

THE EFFECTS OF A 10-WEEK WALKING PROGRAM WITH  
SOCIAL SUPPORT AND GOAL SETTING ON WALKING WITH AFRICAN  
AMERICAN/BLACK WOMEN

BY

MAREN E. TURNER

Submitted to the graduate degree program in Applied Behavioral Science and the Graduate  
Faculty of the University of Kansas in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy.

---

Chairperson: Edward K. Morris, Ph.D.

---

Stephen B. Fawcett, Ph.D.

---

Jomella Watson-Thompson, Ph.D.

---

Melicia Whitt-Glover, Ph.D.

---

Rosemary Chapin, Ph.D.

Date Defended: December 9, 2014

The Dissertation Committee for MAREN E. TURNER

Certifies that this is the approved version of the following dissertation:

THE EFFECTS OF A 10-WEEK WALKING PROGRAM WITH  
SOCIAL SUPPORT AND GOAL SETTING ON WALKING WITH AFRICAN  
AMERICAN/BLACK WOMEN

---

Chairperson: Edward K. Morris, Ph.D.

Date approved: December 19, 2014

## Abstract

African American/Black women have the highest rate of being overweight or obese compared to other groups in the United States. Increasing physical activity is one method used to help solve the complex problem of obesity. Six experiments evaluated the effects of using a 10-Week walking program with social support and goal setting to increase walking with 23 African American/Black women. The first experiment focused on increasing the intensity of steps with African American/Black stylists with social support from the researcher. Subsequent experiments focused on increasing the frequency of steps with social support from stylists to customers they recruited for the 10-Week program. All experiments used a multiple baseline design across participants embedded with a changing criterion design. Results showed that 71% of participants who completed the 10-Weeks met or exceeded their 10-Week goals.

*Keywords:* African American/Black, obesity, women, physical activity, walking

## Table of Contents

Abstract.....	iii
General Introduction.....	1
General Methods.....	22
Experiment 1.....	44
Method.....	47
Results.....	55
Discussion.....	65
Experiment 2.....	73
Method.....	75
Results.....	84
Discussion.....	103
Experiment 3.....	112
Method.....	114
Results.....	119
Discussion.....	144
Experiment 4.....	148
Method.....	150
Results.....	156
Discussion.....	174
Experiment 5.....	177
Experiment 6.....	178
Method.....	180
Results.....	184
Discussion.....	203
General Discussion.....	213
References.....	234
Appendices.....	248

African American/Black (AA/B) women have the highest rate of overweight as well as obesity of any group in the United States, placing them at a disproportionately higher risk of developing diabetes, arthritis, cancer, high blood pressure (HBP), and other diseases related to obesity (Department of Health and Human Services [DHHS], 2010). Approximately 80% of AA/B women are overweight or obese and 36% meet recommended levels of physical activity (PA). Being overweight (e.g., BMI >25) as well as being obese (e.g., BMI >30) can be caused by a combination factors, including behaviors such as overeating, that create an energy imbalance for an extended period time, which means more calories are consumed than calories are burned.

Physical activity is defined as “Any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level” (Centers for Disease Control and Prevention [CDC], 2014). For healthy adults, at least 30 minutes of moderate intensity physical activity (MPA) for five days a week, 20 minutes of vigorous intensity physical activity (VPA) for three days a week, or a combination of both is recommended, in addition to routine daily activities (Haskell et al., 2007). Accumulated PA minutes should be done in at least 10 continuous minutes, sometimes called bouts (Department of Health and Human Services [DHHS], 2014). In addition to MPA, adults should engage in muscle and bone strengthening activities at least two days a week. Most American adults do not engage in PA with sufficient regularity, but participation is lowest for AA/B and non-white Hispanic women compared to men and other women. Also, in addition to insufficient PA, more than 60% of adults engage in sedentary behavior (SB), defined as engagement in activities that do not increase energy levels above 1.5 metabolic equivalents of task (MET). Some individuals engage in the recommended amount of PA, but spend the bulk of the day in sedentary activities such as working at a computer or watching television, which means they are still considered sedentary ((Kim et al.,

2013). Ethnic minorities, older adults, and women are more sedentary than the general population (CDC 2014).

Physical activity should be part of a lifestyle, meaning that PA should be integrated into household, occupational, school, and leisure activities, in addition to having a healthy diet, sufficient sleep, and water consumption (e.g., CDC, 2014; Glickman, Parker, Sim, Cook, & Miller, 2012). Physical activity is not only associated with weight loss benefits, but it also helps reduce symptoms of depression and anxiety, reduce high blood pressure for some women with hypertension, enhance the effects of estrogen replacement, and control symptoms associated with arthritis (CDC, 2014).

Walking is one of the most popular and acceptable forms of PA for adults, including AA/B women (Lee, Mama, McAlexander, Adamus, & Medina, 2011). Walking is convenient, low maintenance, low cost, familiar, and occurs across the lifespan. According to the CDC (2014), walking is the most commonly reported PA for adults, and the most frequently cited for adults who meet the requirements for engagement in PA. As with any form of PA, walking may increase with social support and goal setting.

The purpose of this research is twofold. First, efforts made are to expand the limited knowledge of PA with AA/B women (e.g., Fitzgibbon et al., 2012). The literature on behavioral interventions to increase walking with AA/B women is relatively small compared to literatures with other adult populations (Foster et al., 2011). Second, the research is, arguably, the first attempt to use a within-subjects or single subject design PA research with AA/B women. The research will therefore contribute to both mainstream and applied behavior analysis (ABA) literatures of PA interventions.

This paper begins with background information relevant to the current research. First, a summary of factors that interact to impact the health status of the general population will be provided, followed by a representative review of studies that investigate the effects of population and group interventions used to understand, prevent, and manage obesity and related diseases. Second, a summary of risk factors that interact to impact the health status of individuals is provided, followed by a representative review of studies that investigate the effects of interventions with individuals. Third, information is provided on how hair care issues for women in the AA/B community impact PA, and how stylists can help improve the overall health status of AA/B women.

## **BACKGROUND INFORMATION**

### **Determinants and Risk Factors for Health**

According to Healthy People 2020, health initiatives launched and updated every 10 years by DHHS since 1990, the health status of populations is determined by several factors, including (a) genes and biology, (b) health behaviors, (c) social environment or characteristics, (d) physical environment or total ecology, and (e) health services or medical care. Genes and biology (e.g., gender, age) and health behaviors (e.g., smoking, sedentary behaviors) are responsible for 25% of a person's health status. The remaining three categories—social environment (e.g., discrimination, gender), physical environment or total ecology (e.g., geographic community), and health services or medical care (e.g., access to affordable, high quality care—account for the remaining 75% and, together, are known as the “social determinants of health.”

According to the World Health Organization (2014), “...social determinants of health are the conditions in which people are born, grow, live, work, and age. These circumstances are shaped by the distribution of money power and resources at global, national, and local levels.”

The social determinants of health are organized under five general domains: (a) economic stability, (b) education, (c) health and healthcare, (d) neighborhood and built environment, and (e) social and community context. The social determinants interact and impact health for the general population. However, for the purposes of this paper, specific information about AA/B adults is provided under each domain.

### **Social Determinants**

**Economic stability.** Home ownership is a key to stability and an anchor for financial security. Despite policies and legislation prohibiting discrimination, a history of racial and gender discrimination have negatively impacted the rate of home ownership for AA/B and Hispanics. Both groups have the lowest rate of home ownership, with less than 50% owning their homes (Joint Center for Political and Economic Studies, 2014). Regardless of their educational level, AA/B women are more likely to receive subprime loans and high-cost mortgages. African American/Black women are more likely to be poor than other women and to work in low paying service occupations (Cawthorne, 2008; National Poverty Center, 2010; Wilson, 2004). As a result, they may spend more time working multiple jobs to make ends meet, and consume more fast food while away from home, which is typically high in calories and low in fiber (Blanchard, 2009; Kumanyika, Wilson, & Guilford-Davenport, 1993). The problem of consuming fast food is exacerbated by the overall problems with food security. According to Feed America (2014), 25% of AA/B households do not have enough food each day to cover basic nutritional needs, with AA/B households being twice as likely to face food insecurity than non-Hispanic white households.

**Education.** Education is a key determinant of health and a strong predictor of health across the lifespan (Healthy People 2020). The economic instability or poverty experienced during



childhood pose challenges to memory and physical health that negatively impact education access and success throughout adulthood (Aud, Fox, & Ramani, 2010; Shonkoff & Phillips, 2000). According to the US Department of Education (2005), AA/Bs have made great strides in educational attainment in the three measures of literacy (e.g., prose, document, quantitative). Despite this, the rate of graduation from college for AA/B women has not increased at the same rate for women in other groups. Twenty-one percent of AA/B women have degrees compared to 30% of non-Hispanic white women (*Black Demographics*, 2013; *Journal of Blacks in Higher Education*, 2014; US Census Bureau, 2013).

**Health and healthcare.** A disproportionate number of AA/Bs do not have access to quality and affordable healthcare, leading to health disparities. Twenty-eight percent of AA/Bs have no primary care physician compared to 19% of non-Hispanic white adults, and only 25% of AA/B adults are insured (Center for American Progress, 2013). Without access to primary and other health services, the health of AA/B women is undermined as they usually cannot receive preventive and other needed services. Lack of access to primary care is particularly devastating for AA/B women because they are more likely to be obese, suffer from hypertension, and have high mortality rates from breast cancer than women from other groups. Health literacy is also a problem; only 12% of adults are proficient at health literacy and the numbers are even smaller for AA/B adults (e.g., Healthy People, 2020). Low health literacy jeopardizes implementation of health plans and other problems that lead to higher levels of obesity and other poor health outcomes (James, Harville, Efunbumi, & Martin, 2014; Weekes, 2012).

**Neighborhood.** A disproportionate number of AA/Bs are less likely to live in neighborhoods that support healthy living (Kumanyika et al., 2007). The quality of housing conditions may vary according to race, with AA/B families more likely to live in conditions with

chemical (e.g., lead) and biological (e.g., dust mites) exposure. Low income, predominately AA/B neighborhoods also have an overabundance of liquor stores with few if any supermarkets that provide fresh and affordable fruits and vegetables: These areas are known as “food deserts.” Advertisers target AA/B communities to encourage residents to consume fast food and liquor. Moving from a poor neighborhood to one of a higher socioeconomic level may lessen the prevalence of morbidity and obesity among AA/B women with low incomes (Ludwig et al., 2011). Obesity is more prevalent in neighborhoods where crime is rampant. African American/Black women may be concerned with neighborhood threats (e.g., illegal drug use) and choose to remain in the relative safety of their homes rather than become victims while walking in their neighborhoods. They also face problems inside of the home and may be victims of domestic violence. African American/Black women may be less likely to leave a violent relationship because of insufficient work opportunities, mistrust of the criminal justice system, and insufficient income.

**Social and community context.** Social cohesion, defined as membership in and attitude or loyalty to a group, is an important factor in determining the health of people across the lifespan (e.g., Friedkin, 2004). Residents in highly segregated AA/B neighborhoods, which are typically less affluent, may have a sense of less social cohesion and capital resulting in less civic participation (e.g., membership in civic groups, voting; Pew Research Center, 2009). Cohesion for African American/Black women with the larger society, for example, is negatively impacted not only due to racism but also sexism (Gibbons et al., 2014). Also, the effects of incarceration can negatively impact health of AA/B women, including the spread of infectious diseases when spouses or mates return home from being incarcerated in addition to the stigma and stress associated with having an incarcerated family member (Schnittker, Masoglia, & Uggen, 2011).

