutes or more each day.
- I can exercise 30 minutes or more each day when I'm tired, upset or stressed.
- I want to walk 10,000 steps each day.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I want to exercise 30 minutes or more each day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can exercise 30 minutes or more each day when I'm tired, upset or stressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to walk 10,000 steps each day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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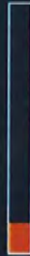
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Now, think about the foods you eat. How much do you agree with the following statements?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I have control over what foods are served in my home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing down the foods I eat will help me lose weight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family members think I should offer fruits and vegetables more often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to eat more fruits and vegetables each day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is mostly up to me what to make for meals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating fruits and vegetables is enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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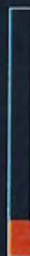
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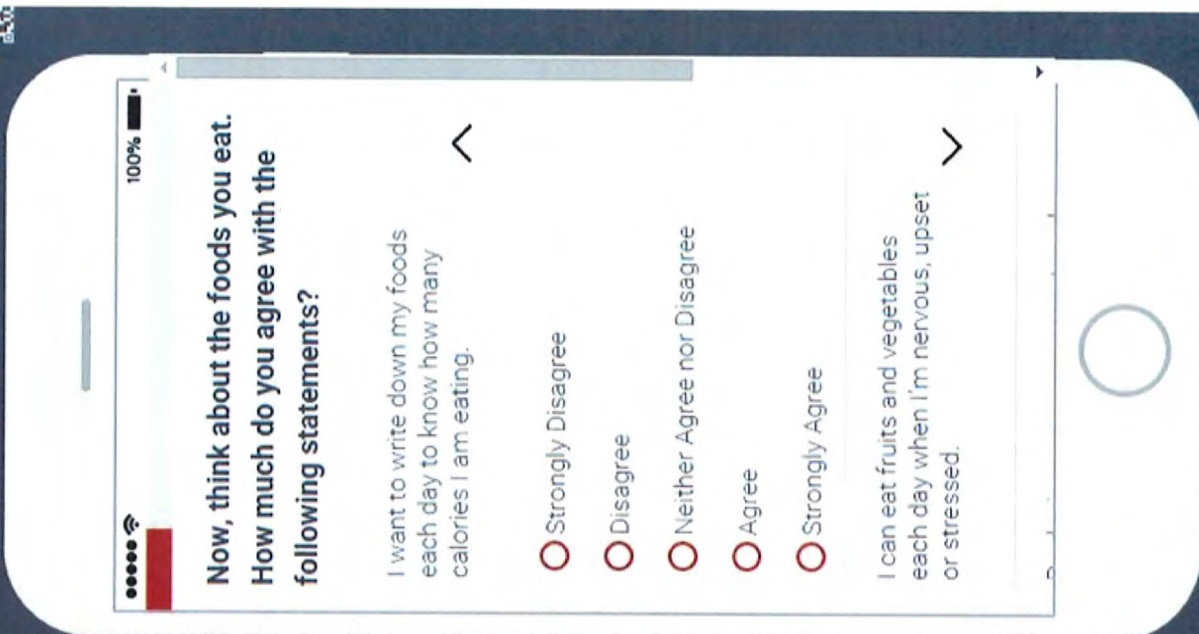
Now, think about the foods you eat. How much do you agree with the following statements?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I want to write down my foods each day to know how many calories I am eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can eat fruits and vegetables each day when I'm nervous, upset or stressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Replacing one sugar-sweetened beverage (such as sweet tea, soft drinks, fruit drinks or sports drinks) a day with water will help me lose weight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating fruits and vegetables is needed for good health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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For the next few questions, think about how sure you are of the following statements.

	Not Sure At All	Not Sure	Neither Not Sure	Sure	Extremely Sure
I know how to set goals to increase my physical activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can have fruits and vegetables when I am in a rush.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can eat 5 servings of fruits and vegetables most days.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can eat high fiber foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how many calories I should eat each day to manage my weight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can select foods from all food groups that are rich in nutrients and lower in calories (such as fruits and vegetables, whole grains, lean meats, low-fat dairy).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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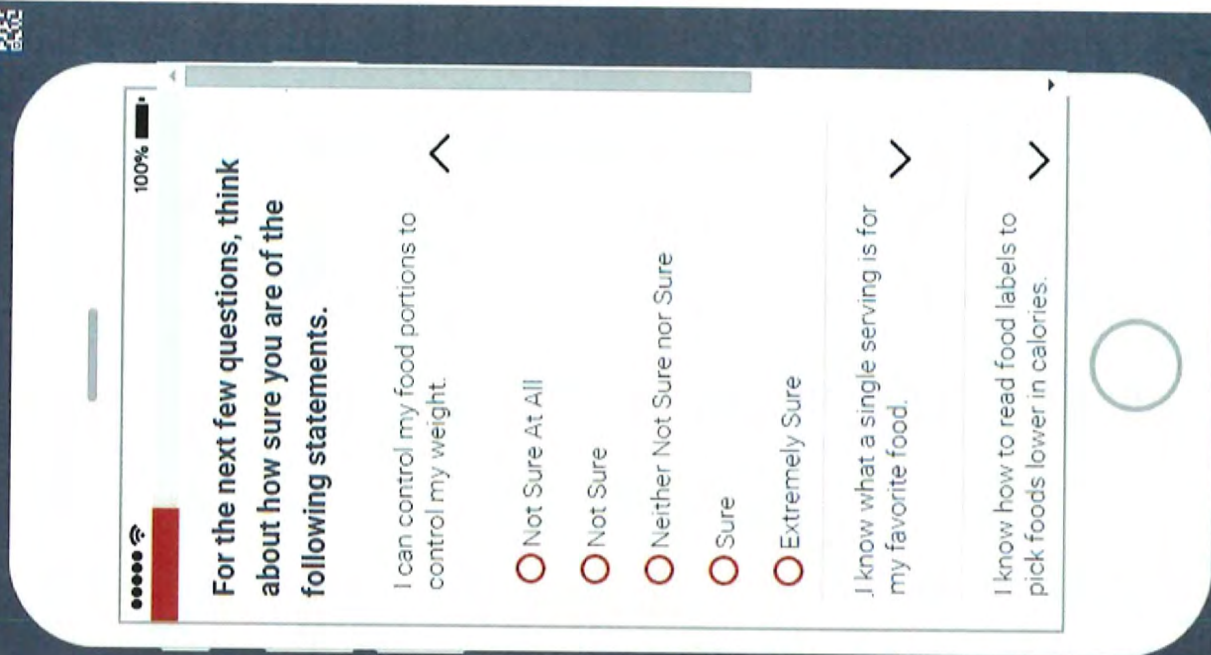
>

For the next few questions, think about how sure you are of the following statements.