In summary, the health status of the general population is determined by the interaction of genetic makeup, health behaviors, and the social determinants of health. African American/Black women as members of the general population experience economic, education, health, neighborhood environment and social cohesion disparities. The problem of obesity must be understood within the context of how these social determinants interact and are experienced by AA/B women.

### **Relevant Literature Review of Population and Group Research**

**Large population.** The U.S. Department of Health and Human Services (DHHS) “is the government’s principal agency for protecting the health and well being of all Americans.” The DHHS establishes goals and objectives used by federal, state, and private entities in pursuit of public health. In 2010, the DHHS announced its strategic plan for the next 10 years, which includes nearly 600 public health goals and objectives included under the framework of Healthy People 2020.

The federal government, along with state and local governments, foundations, and private industry fund research to assist with achieving the goals set by the DHHS. Corresponding population health studies number in the thousands. Studies with significant findings that contribute to the improvement of public health include an examination of the effects of genetics (e.g., Meigis et al., 2014), health behaviors (e.g., Willig et al., 2014), and the social determinants of health on obesity (e.g., Ghosh-Dastidar et al., 2014).

Despite the significance and positive impact of individual studies on improving public health, is still marginal overall progress in solving public health concerns, including the problem of obesity; only 19% of the DHHS Healthy People 2010 goals and objectives were met. Population studies and interventions have not solved the problem for a number of reasons,

including poorly coordinated efforts between public (e.g., governmental) and private (e.g., consumer, employers) entities (Fawcett et al., 2011), a lack of novel and innovative strategies to implement the 2020 goals (Arya et al., 2014; Pappas-Rolgh & King, 2014), and the need for additional organizations to help increase awareness of health issues (e.g., Egan et al., 2014). Nonetheless, some progress has been made since 1990 and 2010, with the addition of 13 new topic areas (e.g., older adults), advancements in evidence-based resources and tools for public health interventions (e.g., sharing best practices), and reducing health disparities through a focus on the determinants of health as part of the framework of Healthy People 2020.

In summary, despite the significance of some population studies, poor outcomes remain a problem for implementing the findings and improving population health. Insufficient or non-existent collaboration between entities leading to duplicative efforts and gaps, as well as a lack of awareness of health issues by consumers are just some of the issues that should be resolved. Solving the problem of obesity will require science-based interventions resulting from research studies that address the personal, economic, and environment of individual and public health (Healthy People 2020).

**Groups.** Group studies, the most common research methodology used in the behavioral sciences, continue as a viable way to demonstrate experimental control and produce outcomes that improve public health, depending on the problem under investigation (e.g., uncovering norms to develop social policies; Gast, 2010, p. 9). Randomized group designs as opposed to one group designs allow for control of secondary variance, such as environmental or subject bias, collectively known as internal validity, and experimentation factors, also known as external validity.

As an integral part of population studies, group studies have been used to test the effects of interventions to increase PA and decrease sedentary behaviors as contributors to obesity. A variety of strategies have been used, including counseling, group sessions, self-monitoring, education classes, and faith-based (e.g., using spiritual themes) as well as faith-placed (e.g., using spiritual locations) interventions (Lancaster et al., 2014). For example, Onubogu et al. (2014) evaluated a self-management intervention to decrease obesity. They used a single, pre/post group design with a group of 19 African American/Black adults; 73% were female with a mean age of 45. The intervention focused on counseling and development of an action plan with six categories of self-management of contributors to obesity. The findings suggested that self-management is essential to helping to curb weight gain. Steinberg et al. (2014) used a 12-month self-monitoring RCT with 185 AA/B women age 25-44, using self-monitoring (e.g., no sugary drinks, 10,000 step goals), e-Health counseling, and membership in a YMCA, targeting weight gain prevention. Women in the intervention who adhered to at least 80% of e-Health monitoring calls and goals lost significantly more weight compared to the usual care group.

Group studies with AA/B women have shown some promise but are also plagued with a number of concerns. For example, systematic reviews of health promotion group interventions used with AA/B women include the following: (a) In a review of 27 faith-based interventions, Lancaster et al (2014) reported that approximately two thirds (70%) of the studies had significant outcomes in reducing weight. Recommendations, based on gaps and issues identified in the literature included calls for additional clarification to determine the key faith-based components of successful interventions (e.g., what does the role of individual spirituality play), use of additional multi-level interventions to determine which interventions are most useful, and further exploration of the role of lay health advisors in effective faith based interventions. (b) In a

review of 16 intervention studies, Whitt-Glover et al. (2014) reported that approximately 56% of the randomized group studies reviewed showed intervention effects that improved fitness.

Recommendations based on gaps or issues identified in the literature included a call for more consistently rigorous study designs (e.g., RCT), clarification of the range of theoretical frameworks used to develop interventions and evaluate results, a component analysis of cultural adaptations used to effect change in package interventions, and additional post-intervention follow-up procedures. (c) In a review of 19 intervention studies to increase PA and good nutrition, LeMack et al. (2013) reported that all studies demonstrated significance in various clinical outcomes for AA/B adults, including improved BMI and high blood pressure, though improvements in BMI remained in the obese range for individuals. Recommendations, based on gaps or issues identified in the literature included incorporation of theoretical models appropriate for health related issues, more vigorous research designs, additional research to determine the cost and sustainability of lifestyle interventions, and further substantiation of the link between intervention induced diet and PA changes and related disease risk biomarkers to help reduce population health disparities.

Added to these reviews is the author's 2013 critical review of 36 studies using walking interventions to increase PA with AA/B. The review used the seven dimensions of applied behavior analysis (ABA) to "evaluate the relevance, quality, and effectiveness of empirical intervention research used to increase walking with AA/B women." In general, studies did not meet the standards of the dimensions (e.g., problems with social validity, experimental control issues). Several concerns were also raised (e.g., high attrition rates, single-group designs). The strengths included culturally relevant designs, use of multiple measures for validation of primary data (e.g., measures to support pedometer reports), and use of research grade pedometers.

Additionally, interventions that did not use walking were mentioned in the review. They included one cultural dance class (e.g., Murrock & Madigan, 2008); nine studies using group counseling sessions (e.g., Banks-Wallace & Conn, 2005); four studies using individualized counseling sessions (e.g., Williams et al., 2004); and seven studies using yoga, or other exercise classes (e.g., Karanja, Stevens, Hdis, & Kumayika, 2002).

In summary, a relatively small group of studies have used interventions to increase PA and decrease SB in AA/B women. While many studies reported significant outcomes, one limitation of group designs is that statistical effectiveness is based on group findings and not on the usefulness of the independent variable to individuals. The literature using group designs with AA/B women is plagued with methodological, procedural, and other concerns related to group studies. Recommendations have included a call for more rigorous study designs, additional strategies to reduce attrition, and a component analysis of effective interventions that use faith-based and other culturally adaptive strategies.

### **Relevant Literature Review on Single Subject Research**

Single-subject research is useful in aiding our understanding of ways to improve public health, and despite the term single- or within-subject the design can be used with small samples (Kazdin, 2011, p. 371). Common designs include reversals and multiple baseline (MBL) designs. In a basic reversal, there is a no-treatment baseline period to observe the target behavior (A), followed by the introduction of the IV (B), and return to baseline or withdrawal of the IV (A) for an A-B-A sequence to determine if the IV was effective. A second common design, the multiple baseline (MBL) uses a series of A-B designs across settings, subjects, or behaviors. The introduction of the IV is introduced in a staggered application across two or baselines. The IV is introduced after the first baseline shows stabilization and is repeatedly introduced after

subsequent baselines also show stabilization. Experimental control is demonstrated in reversals and multiple baseline designs when behavior changes after the introduction of the IV. Single-subject research, for example, provides a basis for understanding the effect of an IV in clinical settings. Single-subject research is limited (a) if there is more than one IV involved in a treatment program, (b) when there is the risk of sequential or order effects, and (c) when the sample subject is not representative of the population the results can not be generalized (Gast, 2010, p. 187). As with population and group studies, an understanding of individual risk factors is important in designing single-subject interventions because individual risk factors increase the likelihood of developing a disease, such as obesity.

**Risk Factors.** Before reviewing studies that have used single subject or research focused on individuals are examined, an understanding of the interaction and complexity of individual risk factors for health is needed. Individual risk factors for health are common among individuals regardless of gender, ethnicity or race. For the purposes of this paper, a focus is placed on the health issue of obesity.

The specific individual risk factors for obesity include (a) heritability, which can influence how fat is stored and the number of calories burned during PA (Delany et al., 2013; Hoed et al., 2013). (b) Family membership, because obesity and related diseases tend to run in families (CDC, 2014; Pettey et al., 2014). (c) Sedentary behavior which is a risk factor for several chronic diseases (BRFSS, 2014; National Institutes of Health [NIH], 2012; Kim et al., 2013). (d) Eating habits that lead to unhealthy weight gain (Brewer et al., 2003) (e) Smoking, which places individuals at risk for developing obesity, cancer, heart and lung disease, and low birth rate (NIH, 2012; Pulvers et al., 2014). (f) Pregnancy, which may increase the risk of gaining and retaining an unhealthy level of weight for some women (Kominiarek, 2014); (f) Insufficient



sleep as well as an excessive amount of sleep which can result in a lower metabolism and an increased appetite (Patterson et al., 2014). (g) Certain medications (e.g., antidepressants, beta blockers) that can lead to weight gain (e.g., CDC; Rathore et al., 2009); (h) Increased age as the risk of developing obesity increases the older you get (CDC, 2014); and (i) Health status, which can place adults at risk for developing obesity (Hillman et al., 2014). Physical inactivity and other factors and behaviors that contribute to obesity must therefore be understood as a complex interaction of determinants and individual risk factors (e.g., CDC, 2014; Emerson et al., 2014; WHO, 2014).

In summary, the health of populations and individuals are impacted by several factors, including genetic make-up, health behaviors, and the social determinants of health. Risk factors are common across individuals, but how they impact individuals may vary. The contribution of PA and SB to the problem of obesity must therefore be placed within the context of population and individual health to be understood. Now that a review of large population and group designs used to improve public health have been examined, a review of studies using within or single subject research is examined. Single subject research, as opposed to large population or group based research, allows for continuous assessment over time and a manipulation and replication of intervention effects over time. Outcomes are therefore not based on group findings but on individual differences.

**Individual.** Research in the recent behavioral literature has included interventions to increase PA, specifically walking, using goal setting, pedometers, heart rate monitors, accelerometers, and other measurement devices (Van Camp & Hayes, 2012). A review of studies using single-subject designs to increase PA with AA/B women was not found. A few studies

that examined the effects of PA interventions with other populations were retrieved from the literature.

A total of six studies were reviewed and listed in alphabetical order. Burgio et al. (1986) used a prompt-and-praise intervention to increase walking with a sedentary sample of eight adults between the ages of 69 years and 90 years in a nursing home. A baseline period consisted of interviewing staff to determine how often each participant walked and interacted with other residents. Participants were assigned individual ambulation goals and given opportunities to ambulate, independently or with assistance, to the lunch and dinner table, using prompts (e.g., your doctor advises you to walk more) and praise (e.g., encouragement from staff). A MBL design was used for experimental control and to evaluate the effects of the intervention. Six of the eight participants achieved or nearly achieved the maximum goal of 15ft. It is difficult to assess the effectiveness of the prompt-and-praise intervention without additional information. For example, ambulation may have been initiated for a number of reasons unrelated to prompts or praise offered by staff. Ambulation may have been based on the satiation levels of residents before coming to the dining area, the resident's health status (e.g., flu), residents could have a preference for one meal over the other, or ambulation may have been effective depending on the staffer (e.g., relationship, tone of voice) working a particular shift.