	Not Sure At All	Not Sure	Neither Not Sure nor Sure	Sure	Extremely Sure
I can control my food portions to control my weight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what a single serving is for my favorite food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to read food labels to pick foods lower in calories.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know I can make small changes in my eating to make my health better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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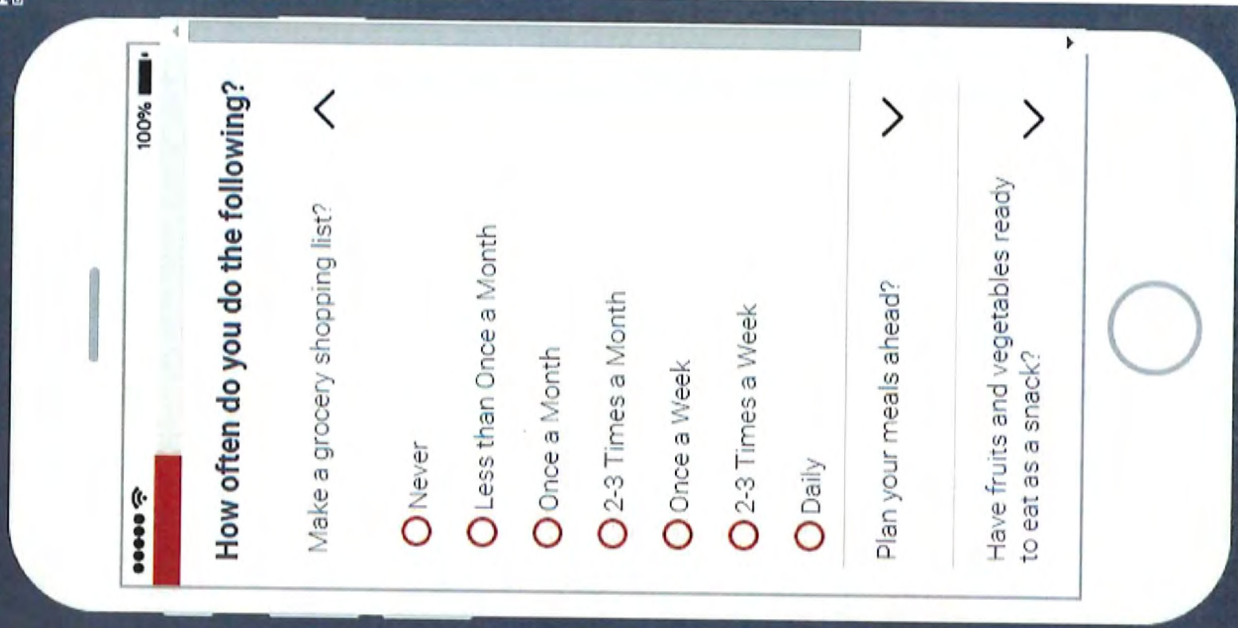
How often do you do the following?

	Never	Less than Once a Month	Once a Month	2-3 Times a Month	Once a Week	2-3 Times a Week	Daily
Make a grocery shopping list?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plan your meals ahead?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have fruits and vegetables ready to eat as a snack?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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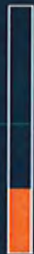
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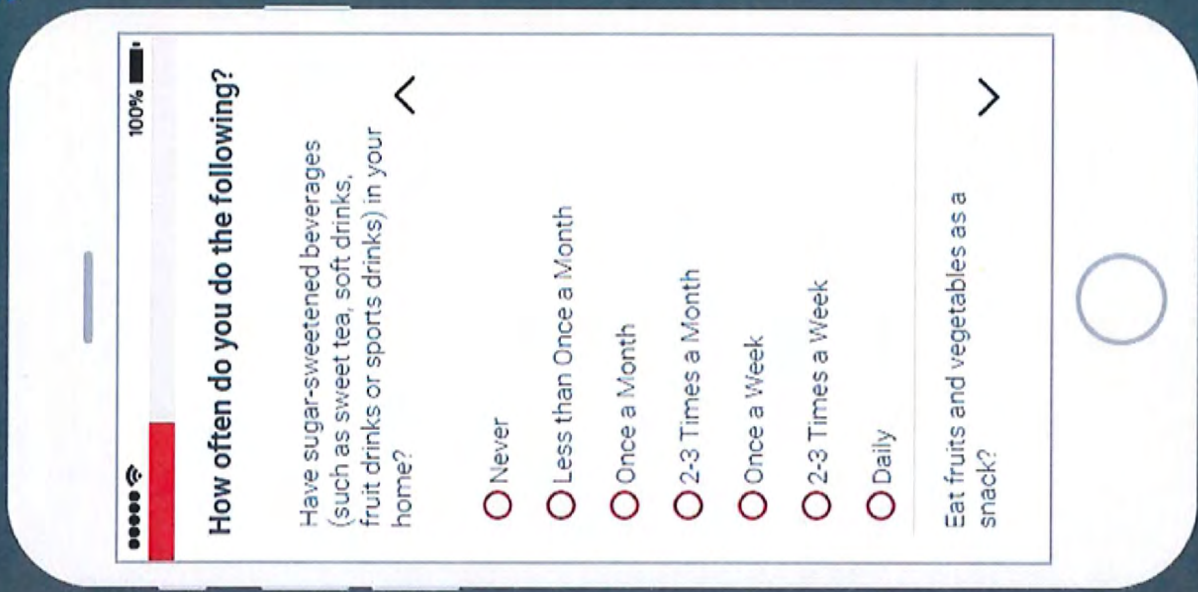
How often do you do the following?

	Never	Less than Once a Month	Once a Month	2-3 Times a Month	Once a Week	2-3 Times a Week	Daily
Have sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks) in your home?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eat fruits and vegetables as a snack?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drink water instead of sugar-sweetened beverages (such as sweet tea, soft drinks, fruit drinks or sports drinks)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Respond "yes" or "no" to the following questions.

Yesterday, I exercised 30 minutes.