Farhney et al. (2010) used goal setting to increase walking with an arthritic sample of four adults between the ages of 64yrs and 84 years. During the baseline participants walked for five 20 minute sessions each week during the same time each day. Participants wore two pedometers and self-selected a goal for the number of steps they planned to walk based on baseline performance. A MBL across participants was used to demonstrate experimental control and evaluate the effects of the intervention. All participants maintained or exceeded average baseline

steps walked. It is unclear how the researcher hid step counts for participants during baseline. The procedures as listed only indicate that the number of steps walked was recorded but not revealed to participants to deter them from starting the intervention prematurely. It is important to have a full understanding of the procedures in order to replicate the study.

Holtgreffe et al. (2007) increased walking with a fibromyalgia/ arthritic sample of three people who were 35 years to 71 years. Participants were assigned to a pre-determined baseline period of either five, six, or seven weeks to decrease the amount of time participants had to wait to begin the eight week intervention and to prevent attrition. The intervention consisted of a walking program three days a week with self-paced as well as self-selected walking goals that gradually increased based on each participants level of pain tolerance during the course of the intervention. An MBL design across participants was used for experimental control and to evaluate the effects of the intervention. Physical activity increased for all three participants. Unfortunately, there was no assessment of social validity and one participant indicated she did not intend to continue the walking program after the research ended.

Kurti and Dallery (2013) increased walking in two studies using an Internet based intervention with a sedentary sample of 12 people who were over the age of 50 years. The screening period, or baseline, was predetermined and lasted five days for each participant. During this time participants were asked to submit to researchers a video of their step goal by holding a Fitbit (e.g., step monitoring device) steps display in front of a web camera for several minutes. During the intervention, participants were assigned a long-term goal to achieve 10,000 steps, using a changing criterion design to gradually increase their step goals. Eighty seven percent of participants achieved their goals when provided with monetary reinforcement for goal achievement while only 52% achieved their goal when no monetary reinforcement was offered.

The study used A-B designs to evaluate the effects of the intervention, making it difficult to demonstrate experimental control. A-B designs preclude demonstration of a functional relation between the IV and DV and either require a reversal, or systematic withdrawal and reintroduction of the IV (e.g., A-B-A-B design) or through a systematic introduction of the IV using an MBL design across behaviors, participants, or conditions (Gast, 2010, p. 218).

Normand (2008) increased walking with a sample of four healthy adults between 39 years and 59 years. The baseline consisted of wearing a sealed pedometer with a seven day memory feature used by the researcher to record step data. During the intervention, participants were assigned a goal and asked to use a pedometer to track daily steps. Feedback was provided using graphs and written encourage and praise. The study used a MBL combined with a reversal (e.g., A-B-A-B) to demonstrate experimental control and to evaluate the effects of the intervention. All four participants increased their step totals. The procedures for weekly goal setting were explained but the process for establishing the first goal following baseline was not, making replication of the study almost impossible. Also, the description of the participants indicates they were healthy, non-obese, and physically active. Additional information is needed to fully evaluate the effects of the intervention. For example, although the participants were not obese it is unclear if they were overweight with BMIs approaching obesity. There is also no indication of their racial or ethnic background.

VanWormer (2004) used a brief e-counseling intervention to increase walking with an obese sample of three adults between 32 years and 52 years. The baseline consisted of wearing a blinded pedometer with step data downloaded weekly by the researcher. The intervention consisted of using an un-blinded pedometer, and receiving basic counseling that included step review and participatory weekly goal setting with the researcher. The study used an A-B-A-B-C-

B-C design to demonstrate experimental control and evaluate the effects of the intervention. All participants increased their steps. The researcher downloaded baseline step data weekly from blinded pedometers, limiting his ability to gauge baseline stability on a daily basis.

In summary, the literature on single-subject interventions used to increase PA with AA/B women does not exist. Studies using similar designs to the current research, though effective, have methodological and procedural limitations. Examples include incomplete information about the goal setting procedures, and use of a weak study design (e.g., A-B). Given the nature of walking, that is the variability in daily steps based on the weather, health status, work schedule, and other factors, studies with individuals can be challenging using some single-subject designs. However, single-subject designs may be particularly useful with AA/B women as so little is known about the health behaviors of this population.

Additional information is needed to better understand which interventions and components of interventions are most effective with AA/B women. The purpose of the current research is to expand our knowledge of effective interventions that increase PA and the overall health status of AA/B women. However, there are barriers to PA that must first be addressed.

### **Barriers to Physical Activity**

The barriers to PA for AA/B women are generally common across adult populations. Time constraints due to caregiving are often cited as the primary reason given for inactivity (e.g., Kirchoff et al., 2004). Other barriers include (a) health status, (b) unsafe environments (e.g., missing or uneven sidewalks), (c) fear for personal safety due to crime (e.g., illicit drug sales), (d) fear of injury (e.g., falling) or exacerbating a health condition (e.g., high blood pressure), (e) insufficient finances to participate (e.g., purchase tennis shoes), or (f) backgrounds that did not emphasize PA for women (e.g., policies, cultural expectations).

Although adults share many of the same challenges, a focus will now be placed on discussing barriers that may be unique or are disproportionately more common for AA/B women. Specifically, the barriers to be discussed are (a) body size, and (b) hair care.

### **Body Size**

African American/Blacks tend to embrace and tolerate larger body sizes for women than many other ethnic and non-Hispanic white groups. Cultural preferences value larger bodies and trump scientific data for AA/B women regarding diseases associated with being overweight or obese (Capodilupo & Kim, 2014; Pekmezi et al., 2013). Girls are taught at early ages to understand that self-satisfaction with their bodies and how their clothes fit are more important than their actual size; being thin and dieting is not preferable to having a more curvaceous body, and weight gain is natural and expected (Boyington et al., 2008; Davis, Clark, Carrese, Gary, & Cooper, 2005; Perry, Byers, Mokdad, Serdula, & Williamson, 2014; Wilcox, Richter, Henderson, Greaney & Ainsworth, 2002). Therefore, PA that focuses on weight loss instead of health factors may not be well received within the AA/B community. An emphasis should be placed on the importance of PA for women of all sizes.

### **Hair Care**

Concerns with hair care as a barrier to PA are cited by AA/B women (Gathers & Mahan, 2014; Im et al., 2011). By way of history, and following the forced immigration of Africans to the US as slaves, AA/B people in general and women in particular were taught to refer to their hair as wool and a source of shame (Bellinger, 2007). Slave children were brought up to not like their hair, and women were encouraged to either iron their hair straight or wear their hair wrapped in a scarf so as to not offend. Miscegenation later produced lighter skinned AA/B women who had hair considered “good” because it was straighter (Bellinger, 2007). Straight hair

is still the US ideal of beauty, but the number of AA/B women wearing natural hair styles is increasing (Gathers & Mahan, 2014).

African American/Black women today, however, choose their hairstyles depending on several factors. First, economic constraints may impact the selection of a hairstyle. Women with lower income lifestyles more often wear “natural” or virgin hair-styles defined as “...having been unaltered by chemicals and therefore does not have a straight look but is tightly coiled or kinky in nature and appearance” (Hall et al., 2013; White, 2005). Such styles include afros, braids, locks, twists, or other styles that are not easily altered by moisture. Second, current and/or desired employment is considered before making a decision. Women with higher income lifestyles more often wear relaxed or permed hair, weaves, and shortly cropped hair because these styles are considered more professional and accepted by mainstream America (Capodilupo & Kim, 2014). A woman’s hairstyle is an indication to an employer that she will do what needs to be done, including alter her appearance if necessary (Dione-Rosado, 2004). Third, women make selections based in part on the choices made or encouraged by their mothers; women tend to wear their hair based on maternal socialization. Girls as young as three and four years old understand what “good” hair is and often receive their first perms from a salon or directly from their mothers (Boyington et al., 2008). As a result, some women today have never seen their own natural hair and do not understand how to style it (Gathers & Mahan, 2014). And fourth, a preference for an Afrocentric aesthetic can be a deciding factor for some women. Although some AA/B women dislike their hair and find it embarrassing, others do not buy into the “good” hair is straight hair (Gathers & Mahan, 2014). Instead, they view good hair as “thick, healthy hair which resists breakage even when given harsh treatments” or “...All hair is good in its natural state,

until a bad relaxer or over-treatment, or not taking care of it turns it dry, crackling, and oily in a bad way” (Bellinger, 2007).

African American/Black women who choose to wear natural hairstyles may often face discrimination in some areas of employment where natural hair may be seen as an unwelcome political statement (Science Daily, 2014). Women who chose to wear weaved, or chemically or heat-straightened hair may be seen as more “acceptable” to society, but they face a barrier to PA participation depending on the texture, style, and length of their hair (Brown, 2008). Concerns related to straightened hair are about ruining a preferred hairstyle by working up a sweat during PA. Efforts needed to reacquire or maintain certain styles ruined by sweat or moisture cannot be accomplished within a short time. Some styles are also expensive to maintain or cannot be redone without the help of a professional stylist. Also, the hair shafts of AA/B hair are fragile, so frequent washings can cause breakage (Hall et al., 2013; McMichael, 2007).

When AA/B women participate in PA, they often plan it just before salon days so they can enjoy a longer window of maintaining their salon styles (Harley et al., 2009). African American/Black women also change their hairstyles to accommodate PA, including wearing ponytails, afros, or braids (Agyemang & Powell-Wiley, 2013; Hall et al., 2013).

In summary, although AA/B women share many of the same barriers to PA as other women and adults, some of the barriers to PA cited by them are either unique in degree or substance. Physical activity interventions for AA/B women must be placed within the cultural context of the genetics of the individual (e.g., type of natural hair), socialization strategies (e.g., maternal preferences) and environmental demands (e.g., work). Physical activity and health interventions that include these cultural factors will be discussed next.

### **Beauty Salons**



Beauty salons have been used to increase PA and the general health status of AA/B communities. African American/Black stylists, for example, have (a) successfully promoted organ donation (Resnicow et al., 2010), (b) significantly increased consumption of fruit and vegetables, although mean daily minutes for PA did not significantly increase between pre and posttest (Johnson et al., 2010), (c) educated and significantly increased awareness about breast cancer prevention, although no significant relationships between client exposure to breast health messages and receipt of a breast exam or mammogram were found (Wilson et al., 2008), (d) successfully educated and used synthetic breast models to demonstrate how to detect lumps, significantly increasing the rate of mammography (Sadler et al., 2011), (e) educated customers about healthy behaviors, resulting in self reported changes that included cancer screening tests, increasing fruit and vegetable consumption, and discussing PA with their health provider (Linnan et al., 2005), and (f) educated and significantly increase knowledge about stroke prevention (Kleindorfer et al., 2010).

Beauty salons and barbershops are common places where people congregate (Kong, 1997). In African American/Black communities, both settings have provided opportunities for researchers to access AA/B adults for health promotion (e.g., Wilson et al., 2008). Salon settings, for example, are places AA/B women talk openly about an array of topics and receive healthcare and other advice from stylists and other women visiting the shop. Health related topics may comprise more than half of the naturally occurring topics (Linnan et al., 2001; Solomon et al., 2004). African American/Black salons may also have more open spaced waiting areas that are closer to stylists than Caucasian salons, which may influence more health-related conversations (Solomon et al., 2008).