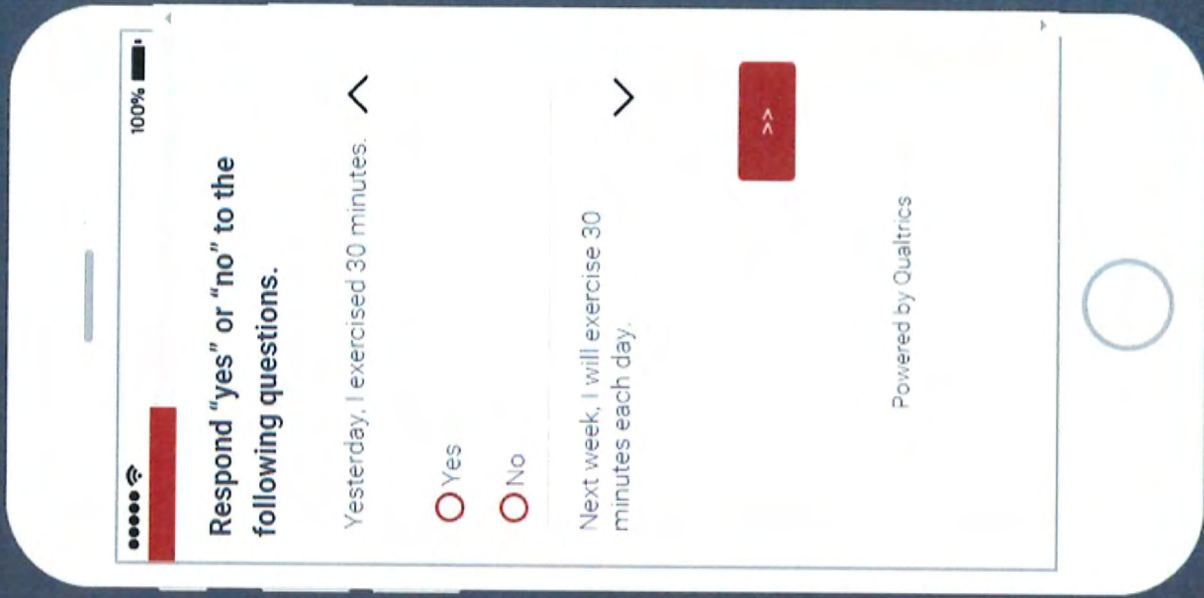
Next week, I will exercise 30 minutes each day.

Yes

No



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Respond "yes" or "no" to the following questions.

- I know the number of steps I walked yesterday.
- Next week, I will walk 500 more steps each day.
- Next week, I will write down my steps each day.

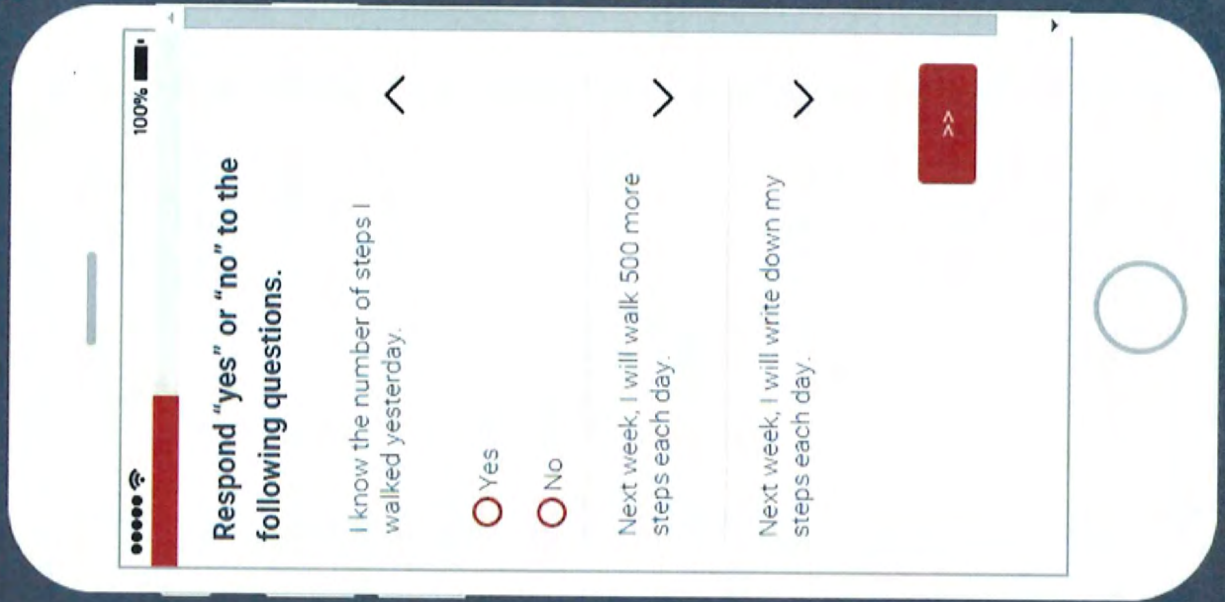
Yes

No

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Respond "yes" or "no" to the following questions.

Yesterday, I wrote down what I ate and drank.

Next week, I will write down what I eat and drink each day.

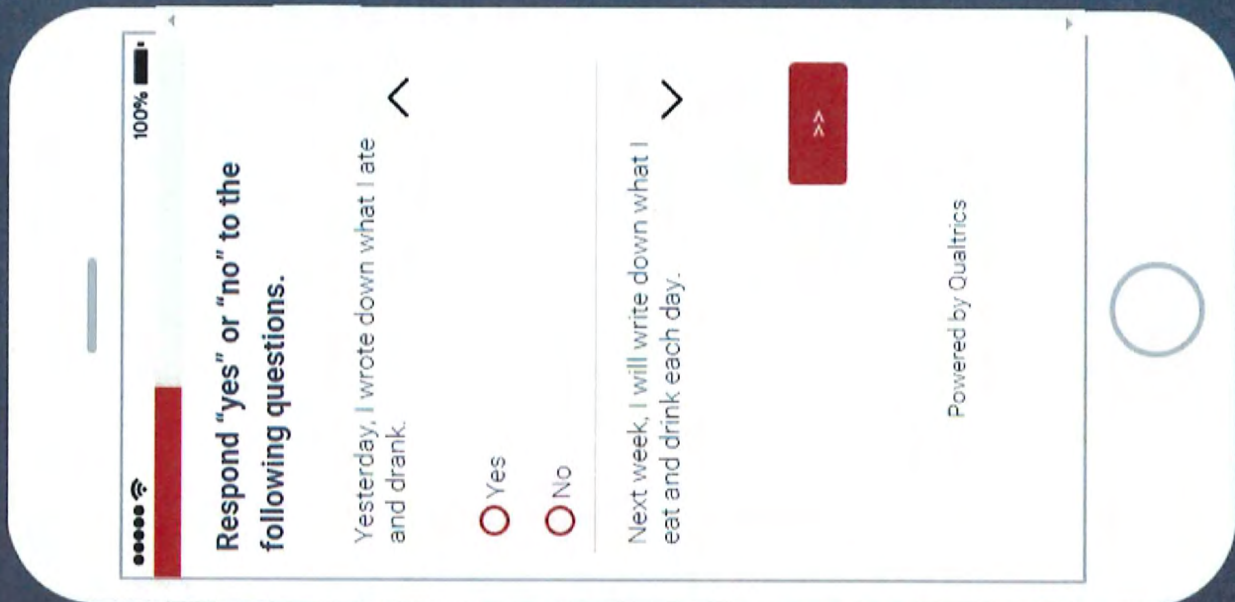
Yes

No

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Now, think about the foods you usually eat and drink.

How many servings of fruits do you eat each day?

(A serving of fruit is an apple or banana, a small bowl of grapes, or 3 tablespoons of canned fruit)

How many servings of vegetables do you eat each day?

(A serving of vegetables means 3 heaped tablespoons or green or root vegetables like peas, baked beans, or sweet corn; or a medium bowl of salad (lettuce, tomato, etc.)

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100%

Now, think about the foods you usually eat and drink.

How many servings of fruits do you eat each day?

(A serving of fruit is an apple or banana, a small bowl of grapes, or 3 tablespoons of canned fruit)

How many servings of vegetables do you eat each day?

(A serving of vegetables means 3 heaped tablespoons or green or root vegetables like peas, baked beans, or

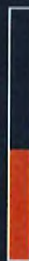


Now, think about the foods you usually eat and drink.

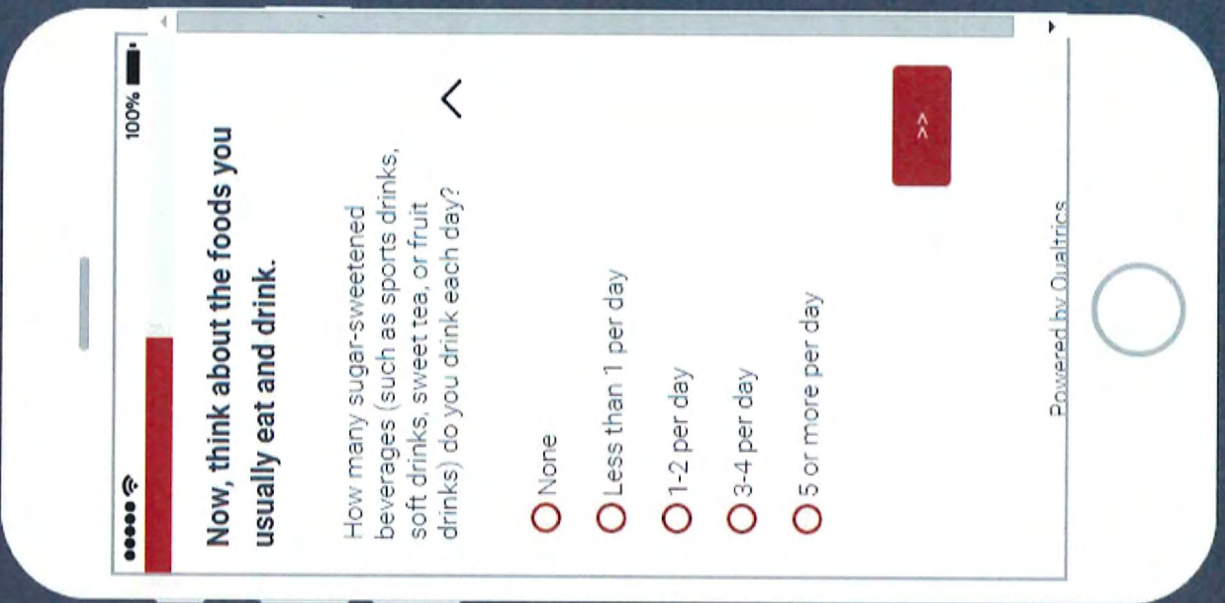
How many sugar-sweetened beverages (such as sports drinks, soft drinks, sweet tea, or fruit drinks) do you drink each day?

- None
- Less than 1
per day
- 1-2 per day
- 3-4 per day
- 5 or more per
day

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Think about the foods you usually eat and drink.

How often do you eat high-fat meats (such as hot dogs, bologna, bacon, sausage, pepperoni, BBQ or fried chicken)?

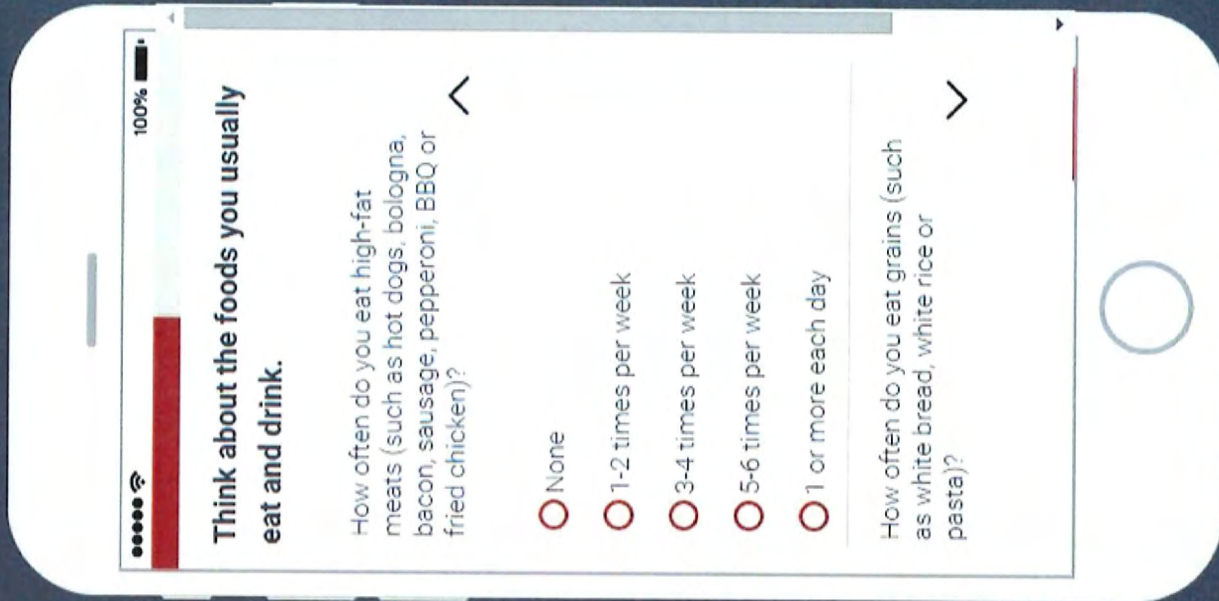
How often do you eat grains (such as white bread, white rice or pasta)?