The current research examines the effects of a 10-Week walking program that includes goal setting, hair-care, and social support provided by stylists to their customers. African American/Black stylists will be in the most effective position to support AA/B women who may avoid PA due to concerns with maintaining their hair styles.

### **GENERAL METHODS**

The present research used a within-subjects multiple baseline (MBL), changing criterion design with six experiments that used a 10-Week walking intervention as the independent variable (IV) to increase PA, the dependent variable (DV), with AA/B women. The 10-Week program included social support from the researcher to hair stylists or stylist participants (SP) in the forms of praise and encouragement for the first experiment. In the next five experiments, social support in the forms of praise, providing relevant brochures, and hair care support was provided by SPs to their respective customers, or customer participants (CP). Goal setting and feedback were also part of the 10-Week program, with an assigned long term goal set by the researcher and weekly goals selected by the participants in all experiments.

The research was informed, in part, by focus group research conducted for AARP on December 15 and 16, 2008 (Brown, 2009). There were a total of four focus groups with two groups of stylists, one in Wichita, Kansas and one in Atlanta, Georgia, and two corresponding groups of AA/B women in each city. Stylists groups in each city consisted of 10-12 primarily AA/B females and AA/B groups consisted of 10-12 women over the age of 18 years. The researcher and Dr. Whitt-Glover participated in developing a moderator's discussion guide that was divided into sections consisting of (a) an introduction and warm up, (b) hair care and maintenance, (c) barriers to exercise, (d) relationship of hair on exercise, (e) stylist help, and (f)

description of KU research intervention for a total of 110 minutes per focus group. An AA/B female conducted the group discussions while the researcher observed through a one-way mirror.

The key findings from the two stylists focus groups were that (a) the time and ability required for clients to manage their own hair after exercise are barriers to any physical activity; (b) stylists would be willing to provide social support to clients interested in participating in a 10-Week walking program, (c) clients may be more willing to participate in PA if they knew their stylist had already completed the program, and (d) stylists had a slight concern about losing business if their clients visited the salon less often due to a change in hairstyles, yet stylists supported the idea of recruiting consumers through their salons because they could help women manage their hair while exercising. Key findings from the two AA/B consumer focus groups were that (a) exercise is a barrier to participation in exercise; (b) AA/B women do not like to participate in activities that require them to perspire if it gets their hair wet; and (c) it takes one to two hours to style hair once it has been wet. Even if time were not a factor, washing hair multiple times each day damages the hair shaft and dries the scalp resulting in hair breakage.

Recommendations from the AARP report to address hair care and PA were that (a) tips should be provided to AA/B women to encourage them to discuss their hair care and PA issues with their stylists; (b) outreach activities should make AA/B women aware that sweating can be reduced by using a cool cloth, or by accumulating 150 minutes of PA in a series of 10 minute bouts; and (c) walking programs should build on the natural routines AA/B women report they have, with longer bouts of PA occurring nearer to the scheduled time of a salon visit. All recommendations were incorporated into the current research. In addition, policy implications include changes in work schedules to allow for more flexible time during lunch breaks, arrival

times, and extended hours if needed for AA/B women to participate in PA and maintain hair care standards.

## **Recruitment**

The recruitment of research participants (e.g., stylists-participants, consumer-participants) was conducted in the Kansas City metro area and Lawrence, Kansas between May, 2009 and February, 2013. For stylist-participants (SP), recruitment was conducted by the researcher. She identified potential enrollees by (a) soliciting assistances from friends, members of her sorority, AA/B colleagues in the area, local beauty supply stores, and her personal stylists; (b) using the Internet and telephone book to identify potential recruitment sites, later verified by calling and/or driving by the salon to ensure AA/B stylists were employed at the locations; (c) purchasing a comprehensive list of licensed cosmetologists residing in three counties in or near the Kansas City metro area from the state of Kansas, and; (d) visiting commercial or department store chains, as well as independently owned salons clustered in one building (e.g., Sola Salon Suites).

The recruitment of consumer-participants (CP) was conducted by SPs from their own respective customer bases. The researcher instructed them on how to recruit potential participants and provided them with a checklist of inclusion criteria (Appendix A) and a recruitment flier (Appendix B).

## **Participants**

**Stylist-participants.** As seen in Table 1, nine AA/B SPs were recruited, seven SPs from the Kansas City metro area and two from Lawrence, Kansas. Their ages ranged between 24 years and 58 years old; their incomes ranged from \$35,000 to \$99,999. All SPs were licensed in the state of Kansas and had completed high school, the minimal requirement for licensure.

Of the nine SPs, two owned their own buildings; two owned their own salon in a suite of one room salons; one owned her home and converted her basement into a salon; one rented a chair in a small open environment shared by other stylists and barbers; one rented salon space in a room with a private entrance; one was an employee in an independent stand-alone shop; and one was an employee of a department store chain. When surveyed using the BWWS (see surveys section) they reported that their self-rated health status ranged between fair and very good. This was the same range they reported when asked how their health compared to other AA/B women their age. Arthritis was the most commonly reported health concern (Appendix C). Anthropometric measures placed eight of the stylists in the obese range, with BMI scores of 30.3 to 45.2. The remaining SP was overweight with a BMI of 25.7.

**Consumer-participants.** Twenty-five AA/B CPs were recruited, 14 from the Kansas City metro area and 11 from Lawrence, Kansas. Their demographics are presented in separate tables for each experiment. Consumer-participants were between the ages of 29 years and 66 years old. Their incomes ranged from \$25,000 to over \$75,000. Upon enrollment, 15 wore short permed hair; three wore long permed hair; three wore short, natural hair styles; and one wore a long natural hair style. Twelve were married; eight were single; one was divorced; and one was widowed. Four CPs had completed a graduate degree; seven completed college; and 12 had completed high school. When surveyed, they reported self-rated health status ranging from poor to excellent. This was the same range reported when asked how their health compared to other AA/B women their age. High blood pressure, high cholesterol, and arthritis were common health concerns (Appendix G).

## **Settings**

The baseline, intervention, and post-intervention sites presumably varied. Each SP and CP presumably walked in their own communities during the baseline and intervention phases of the research. The post-intervention site took place in their respective salons, as described earlier. The post-intervention site where post-testing was conducted for the CPs varied, with some taking place in a salon, private home, worksite, or library.

### **Supplies**

This section describes supplies or material distributed to SPs and CPs. Supplies included activity sheets, fliers, and other items as described below. A list of supplies used is included under the methods sections in each experiment.

### **Activity sheets.**

Five activity sheets were developed. Three sheets were developed for the SPs by the researcher. One was used during the baseline-phase and provided space for SPs to record the number of steps taken each day (Appendix D). The second was used to record the number of bouts taken each day, start and end time of the bout, RPE level, steps taken per bout, and the total number of steps taken each day (Appendix E). In experiments in which SPs provided social and hair care support, the third activity sheet was used during the intervention to request weekly information about whether contact of any sort was made between the SP and CP (Appendix F). Space was also allotted for the SP to provide questions or comments for the researcher. Two activity sheets were developed for CPs by the researcher. One was used during the baseline-phase (Appendix G). It provided space to record the number of steps taken per day. The other sheet was used during the intervention phase of the research (Appendix H). It was used to record the frequency of steps taken per day, the projected self-selected goal for that week, and space to write notes from the CP to the researcher.

**Flier.** A one page 10-Week Walking Program Flier was developed by the researcher for SPs to distribute to potential research participants (Appendix B). It announced that a 10-Week Walking Program was being conducted and that interested parties should contact the researcher for more information. It included a picture of two AA/B women walking, the University of Kansas (KU) logo, and contact information to reach the researcher. Upon request of the SPs, the flier was printed in a variety of bright colors to better attract participants.

**Informed consent.** The KU Informed Consent Form (#HSCL 17686) was distributed to potential participants (Appendix I). The researcher conducted a readability index analysis of the consent form using [www.readability-score.com](http://www.readability-score.com). The form was written at an 11.4 grade level. A one-page summary of the informed consent form was developed by the researcher for participant ease of reading and attached to the front of the standard informed consent form (Appendix J). The readability index of the summary page was 6.0 grade level.

**Incentives schedule.** The incentives schedule, included in the informed consent form, was developed by the researcher. To better assist CPs and SPs with the schedule, the researcher pulled the form from the informed consent and used it as a stand-alone reference guide to remind SPs and CPs of the incentives schedule (K). The incentives schedule included a medical-grade pedometer (see equipment section) provided to each SP and CP at the beginning of baseline to use during each phase of the experiment and to keep once the 10-Week Program was completed. At the beginning of the intervention- phase, SPs and CPs received a Cool Cloth (see equipment section) and Instant Recess DVD (see equipment section). For Experiment I, SPs were provided information on how to receive a free pair of walking shoes which included a foot and walking analysis. During the experimental phase of Experiments 2, 3, 4, and 5, SPs received \$5.00 for each activity sheet they completed, while CPs received reductions in hair care costs

Table 1

*Demographic Profile of Stylist-Participants*

Demographic	SP1	SP2	SP3	SP4	SP5	SP6	SP7	SP8	SP9	
Age	53	33	33	37	32	---	24	47	58	
Gender	F	F	F	F	F	F	F	F	F	
Ethnicity	AA/B	AA/B	AA/B	AA/B	AA/B	AA/B	AA/B	AA/B	AA/B	
Education	HS	HS	HS	HS	HS	---	---	HS	BS/BA	
Location	KC	KC	KC	KC	KC	KC	KC	Lawrence	Lawrence	
Salon	Rent	Own	Rent	Rent	Own	Own	Employee	Own	Own	
Income	--	>\$40k	>\$80k	>\$40k	>\$60k	---	---	<\$35k	<\$35k	---
BMI	44.3	30.3	32.6	35.9	45.2	31.6	25.7	---	---	

*Note.* Demographic profile of stylist-participants (SPs) in experiments. Dash indicates data was not obtained or reported. High School is abbreviated using the letters HS. Kansas City is abbreviated using the letters KC.



based on their progress at weeks one, five, and eight. All CPs who completed the 10-Week Program received a My Hairdo Pillow (see equipment section) regardless of whether they reached their goals.

**Medical clearance form.** A medical clearance form was used for potential participants if they answered “yes” to any of the questions presented on the PAR-Q (see surveys section). The form was developed by Melicia Whitt-Glover, Ph.D, Wake-Forest University, and was modified by the researcher to address the needs of the current research (Appendix L). The medical clearance form was attached to a cover letter that explained the purpose and scope of the research (Appendix M). The form requested physicians to indicate whether they approved or disapproved of the potential enrollee’s participation in the 10-Week Program.

**Recruitment checklist.** A recruitment checklist for SPs was developed by the researcher to use when recruiting CPs for the 10-week program (Appendix A). It instructed SPs to recruit CPs who (a) had received hair care services for at least three months, (b) visited the salon at least twice monthly, (c) self-identified as AA/B, (d) were at least 18 years old, (e) self-identified as not being physically active at least 30 minutes per day, (f) answered “yes” when asked if hair care was at least one barrier to PA, and (g) upon inspection, did not have naturally straight or curly hair or wear a wig.

**Toolkit.** A toolkit consisted of several pamphlets used to assist CPs in addressing PA barriers. It included (a) Curves pamphlet, developed by DHHS to address body image questions and concerns common among AA/B women (Appendix N). The pamphlet addressed an appreciation for body curves as valid, as long as good health is the primary goal. (b) The Borg Rating of Perceived Exertion, a 10-point scale, was provided to each participant to be used for self-assessment when measuring the intensity of any PA bout lasting more than 10 continuous

minutes (Appendix O). The scale is based on physical sensations experienced during PA, such as increased heart or breathing rate, as well as increased sweating or muscle fatigue. The 10 point scale ranged from 0, which means no exertion at all, to 10, which means maximal exertion. (3)

The Improving Your Health: Tips for African American Men and Women pamphlet was developed by the National Institutes of Health (NIH) to address the barriers of insufficient time to engage in PA and feeling unsafe walking in a local neighborhood (Appendix P).

Recommendations include breaking PA activity into 10-minute bouts as one way to find time for PA. (4) The Walking: A Step in the Right Direction pamphlet was developed by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) to provide tips on how to create a walking plan (Appendix Q). Recommendations included finding a safe place to walk and wearing clothes that are comfortable.

### **Surveys, Questionnaires, and Scales**

This section describes forms used by the researcher to gather information from SPs and CPs. Surveys, questionnaires, and scales are all included under this section.

**Black Women's Wellness Survey.** The Black Women's Wellness Survey (BWWS) is used to measure general health (Appendix C). It was developed in 2001 by the Black Women's Health Project to document health disparities of black women. The organization, now known as the Black Women's Imperative, promotes responsible healthy behaviors as one way to eliminate disparities. The BWWS Survey includes questions aimed at determining a woman's health status, diet and eating habits, activity and exercise routines, body image using silhouettes, stress and coping styles, perceived stress scale, and weight loss efforts and strategies. The current health status, activity, and exercise scales were used because they were relevant to the current research. The BWWS survey includes 21 questions and takes approximately 10 minutes to

complete, while the activity and exercise scale used 33 questions and takes approximately 20 minutes to complete. The researcher added one social validity question at the end of the survey and asked the CP why she was joining the research program.

**Demographic profile survey.** A demographic profile for SPs was developed by the researcher to collect demographic, salon, and licensing information (Appendix R). A demographic profile for CPs was developed by the researcher to collect demographic, hairstyle, and SP information (Appendix S).

**Research protocol survey.** The research protocol survey was a tool developed by the researcher to solicit input from SPs in designing a research protocol (Appendix T). It was sent by mail to the SPs following Experiment 1 to provide input into developing subsequent studies with CPs. It requested information about the use, readability, and any modifications to the (a) recruitment flier, (b) activity sheets, (c) research graphs, and (d) incentives. It also requested information from the SPs regarding hair care and PA for AA/B women as well as suggestions for the goal setting procedures.

**Trans Theoretical Model.** The TTM is a survey tool often used in PA interventions to explain when, how, and why people change their behavior (Dinger, Heesch, Cipriani, & Qualls, 2007; Prochaska & Velicer, 1997; Appendix U). Concepts as described by the Model include (a) Stages of Change—Short Form, which addresses the temporal dimension of change, (b) decisional balance (Appendix V, and (c) self-efficacy (Appendix W) which both address the meditational decision-making components and the experiential strategies for making behavior change (Blaney et al., 2012). The Short Form divides PA change into five stages of readiness (Prochaska & DiClemente, 1983; Prochaska, DiClemente, & Norcross, 1992). Stage 1 is Pre-contemplation, a stage where no plans are made to change behavior within the next six months;

Stage 2 is Contemplation or thinking about making a behavior change within the next six months; Stage 3 is Preparation, indicating a decision has been made to change behavior within the next six months; Stage 4 is Action, the beginnings of a behavior change, and; Stage 5 Maintenance is a behavior change made and efforts made to maintain the behavior. Movement forward or backward from one stage to another, as well as maintenance at a stage, is based on personal factors, such as health, and environmental factors, such as weather. The TTM was used as part of the analysis reported in the general discussion section.

**Intake questionnaire.** An intake questionnaire was developed by the researcher to collect demographic and anthropometric information from CPs. The form requested the name, date of birth, height, and contact information. It was also used to record each person's weight. The height and weight information were used to calculate the BMI, which was also recorded on the sheet (Appendix X).

**Physical Activity Readiness–Questionnaire.** The PAR-Q is a survey used to determine whether a potential enrollee can safely increase their level of PA (Marcus & Forsyth, 2009, pp. 80-82; Appendix Y). It can be self-administered and consists of seven health-related questions regarding whether a potential participant has a heart condition such as HBP, has a current prescription for a heart related disease, experiences chest pain during PA or within the past 30 days, has a bone or joint problem that could be worsened with PA, or knows of any reason he/she should not participate in a PA program. If the potential enrollee answers “no” to all of the questions, she can proceed. If she answers “yes” to any of the questions, is older than age 40, and has been inactive or has concerns about their health status, a physician should be consulted before increasing the level of PA. The researcher read the questions aloud and CPs who

answered “yes” to any of the questions were required to get medical clearance before participating in the experiments.

**Wake-Forest survey.** The Wake-Forest Hair and Exercise Survey is used to measure PA participation. The tool was developed at Wake-Forest University to measure how attitudes about exercise are influenced by the hair type, hairstyle, and hair maintenance of African American/Black women. The survey is a paper and pencil instrument that takes approximately 20-25 minutes to complete and has been used to guide research about the role hair care assumes for some African American/Black women. The survey also asks for demographic information, such as information about race and income level (Appendix Z).

### **Measures**

Specific information for each study can be found under the methods sections. Measures include the pre- and post-tests used in each experiment.

### **Equipment**

This section includes a list of equipment used during the experiments. The first three items were used as incentives. Standard equipment used is described in the present tense with an explanation of how it was used during the research.

**Cool Cloth.** The Cool Cloth is a head/neck wrap made of high performance fabric designed to help cool the body during PA by wicking away perspiration (Appendix AA). It is a white cloth that measures 3” x 32” and can be “snapped” during PA to keep the temperature of the cloth at approximate 32 degrees. The Cool Cloth was distributed at the beginning of the intervention and was used as an incentive to encourage PA participation.

**Instant Recess DVD.** The Instant Recess DVD is a 10-13 minute, tightly choreographed sequence of 8 – 12 moves or exercises performed to music. The exercises are derived from

African or ethnic dance and include low intensity to moderate aerobic intensity (100-120 beats/minute) sequences designed to increase energy and break-up sedentary routines. The DVD begins with lower body movements and then adds upper body movements. The Instant Recess sequence is part of a series that can also be found on YouTube by typing in the words “Instant Recess.” The DVD was used as an incentive to encourage PA participation and encourage warm ups before walking and was distributed to participants after each baseline-phase. It was downloaded from YouTube and used prior to administering the PAR-Q to assist participants in more accurately recalling their 10-minute activity levels (Appendix BB).

**My Hairdo Pillow.** The My Hairdo Pillow was designed by an AA/B woman to assist AA/B women in maintaining their salon hairstyles and get a good night sleep (Appendix CC). It comes in firm or soft density foam, covered by soft, machine washable fleece. It is U-shaped and could be used alone or on top of another pillow to elevate the head so that the hairstyle is not flattened or otherwise disturbed during sleep. The My Hairdo Pillow was given to each CP who completed the 10-Week program regardless of whether she met her goal.

**Scale.** A Taylor Brand (#11304072), Easy-to-Read Dial analog scale was used to weigh all of the participants. The scale is constructed of solid steel and reads up to 330 pounds in increments of 20. The scale measures 18.40 x 5.10 x 13.70.

### **Independent Variable**

The independent variable (IV) in all studies was a modification of the AARP 10-Week Walking Program. It included social support from the researcher and SPs, as well as goal setting procedures. A table outlining the components of the IV and how they were delivered can be seen in Table 1. AARP, an acronym that once stood for the American Association for Retired Persons, is a nonprofit, nonpartisan organization dedicated to addressing the needs of persons over 50

years of age. Founded in 1958, the organization provides advocacy, education and information, community service, and personal life enrichment by way of initiatives, activities, and publications. One area of focus has been assisting 35 million members to prevent and manage illnesses by adopting lifelong healthy behaviors.

One healthy behavior promoted by AARP is increasing PA, specifically leisure walking. As noted in the introduction of this paper, walking is a preferred activity for older people, as well as for people in general. Walking-focused campaigns are: (a) clearer and simpler to communicate than just encouraging people to become more physically active, (b) a gateway to other PA, and (c) easy to track (Health Enhancement Systems [HES], 2008). AARP developed the 10-Week Walking Program for several reasons, including (a) people who are physically active live longer and feel better, (b) walking boosts brain power and improves decision making tasks, (c) only a modest investment of time and money is required, (d) walking increases employee productivity by increasing energy levels and reducing stress, and (e) walking may lead to reduced insurance costs because it reduces sedentary behaviors and the associated diseases.

**10-Week program.** Participants were asked to either increase, on average, the time spent walking or the number of steps they walked per day. A general description of the walking program is provided below. Specific details are provided under each experiment's methods and procedures sections. The following section describes how the AARP program was modified for the current research studies.

**Kickoff.** The AARP program includes a gathering of people interested in joining the program. An overview of the 10 weeks is provided, "walking captains" are generally selected, and walking schedules and meeting times are determined. For the present research, participants

were recruited by either the researcher or SPs. Walking captains were replaced with SPs, who like captains, provided some level of social support.

**Goal setting.** The goal-setting procedure in the AARP program is self-directed, with each participant deciding how many steps to walk daily and weekly. In most instances, a volunteer walking captain will host the walks and encourage group directed goal-setting for people interested in walking together. Long-term goals in the modified program were set by the researcher, while daily and weekly goals were set by the participant.

The long-term goals for SPs were assigned to them by the researcher, based on recommendations set by DHHS to participate in at least 150 minutes of moderate aerobic physical activity (MPA) each week. The researcher instructed SPs to gradually reach the goal over the course of 10 weeks by setting smaller, short term weekly goals. The long-term goals for CPs were based on the baseline average of their last seven days, plus an addition of either 2000 or 4000 steps. Walking a minimum of an additional 15 to 20 minutes, or an additional mile per day, which is approximately 2000 to 2500 steps for most people, is one strategy to prevent weight gain and address the problem of obesity (Hill, Wyatt, Reed, & Peters, 2003; Holm et al., 2012).

**Tracking.** The tracking procedure in the AARP 10-Week Program uses activity sheets for recording steps per day as recorded on a pedometer. The research program was modified so that each phase of the research was recorded on different activity sheets. The activity sheets used during the baseline phase provided space to record the number of steps taken per day. Activity Sheets used during the experimental-phase either included space to write start and stop times for bouts, weekly goals, total number of steps taken per bout, and/or total number of steps taken per day.



**Weekly touches.** Weekly “touches” in the AARP program are conducted by a volunteer walking captain and consists of telephone calls, emails, or personal group contact. The touches consist of encouragement from the coordinator to remain in the program. Participants record information on their activity sheets, but do not necessarily turn them in weekly; activity sheets are most often turned in at the end of the 10-weeks. The AARP standard program was modified by eliminating the volunteer walking captain. Weekly touches were conducted by the researcher in the form of weekly activity sheets, through scheduled incentives, and telephone calls or visits as necessary.