None	1-2 times per week	3-4 times per week	5-6 times per week	1 or more each day
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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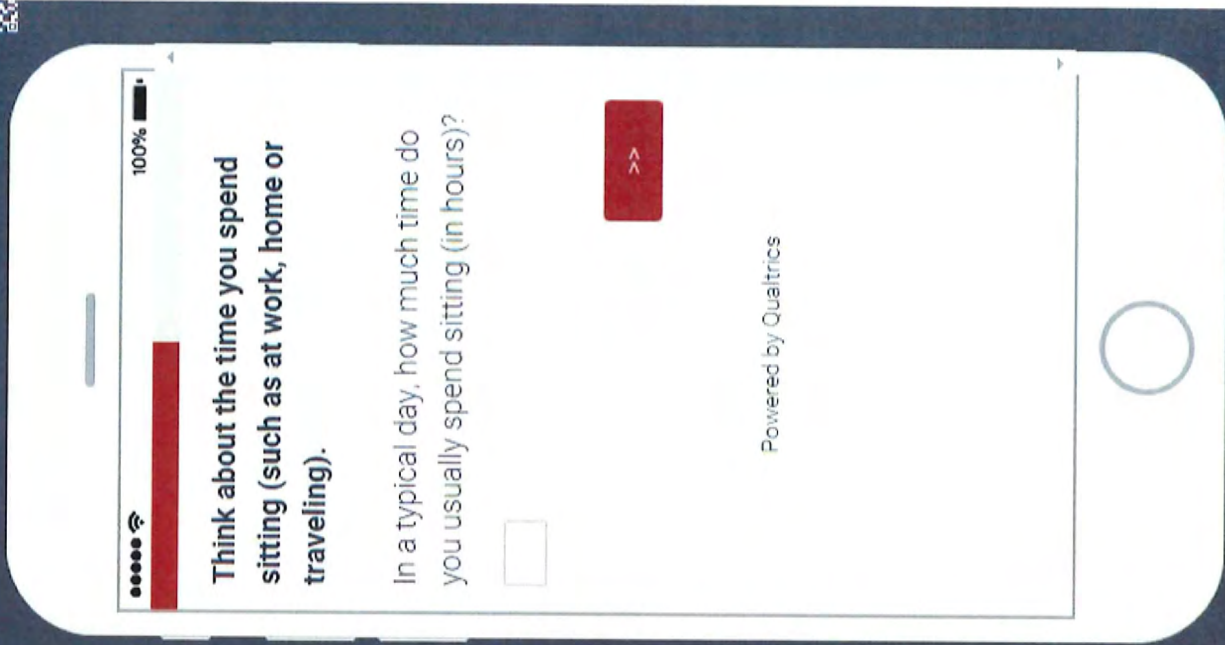


Think about the time you spend sitting (such as at work, home or traveling).

In a typical day, how much time do you usually spend sitting (in hours)?



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Think about the time you spend sitting (such as at work, home or traveling).

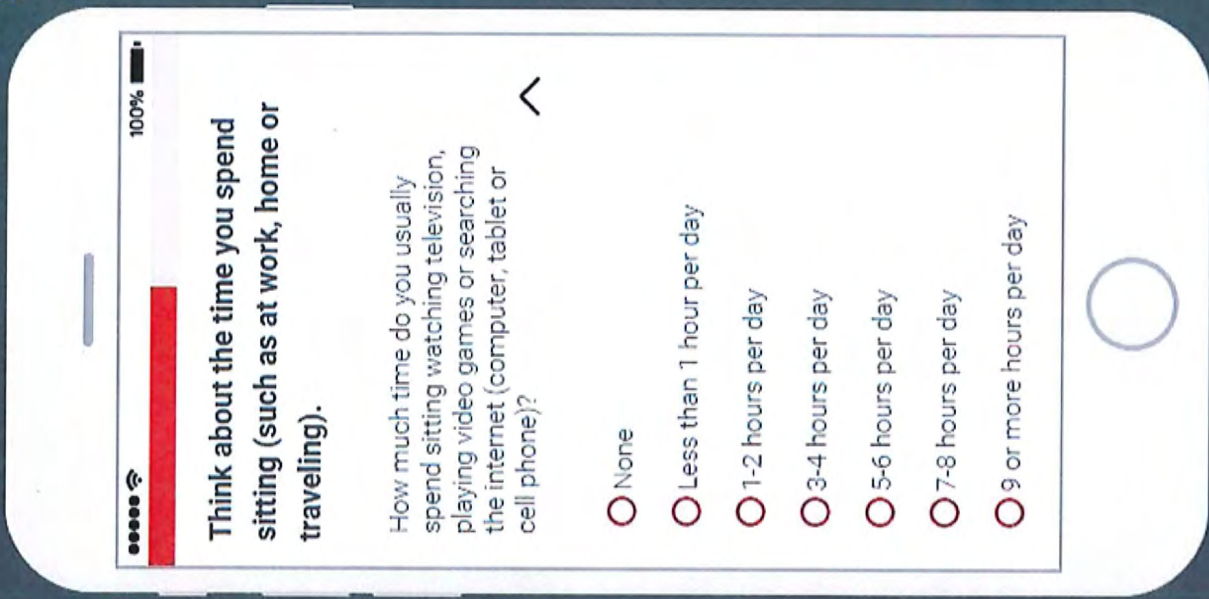
How much time do you usually spend sitting watching television, playing video games or searching the internet (computer, tablet or cell phone)?