**Social support.** Social support for participants in the AARP program consists of encouragement each week by way of a phone call or an email from a volunteer walking captain. The captain also assumes the role of reminding people to walk each day, and in some cases assumes responsibility for gathering participants together in groups to provide encouragement during the 10-weeks.

The research was modified so that the volunteer captain position was eliminated. In Experiment 1, the researcher provided social support to the SPs as needed. Forms of social support included encouragement from the researcher, assistance with setting goals, walking with SPs to help demonstrate brisk walking, and incentives such as the Cool Cloth and Instant Recess DVD . In all subsequent interventions, SPs provided social support to their CPs each week through hair care support, pamphlets to address barriers, and words of encouragement during each contact.

Social support was measured using a pre- and post Social Support for Physical Activity Scale. The scale was developed specifically to measure social support as it relates to physical activity (Sallis, et al., 1987; Appendix CC). It is a paper and pencil instrument that measures

social support from family and friends within the past three months. Each of the 13 questions is rated twice so that there is a separate score for support from family and support from friends. The researcher added a column to indirectly measure social support CPs received from SPs. CPs self-administered the Social Support for Physical Activity scale.

### **Dependent Variables**

**Primary.** In Experiment 1, the primary dependent variable was an increase in the intensity of steps taken, measured using the RPE (see Toolkit) through 10 minute bouts. The RPE is a 10-point scale used to measure the intensity of PA, based on physical sensations experienced during PA such as increased heart or breathing rate, as well as increased sweating or muscle fatigue. The 10-point scale ranges from 0, which means no exertion at all, to 10, which means maximal exertion.

For all subsequent experiments, the primary dependent variable was an increase in the frequency of steps taken as recorded on a pedometer. Stylist- and CPs were provided with a Digi-Walker NL-1000 pedometer and written instructions that came with the pedometer on how to use it. The Digi-Walker is a medical grade, piezo-electric pedometer used to measure the frequency of steps. The NL-1000 was selected because the piezo-electric pedometer is more accurate than spring-levered pedometers in overweight and obese individuals, especially at slower walking speeds (Crouter, Schneider, & Bassett, 2005). It is the first pedometer with a moderate-to-vigorous physical activity (MVPA) timer. The pedometer includes a safety strap, clock, and step stride with counter. It measures 2 ½" x 1 ½" x 7/8", weighs less than 2 ounces, records a maximum of 99,999 steps and 99,999 miles, and is set in an opaque clamshell case with a metal/plastic hybrid clip designed to be worn at the waist. Participants were instructed to wear it daily during waking hours for at least eight hours. The researcher demonstrated how to

Table 1

*Components of the Independent Variable*

<b>Delivery</b>	<b>10-Week Walking Recruitment Screening</b>	<b>10-Week Walking Baseline Activity Sheets</b>	<b>Goal Setting/ Long-Term Goal</b>	<b>Goal Setting/ Short-Term Weekly Goals</b>	<b>Social Support/ Hair Care, Feedback – Praise/Support</b>	<b>Social Support/ Praise Feedback/Tracking Graphs/Praise</b>
SP	X				X	
CP				X		
Researcher		X	X			X

*Note:* The Independent Variable (IV) as delivered to consumer participants (CPs).

use the pedometer and used the 20-step test with each participant prior to beginning the baseline-phase to ensure the pedometer worked properly.

The 20-step test consists of placing the pedometer on the waistband and then pressing the reset button to ensure the pedometer is set at 0. Participants are asked to walk exactly 20 steps. Without taking the pedometer off, participants are instructed to open the door of the pedometer and check the number of steps it registered. If the pedometer does not read between 19 to 21 steps, the pedometer is moved to a different place on the waistband and the test is repeated until the desired number of steps is accurately registered. Instructions that came with the pedometer were sent home with each participant to provide a refresher should questions arise during the experiment.

**Secondary.** Secondary dependent measures were changes noted in pre- and post-intervention measures. Specifically, anthropometric differences were measured using the BMI. The Decisional Balance questionnaire was used to measure changes in perceived PA benefits to barriers ratio, the IPAQ-S was used to measure changes in self-reported PA, and the Self-Efficacy questionnaire was used to measure changes in self confidence to engage in PA in different situations. Social validity measures of the effective and procedural dimensions of ABA were done using a social validity questionnaire.

Standard scales and questionnaires are described in the present tense with an explanation on how they were used. Scales and questionnaires developed by the researcher are described in the past tense.

**BMI.** The BMI is a diagnostic tool that compares a person's weight to height by using a statistical formula to estimate a healthy body weight. Each person's weight was taken in pounds using a Taylor Brand Easy-to-Read analog scale (see equipment section). Information regarding

height was self-reported by participants. The height was then squared and divided into the total weight to calculate the BMI. All measurements were taken in triplicate with an average used to calculate BMI.

***Decisional Balance.*** The Decisional Balance questionnaire is used to measure the ratio of perceived benefits to barriers of change or a person's perception of the benefits of PA activity compared to barriers (Janis & Mann, 1997; Marcus, Rakowski, & Rossi, 1992; Appendix W). According to Marcus and Forsyth (2009), differences in decisional balance correspond to the TTM stages described earlier. For example, people in the Pre-contemplative stage see more barriers than benefits to PA compared to people who identify themselves as belonging in later stages. The questionnaire consists of 16 questions, with 10 pro-PA and six con-PA questions. The difference in averages, or the pros minus the cons, yields the decisional balance score. A score greater than zero is an indication of more benefits than barriers to PA, while a score less than zero indicates more barriers than benefits to PA. The CPs self-administered the questionnaire.

***International Physical Activity Questionnaire-Short.*** The International Physical Activity Questionnaire-Short (IPAQ-S) is an indirect measure of the duration, frequency, and intensity of self-reported PA participation (IPAQ, 2005; Appendix EE). It requests information about PA lasting for at least 10 continuous minutes and is designed to measure PA among adults 15 to 69 years of age. This questionnaire asks about three specific types of PA: (a) vigorous-intensity activities, (b) daily walking, and (c) moderate-intensity activities. Scoring requires summation of the duration of walking in minutes, frequency of days walked, and moderate-intensity, and vigorous-intensity activities during the previous seven-days. Scores are placed into three categories: (a) low PA, (b) MPA, and (c) VPA (IPAQ, 2005). Low PA is defined as not meeting

the requirements of either moderate-intensity or vigorous-intensity activity. MPA is defined as either engaging in PA (a) three or more days of vigorous-intensity activity of at least 20 minutes per day, or (b) five or more days of moderate-intensity activity and/or walking of at least 30 minutes per day, or (c) five or more days of any combination of walking, moderate-intensity or vigorous-intensity activity achieving a minimum total PA of at least 600 MET-minutes per week. VPA is defined as either engaging in (a) vigorous-intensity activity on at least three days achieving a minimum total PA activity of at least 1500 MET-minutes per week or (b) seven or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum total PA of at least 3000 MET-minutes per week.

A modified version of the *IPAQ-S* form was used to increase the accuracy of self-reported data from sedentary individuals who are often unable to accurately estimate time spent engaged in aerobic activity (Craig, et al., 2003; Whitt-Glover, Hogan, Heil, & Lang, 2008; Appendix EE). The IPAQ-S was modified in the following ways: (a) open ended questions related to the frequency of PA for at least 10-continuous minutes were changed to closed-ended questions; participants selected the frequency of days per week from a list ranging from 0 days to 7 days; (b) the questions regarding the duration of PA were changed from open-ended responses to categorical responses to try to reduce overestimation; participants selected the duration from a list ranging from 0 minutes to over 60 minutes per day; and (c) the order of the questions was modified so that daily walking was asked about before asking about other types of MPA.

***Self-Efficacy.*** The Self-Efficacy questionnaire measures confidence in the ability to perform specific behaviors in specific situations (Marcus, Selby, Niaura, & Rossi, 1992; Appendix W). For example, participants may have more confidence to participate in a walking program during summer than winter months. Or participants may have more confidence to

maintain a PA program while at home versus while away on vacation. The questionnaire consists of 16 questions. The score on the questionnaire is computed by averaging all questions, with higher scores indicating greater self-efficacy. The CPs self-administered the questionnaire.

***Social validity.*** The Social Validity questionnaire was developed by the researcher to assess the effective and procedural social validity components of the 10-Week walking program. It was an interactive tool the researcher used to ask CPs questions as an indirect measure of satisfaction with the procedures and outcomes of the research. Follow-up questions were asked by the researcher, depending on the responses provided by each individual. Additionally, the questionnaire asked whether the SPs who participated in Experiment 1 if they were interested in continuing to the next phase of the research, which was to be the social support for CPs they recruited (Appendix FF). Additional social validity questions were embedded in the Wake Forest questionnaire (Appendix Z).

### **Experimental Design**

The effects of the 10-Week walking program was evaluated using a multiple-baseline design across participants. A multiple-baseline design is used to examine experimental control of changes in behavior, generally using at least two staggered A-B designs consisting of a no treatment baseline (A) followed by an intervention (B) that introduces the independent variable at staggered intervals to control for confounding variables (Gast & Ledford, 2009, p.278). A pre/post design was also used. Pretesting was performed one week prior to the onset of the 10-Week program and included anthropometric measures to determine BMI; perceptions about hair care and exercise using the Wake Forest Hair Care Survey; general health and wellness using scales from the Black Woman's Wellness Study; physical activity levels using the International Physical Activity Questionnaire; and social support and physical activity. Post-testing occurred

during the week following the end of the 10-Week program and included a repeat of anthropometric measures, and pretest questionnaires.

## **Procedures**

**Baseline-phase.** At the beginning of the baseline phase, all participants met with the researcher separately or in small groups of three. Each participant received a pedometer and instructions on how to use it, as well as activity sheets. The researcher communicated with each SP and CP every day at an agreed upon time to collect walking data. The amount of time the researcher interacted during each communiqué was generally less than one minute each time. At the end of each baseline, the researcher called the SP or CP and arranged to meet within 24-hours to further explain the 10-Week walking program, explain how to use the next activity sheets, and to answer any questions. Participants were provided with a cool cloth, Instant Recess DVD, and activity sheets with corresponding stamped envelopes to mail activity sheets in weekly.

**Intervention.** The modified version of the AARP 10-Week Walking Program was used for all experiments. The walking program included social support from the researcher or researcher and SP, and goal setting. The results of each intervention are depicted in graphs. More specific procedures are included under each Experiment.

**Post-intervention.** At the end of each intervention, the researcher contacted the SP or CP within three days to conduct the post-surveys and to weigh them. In most cases, the researcher was able to schedule an agreed upon time to meet immediately following the intervention.

## **EXPERIMENT 1**

As stated in the general introduction of this research, African American/Black (AA/B) women have the highest rate of overweight and obesity of any group in the United States, placing them at a disproportionately higher risk of developing diabetes, arthritis, cancer, high



blood pressure (HBP), and other diseases related to obesity (DHHS, 2010). Being overweight, or weighing too much, being obese, having excess body fat, can be caused by a combination of genes, environment, metabolism, culture, or socioeconomic status. They can also be caused by behaviors that create an energy imbalance for extended periods of time, which means more calories are consumed than calories are burned.

One of the most effective ways to burn calories and contribute to an energy balance is through PA, defined as “any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level” (CDC, 2014). For healthy adults, at least 30 minutes of MPA for five days a week, 20 minutes of VPA for three days a week, or a combination of both is recommended in addition to routine daily activities (Haskell, 2007). Accumulated PA minutes should be done in at least 10 continuous minutes, also known as bouts.