- | | | | | | | | | | | | | | |
|------|-----------------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------------|-----------------------|
| None | <input type="radio"/> | Less than 1 hour per day | <input type="radio"/> | 1-2 hours per day | <input type="radio"/> | 3-4 hours per day | <input type="radio"/> | 5-6 hours per day | <input type="radio"/> | 7-8 hours per day | <input type="radio"/> | 9 or more hours per day | <input type="radio"/> |
|------|-----------------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------------|-----------------------|

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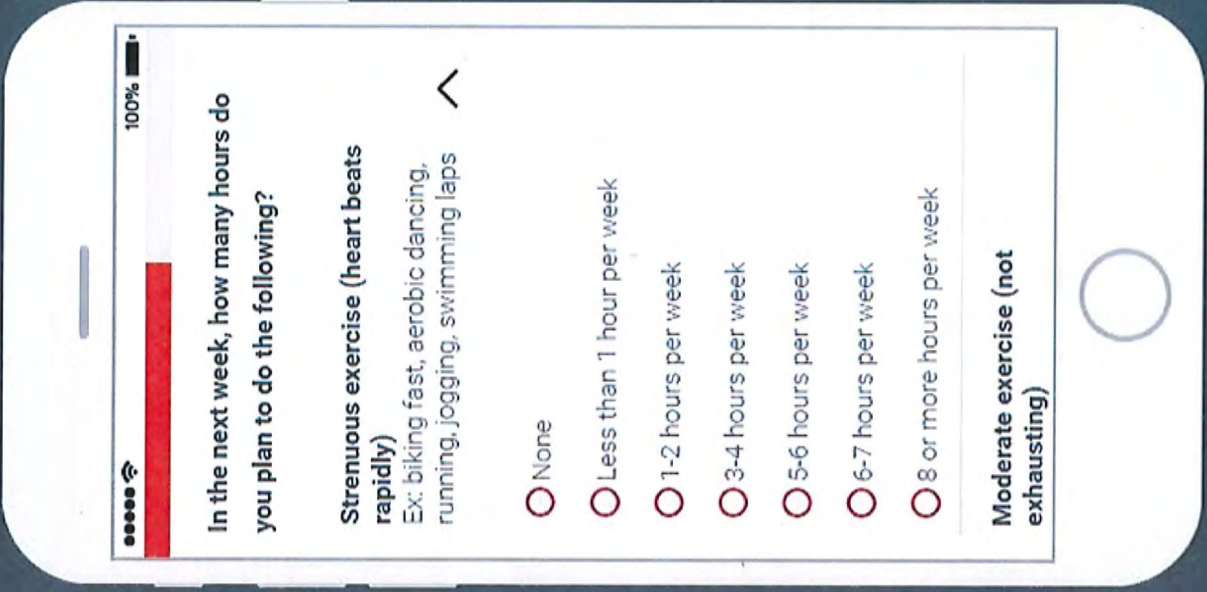
In the next week, how many hours do you plan to do the following?

	None	Less than 1 hour per week	1-2 hours per week	3-4 hours per week	5-6 hours per week	6-7 hours per week	8 or more hours per week
Strenuous exercise (heart beats rapidly) Ex: biking fast, aerobic dancing, running, jogging, swimming laps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moderate exercise (not exhausting) Ex: walking quickly, dancing, team sports, weight lifting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mild exercise (little effort) Ex: walking slowly, gardening, cleaning house, vacuuming, bowling, golf, fishing, yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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You are almost finished. This is the last set of questions. Make sure you complete the survey so you receive your pedometer.



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What is your age?



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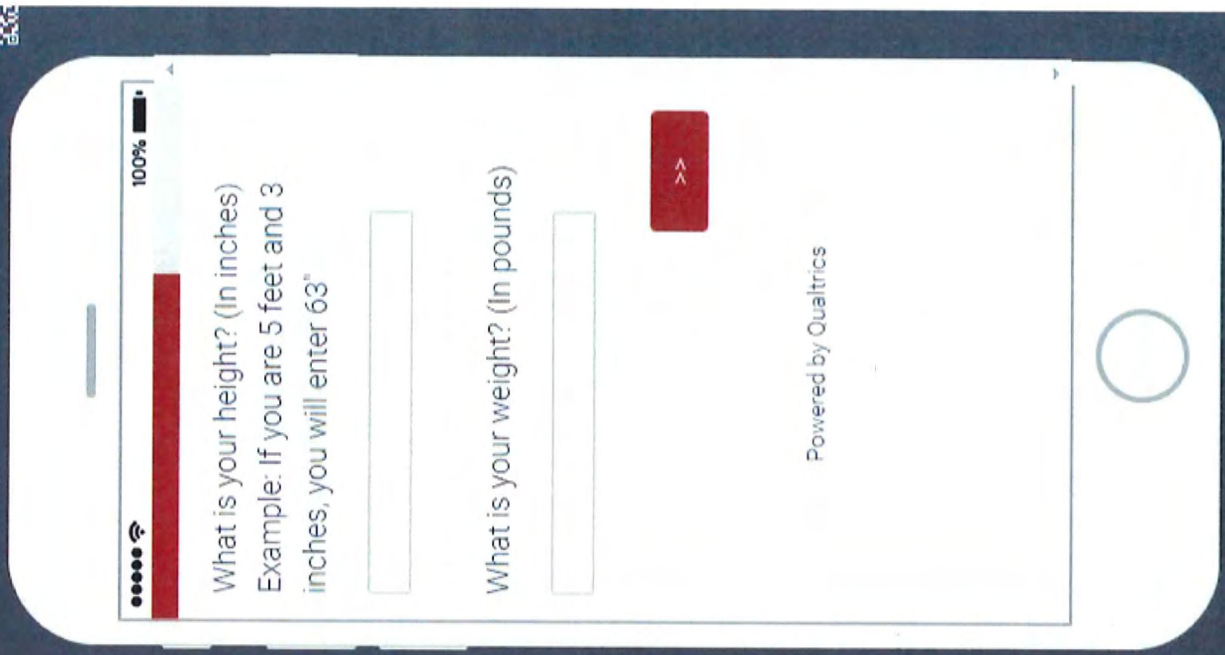
What is your height? (In inches)

Example: If you are 5 feet and 3 inches, you will enter 63"

What is your weight? (In pounds)



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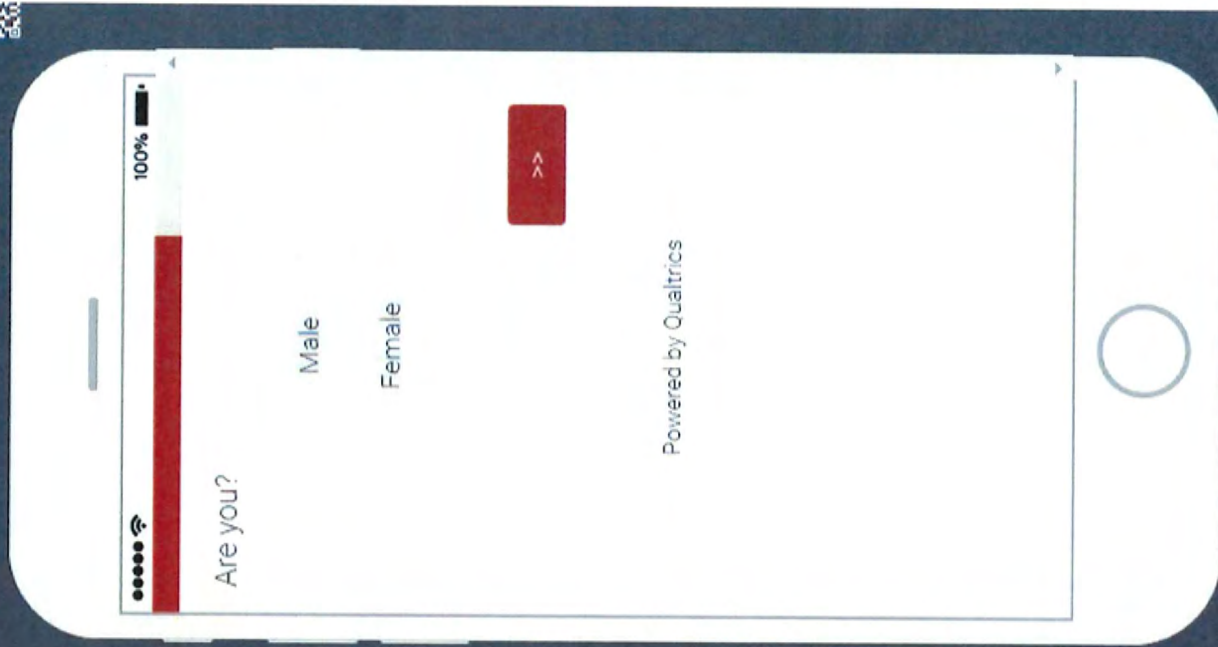
Are you?

Male

Female



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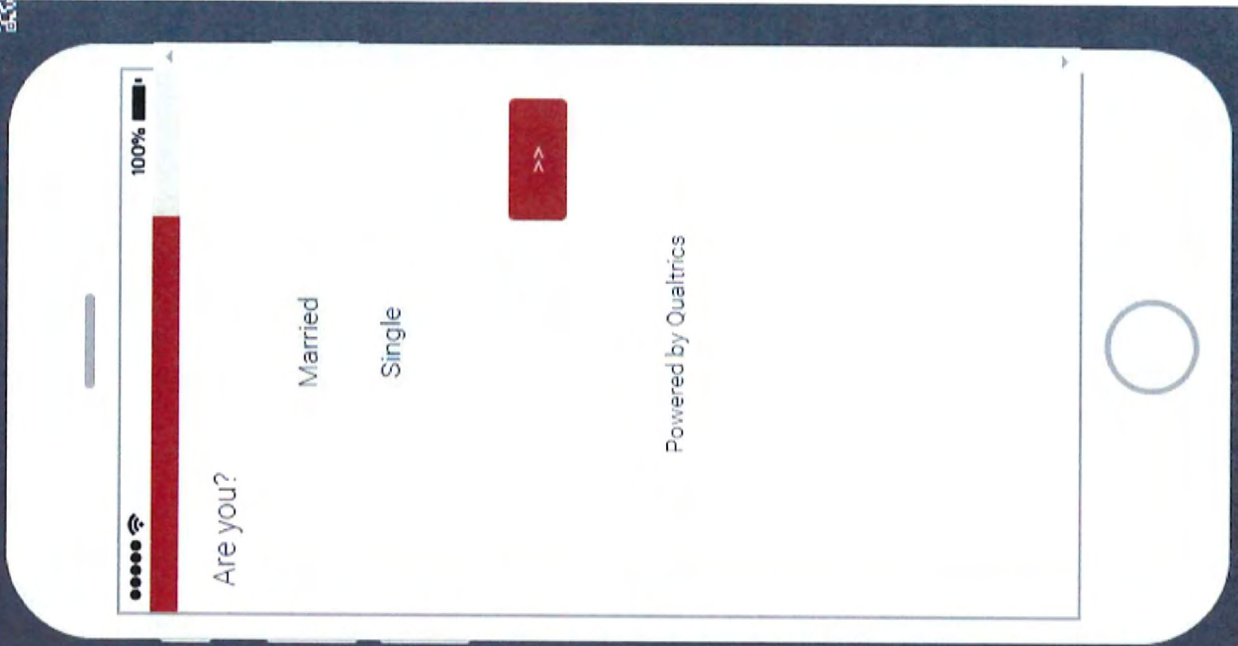
Are you?

Married

Single



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Are you Hispanic or Latino?

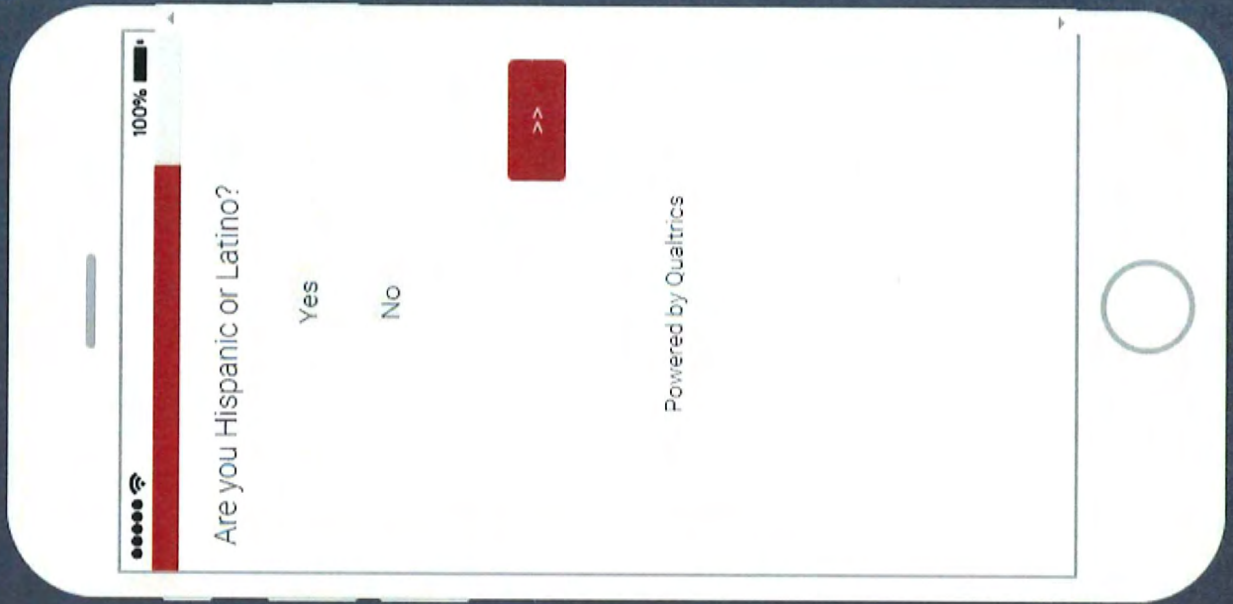
Yes

No



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What is your race? (Check all that apply)

- White/Caucasian
- Black/African American
- American Indian/Alaska Native
- Native Hawaiian or Other Pacific Islander
- Asian
- Other



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Including yourself, how many adults (over 19 years old) live with you?