The purpose of Experiment 1 was to assess the effects of a 10-Week walking program on increasing the intensity and frequency of PA with AA/B women. The program included goal setting, both self-selected and assigned, and social support. Stylist-participants were asked to accumulate a weekly total of 150 minutes of MPA, brisk walking for 30 continuous minutes, or through three 10 minute bouts. SPs were also asked to rate the intensity of their PA by using the RPE Scale.

## **Method**

### **Recruitment**

The recruitment of research participants was conducted in the Kansas City metro area between May and June, 2009. The researcher recruited SPs using the following means: She (a) solicited assistance from friends, members of her sorority (e.g., Delta Sigma Theta), AA/B colleagues, local beauty supply stores, and her personal stylists to help identify potential

participants working in the Kansas City area; (b) used the Internet and telephone book to identify potential recruitment sites, later verified by calling and/or driving by the salon to ensure AA/B stylists were employed and provided services to AA/B women at the location; (c) purchased a comprehensive list from the state of Kansas of licensed cosmetologists residing in three counties in or near the Kansas City metropolitan area; and (d) visited commercial or department store chains (e.g., JC Penny), as well as independently owned salons clustered in one building (e.g., Sola Salon Suites).

During the initial contact, the researcher provided an overview of the research program in the work setting of each potential SP enrollee. Each SP also received a flier which provided an overview of the research program (Appendix B). Stylists interested in participating were screened on site to determine their eligibility, using a tool developed by the researcher (Appendix C). The researcher offered to read a summary of the research program before placing the written summary on top of the Informed Consent Form (Appendix J). Stylists who signed immediately were told that the researcher would contact them to schedule an organizing meeting to (a) conduct screenings using pre/post tests; (b) collect demographic and anthropometric information; (c) conduct training on how to use a pedometer, and; (c) set up a schedule for providing daily and weekly information. Stylist-participants who preferred to take the form home to read more thoroughly were asked to indicate a time the researcher could check-in with them during the following week to answer questions and ascertain if they were still interested in joining the research program.

### **Participants**

**SP1.** Stylist-participant 1 was as a 53-year-old female with a BMI of 44.3 (e.g., Class III obesity). She wore a short, natural hair-style and indicated she participated in aerobic PA line

dancing for one hour each week. She would not provide information regarding her income but indicated that high school was the highest level of education she had achieved. She was diagnosed with arthritis. Her general health was self-rated on the BWWS as good and self-rated as good when compared to other AA/B women her age.

**SP2.** Stylist-participant 2 was a 33-year-old female with a BMI of 30.3 (e.g., Class I obesity). She wore a natural hair-style and indicated she participated in aerobic PA such as jogging/running or dancing four days per week for approximately 15-30 minutes each day. She had an income of between \$80,000 to 99,999 a year and indicated high school was the highest level of education she had achieved. She was diagnosed with arthritis, high blood pressure, high cholesterol and depression. Her general health was self-rated on the BWWS as good, but self-rated as very-good when compared to other AA/B women her age.

**SP3.** Stylist-participant 3 was a 33-year-old female with a BMI of 32.6 (e.g., Class I obesity). She wore a short, natural hair-style and indicated she participated in aerobic PA such as roller-skating or biking two days per week for approximately 15-30 minutes each day. Stylist-participant 3 had an income of between \$40,000 to 59,999 a year and indicated high school was the highest level of education she had achieved. She was diagnosed with arthritis, depression, and had respiratory problems. Her general health was self-rated on the BWWS as fair and self-rated as fair when compared to other AA/B women her age.

**SP4.** Stylist-participant 4 was a 37-year-old female with a BMI of 35.9 (e.g., Class II obesity). She wore a chemically straightened hairstyle and indicated she participated in aerobic PA such as roller-skating and jogging three days a week for approximately 15-30 minutes per day. She had an income of between \$40,000 to 59,999 a year, and indicated high school was the

highest level of education she had achieved. Her general health was self-rated on the BWWS as fair and self-rated as fair when compared to other AA/B women her age.

**SP5.** Stylist-participant 5 was a 32-year-old female with a BMI of 45.2 (e.g., Class III obesity). She wore a natural hairstyle and indicated she did not participate in any type of PA. She had an income of between \$60,000 to 79,999 a year and indicated high school was the highest level of education she had achieved. She did not indicate she had any health concerns. Her general health was self-rated on the BWWS as fair, but she was not sure how her health compared to other AA/B women her age.

**SP6.** Stylist-participant 6 would not provide information regarding her age. She had a BMI of 31.6 (e.g., Class I obesity) and wore a combination hairstyle of chemically straightened and weaved hair and indicated she participated in weight training and aerobic activities such as swimming three days per week for 15-30 minutes per day. She would not indicate her income or educational level. Her general self-rated health on the BWWS was very-good and self-rated as very good when compared to other AA/B women her age.

**SP7.** Stylist-participant 7 was a 24-year-old female with a BMI of 25.7 (e.g., overweight). She wore a chemically straightened hairstyle and indicated she engaged in housework and took the stairs less than one day per week. She would not indicate her income or educational level. Her general self-rated health on the BWWS was very-good and self-rated as very good when compared to other AA/B women her age.

### **Settings**

**Salon.** Stylist-participant 1 rented salon space in a two-story converted office type building right off a busy thoroughfare in a primarily AA/B residential community. The building shared a parking lot with what appeared to be one other commercial building that had been converted to

accommodate small business owners. The building was surrounded by open space and residential homes. The SP worked on the second floor and shared space with five other stylists. Each stylist had one room that had been converted into a salon with a separate and private entrance. Salons could only accommodate the stylist and customer and included a sink for washing hair, one hair dryer, and one styling station.

Stylist-participant 2 owned a building with a salon and barbershop located right off a busy thoroughfare in a commercial area of a primarily AA/B community. Across the street was a strip mall with AA/B owned businesses and chain stores (e.g., CVS, Dollar Store). A bowling alley neighbored the salon on one side and a fast food restaurant on the other side. The one-story building had a separate/private parking lot. The salon housed three work stations, a private area separated by a curtain designated for waxing services, five hair dryers, and a back room with two sinks for washing hair. Several chairs were arranged in an open reception area for waiting customers to sit. Stylist-participant 2 worked as a sole proprietor and did not employ additional staff.

Stylist-participant 3 worked part-time in a small, stand-alone independent shop in Kansas City, Missouri in a commercial area of a primarily AA/B community. The salon had a glass store-front and was located within a cluster of occupied and unoccupied office and retail buildings. It had recently been acquired by a new owner and was under reconstruction. The salon had a front and back entrance and could accommodate three additional stylists. It housed rotating shared space for two stylists at a time and included three hair dryers, two styling stations, and a sink for washing hair. Two chairs were available in a reception area for waiting customers to sit.

Stylist-participant 4 rented a chair in a co-located barbershop/beauty salon with four other hair care professionals (e.g., barbers and stylists). The salon was located in an upscale strip mall on a busy thoroughfare. The salon had a glass window store front and was located across the street from a larger commercial retail area that included chain stores (e.g., grocery store, home furnishings). The commercial area catered to a mixed ethnic group, but was located in a primarily non-Hispanic white neighborhood. The salon/barbershop had an open floor plan with a reception area, followed by two chairs designated for barbers and four chairs designated for salon services. The salon services area included four hair dryers and a sink for washing hair.

Stylist-participants 5 and 6 owned separate studio salons on the first floor of an office building right off a busy thoroughfare in a strip mall that housed several other retail establishments (e.g., pet store, grocery store). Across the street from the strip mall was an indoor mall with several anchor or large department stores (e.g., Dillards, Macy's) and multiple smaller retail stores. The commercial area catered to a mixed ethnic group, but was located in a primarily non-Hispanic white neighborhood. The building where the salons were located had a glass front with a common, locked entrance that required customers to ring a bell before entrance was granted. Once inside of the building, three hallways of approximately 20 salons could be accessed. The salons for SP5 and SP6 were located on opposite sides of the first floor. Chairs dotted the hallways and were used as a common space for customers waiting for services. Each salon had a separate and private entrance with a glass front and could accommodate no more than two customers at a time. The salons had one hair dryer, one sink, and one styling station.

Stylist-participant 7 worked in a salon within an anchor department store located in an indoor mall during Experiment 1. The salon was located on the second floor and included a waiting area operated by a receptionist. The salon could accommodate three or four other stylists

and nail technicians, as well as multiple customers simultaneously. Each styling station shared a large, almost floor model mirror in a large open area. Stylist-participant later bought a salon in the same building with SP5 and SP6.

**Intervention.** During each phase of the research, the researcher met with each SP as needed at her salon to collect activity sheet information, replace pedometers, or to discuss any concerns. The setting for each salon has been previously described. Each SP chose when and where to walk during the experimental phase of the research.

**Post-intervention.** The researcher met with each individual SP at her salon to collect the post-research information. The respective salons are described above.

### **Experimental Design**

The effects of the 10-Week walking program with an assigned goal to walk 150 minutes per week by the end of the 10 weeks was evaluated using a multiple baseline design across three participants in the first group and four participants in the second group for a total of seven SPs. The frequency of steps per day were measured during the baseline. Pretesting was performed one week prior to the onset of the 10-Week program and included anthropometric measures to determine BMI, perceptions about hair care and exercise using the Wake Forest Hair Care Survey; general health and wellness using scales from the Black Woman's Wellness Study; physical activity levels using the IPAQ-S; and Social Support and Physical Activity (Appendix CC). Post-testing during the week following the end of the 10-Week program included a repeat of anthropometric measures, IPAQ-S, and Social Support and Physical Activity. Stylist-participants also responded to social validity questions regarding the applied nature of the problem, the procedures used and their satisfactions with the effects or results.

### **Dependent Variables**

The primary dependent variable was to achieve 150 minutes per week of time spent in MPA or brisk walking for at least 30 continuous minutes or in 10-minute bouts totaling at least 30 minutes on most days during the 10-Week program. Time spent walking was recorded on an activity sheet and collected from SPs by the researcher each week, either through the mail or in person. Participants used the timer on their pedometers or a watch to measure their time spent walking, and used the pedometer to measure the number or frequency of steps walked during each bout.

Secondary dependent variables were (a) an increase in social support from friends and family, (b) an increase in PA as indicated on the IPAQ-S, and (c) an increase in MPA as indicated on the RPE 10-point scale. The RPE scale was provided to each SP to be used for self-assessment of the intensity of any PA bout lasting more than 10 continuous minutes. The scale is based on physical sensations experienced during PA such as increased heart or breathing rate, as well as increased sweating or muscle fatigue. The 10 point scale ranges from 0, which means no exertion at all, to 10, which means maximal exertion.

### **Independent Variable**

The independent variable was the 10-Week walking program, which included an assigned goal to engage in at least 150 minutes of brisk walking by the end of the 10-Week program. Participants self-selected their weekly goals during the 10 –Weeks and were asked to spread the time spent walking over at least five days per week, with either one continuous bout of at least 30 minutes, or at least three 10 minute bouts each day.

### **Procedures**

Experiment 1 was conducted in two waves with SPs 1, 2, and 3 in the first wave and the remaining four SPs in the second wave. Separate or small group organizing meetings were



verbally arranged with each SP within a week after each enrolled into the research program. Stylist-participants 1, 2, and 3 described themselves as friends and requested a group meeting. The researcher met with the remaining SPs separately, although they knew each other. The organizing meeting was conducted by the researcher to explain each phase of the research, conduct screenings, distribute the pedometer and instructions on how to use it, and to take anthropometric measurements. Each meeting lasted between 50 and 90 minutes, including time needed to build rapport.