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Including yourself, how many adults
(over 19 years old) live with you?



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How many children (18 years or younger) live with you?



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How much education do you have?

- Less than High School
- High School Graduate/GED
- 2 Year Degree/Some College
- 4 Year Degree or More

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For work, are you employed?

- Full-time
- Part-time
- Unemployed
- Retired



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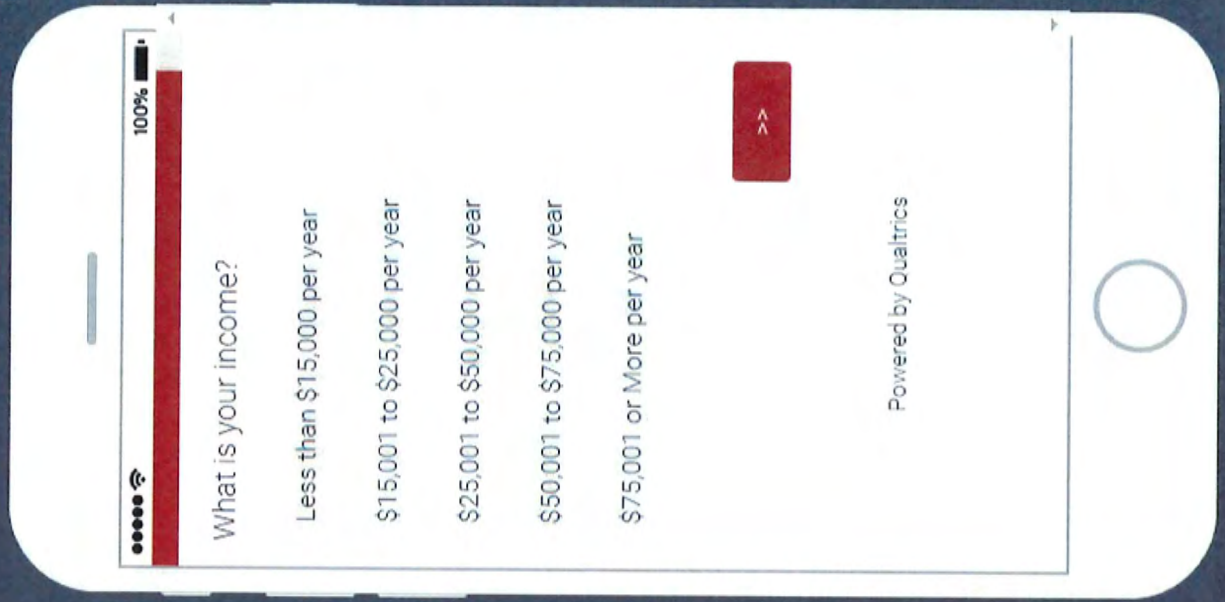


What is your income?

- Less than \$15,000 per year
- \$15,001 to \$25,000 per year
- \$25,001 to \$50,000 per year
- \$50,001 to \$75,000 per year
- \$75,001 or More per year



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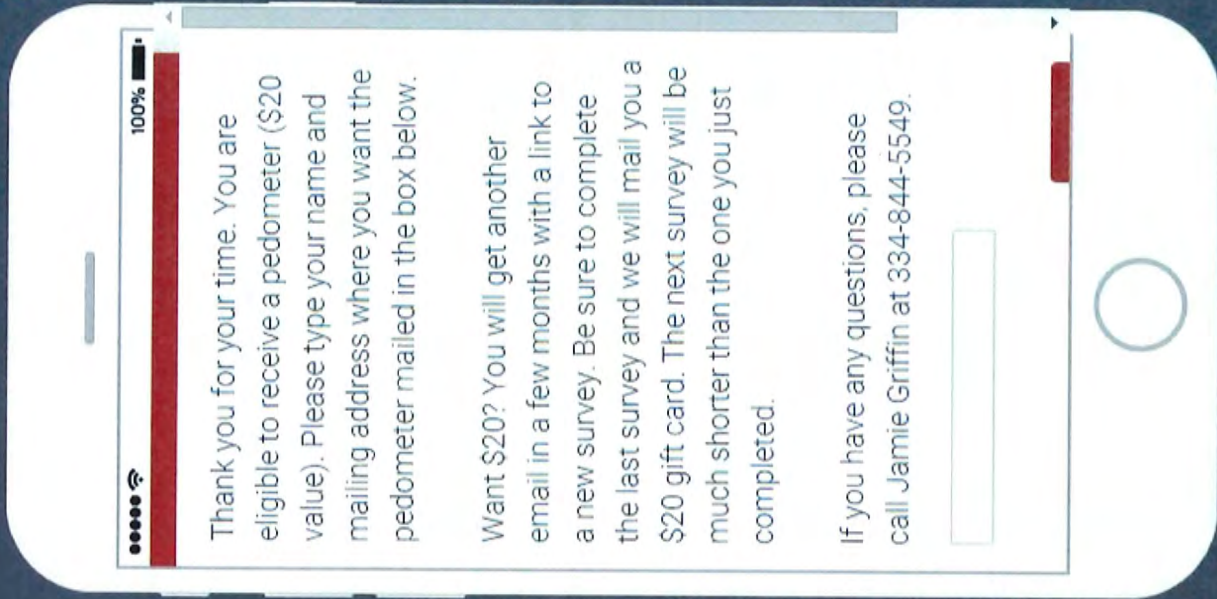
Thank you for your time. You are eligible to receive a pedometer (\$20 value). Please type your name and mailing address where you want the pedometer mailed in the box below.

Want \$20? You will get another email in a few months with a link to a new survey. Be sure to complete the last survey and we will mail you a \$20 gift card. The next survey will be much shorter than the one you just completed.

If you have any questions, please call Jamie Griffin at 334-844-5549.

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We thank you for your time spent taking this survey.
Your response has been recorded.



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