**Baseline.** For the baseline phase, the researcher explained the importance of obtaining individual PA baselines before beginning the 10-Week program. Stylist-participants were asked not to change their daily routines except to wear a pedometer and verbally report their steps daily, as well as mail in their activity sheets weekly. The researcher explained the baseline phase and asked each SP to wear the pedometer for at least eight continuous hours and record steps on the activity sheet she provided. Stylist-participants were asked to (a) provide a preferred time the researcher could call to collect information on the number of steps walked that day and (b) record the number of steps taken each day and then mail the activity sheets at the end of each week in the stamped envelope provided. The researcher then briefly discussed that the goal setting procedures would take place during the second wave of the experiment. Also, because SPs knew each other, the researcher explained the MBL design so they would be aware that although the baseline phase was initiated simultaneously, initiation of the 10-week program would be staggered.

**Intervention.** The researcher met with each SP at her salon at the end of each respective baseline to initiate the intervention or the 10-Week walking program. Stylist-participants were instructed to either bring or wear the walking shoes they intended to use during the intervention

to the meeting. Each SP was instructed to follow the CDC (2009) recommendations to gradually walk at least 30 minutes per day for at least five days for a total of at least 150 minutes of MPA per week. Stylist-participants were advised to follow the CDC's recommendation to warm up before walking and were given the Instant Recess DVD to assist them. They were told they could walk briskly for 30 continuous minutes a day or they could break up their 30 minute per day walking time into segments known as bouts, using the CDC definition of a bout as walking briskly for at least 10 continuous minutes. Stylist-participants were asked to wear the pedometer all day but record the start and stop time of each bout as well as the number of steps walked during each bout. The researcher then discussed how to use the RPE scale and indicated that each bout should be rated based on the perceived exertion levels of each SP. They were also instructed to gradually increase their bout time over the 10 weeks until they reached the minimum goal of 150 minutes per week. Finally, SPs were instructed in how to wear and use the pedometer as described under the equipment section of this paper.

Following these verbal instructions, the researcher conducted a practice session and asked each SP to write her goal for the first week in the allotted space on the activity sheet. The researcher then asked each SP to change into her walking shoes, followed by a practice session of walking briskly outside of the salon with each participant for as much as 10 continuous minutes. Upon return to the salon, the researcher asked the SP to record the starting and ending time of the bout, the number of steps walked, and her RPE on the activity sheet. The researcher answered questions and then left a packet with each SP containing (a) 11 activity sheets; (b) 11 stamped envelopes; (c) a copy of the RPE scale; (d) a Cool Cloth, with a demonstration on how it can be used to help control sweat; (e) an Instant Recess DVD that could be used to warm up before walking; and (f) written instructions on how to use the pedometer. She also discussed that

she would no longer be in touch with them daily, but they should continue to send in the new weekly activity sheets. Stylist-participants were told they could contact the researcher at any time should they need additional activity sheets, stamped envelopes, a new pedometer, or if they experienced an adverse event.

During the intervention, the researcher walked with SP1 to assist her in walking briskly. The researcher also met with participants throughout the 10 weeks as necessary to replace pedometers and to review the goal setting procedures.

**Post.** For the post-intervention, the researcher met with each SP at her salon within a day of completing the 10-week intervention to conduct the post interview and screenings. Each SP was asked to repeat the IPAQ-S, Social Support for Physical Activity Scale, and to discuss the Social Validity Questionnaire. They were also given a copy of a graph of their progress during the 10 weeks, and then weighed. Finally, each SP was provided with information on how to obtain the incentive for completing the program by going to a nearby vendor for a free pair of walking shoes, including a foot analysis, shoe fitting, and walking assessment.

## **Results**

### **Primary Results**

The total number of bouts per week for the first wave of Experiment 1 is shown in Figure 1, and for the second wave in Figure 2. These data suggest that most SPs did not meet the goal of walking for at least 150 minutes per week, with bouts of at least 10 minutes each. Stylist-participants 1, 2, and 4 completed the 10-Week walking program. Stylist-participant 3 completed baseline and one week of the intervention. Stylist-participants 5, 6, and 7 dropped out during baseline and before starting the intervention. Their graphs can be seen in the Appendix section.

Stylist-participant 1 reported a total of 24 bouts. She met her goal with all bouts lasting at least 10 continuous minutes, ranging from 15 to 90 continuous minutes each, with an average of 48 minutes per bout during the 10-Week program. She did not report any bouts during the first week, did not indicate her short-term goals, and she did not meet the long term goal of 150 minutes per week during the first four weeks. During week five, she exceeded the goal of 150 minutes, but averaged 16 steps per minute, far below the “brisk” walking speed of approximately 100 steps per minute. During week six, no bouts were reported but the researcher met and walked with her for 10 minutes to encourage a faster walking speed. During weeks seven, eight, and nine she exceeded the long-term walking goal, increased the number of bouts to four during weeks seven and eight, and increased her walking speed to approximately 38 steps per minute with a range of three to 88 steps. She did not meet the long-term goal during Week 10, with bouts totaling only 90 minutes. Figure 3 suggests that the number of steps per bout minute as well as the number of bout minutes per week steadily increased during the 10-Week program. During the first four weeks, her RPE ranged from four to seven with an average of six, generally indicating the moderate aerobic range of activity even though the number of steps she walked per minute were well below the moderate range. During weeks five through 10 her RPE ranged from four to eight with an average of seven. The solid horizontal line indicates that her bouts or time walked met the recommendation of walking a minimum of an additional 15 minutes per day to prevent weight gain. Despite an overall RPE range of four to eight, the trend line indicates little change in perceived exertion.

Stylist-participant 2 reported a total of 45 bouts. She met her goal with all bouts lasting at least 10 continuous minutes. Bouts ranged from 15 to 60 continuous minutes each, with an average of 38 minutes per bout during the 10-Week program. She met and exceeded the long

term goal of achieving 150 minutes of brisk walking each week with the exception of week four; her bout totaled 60 minutes. She did not report any weekly or daily short term goals. Her walking speed during the first five weeks averaged 72 steps per minute with a range of 66 to 124 steps. She achieved an average speed during the last five weeks of 73 steps per minute, with a range of 67 to 86 steps. Both speeds are generally considered below the moderate or brisk walking speed of 100 steps per minute. Figure 4 suggests a slight increase or upward trend in the number of steps walked per bout, while the actual minutes per bout suggests a downward trend. The solid horizontal line indicates that her bouts or time walked met the minimum of walking an additional 15 minutes per day to prevent weight gain. It should also be noted that despite an RPE range of four to eight, with an average of six during the last five weeks, the trend line indicates little change in perceived exertion.

Stylist-participant 3 reported one bout of 30 continuous minutes during week one. She left the program following the first week. The solid horizontal line indicates that her bouts or time walked met the recommendation of walking a minimum of an additional 15 minutes per day to prevent weight gain.

Stylist-participant 4 reported a total of eight bouts. She met the goal of bouts lasting at least 10 minutes each. All bouts ranged in time between 10 and 96 continuous minutes, with an average of 32 minutes per bout during the 10-Week program. During the first five weeks, her self-selected goal was to achieve 250 bout minutes each week, which she did not meet. During the last five weeks, her self-selected goal each week was to achieve 150 bout minutes, which she achieved only during week nine. Figure 5 suggests a downward trend in the number of steps walked per bout, while the actual minutes per bout suggests an upward trend. She did not report an RPE during the 10 weeks. The solid horizontal line indicates that most of her bouts or time

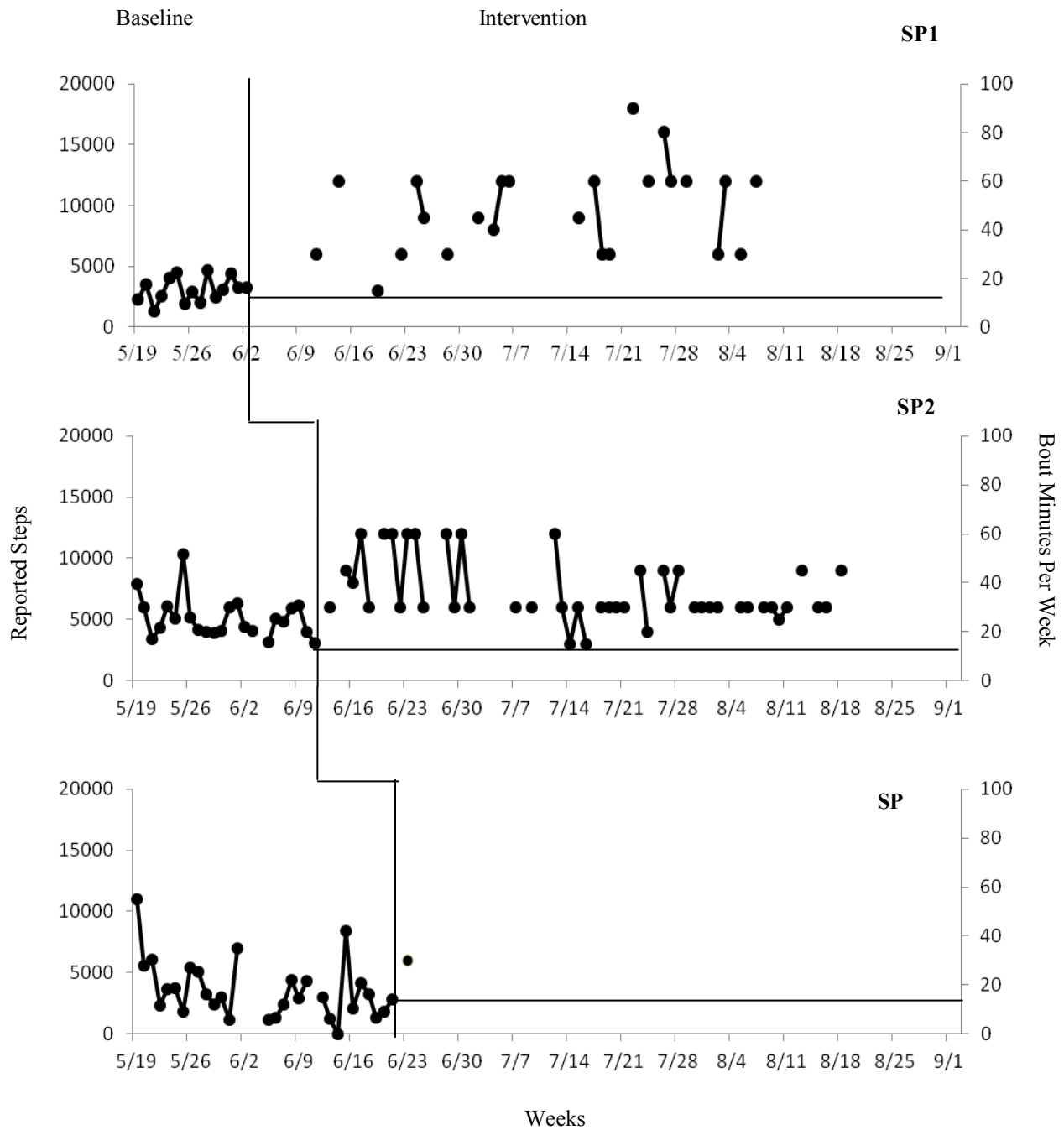
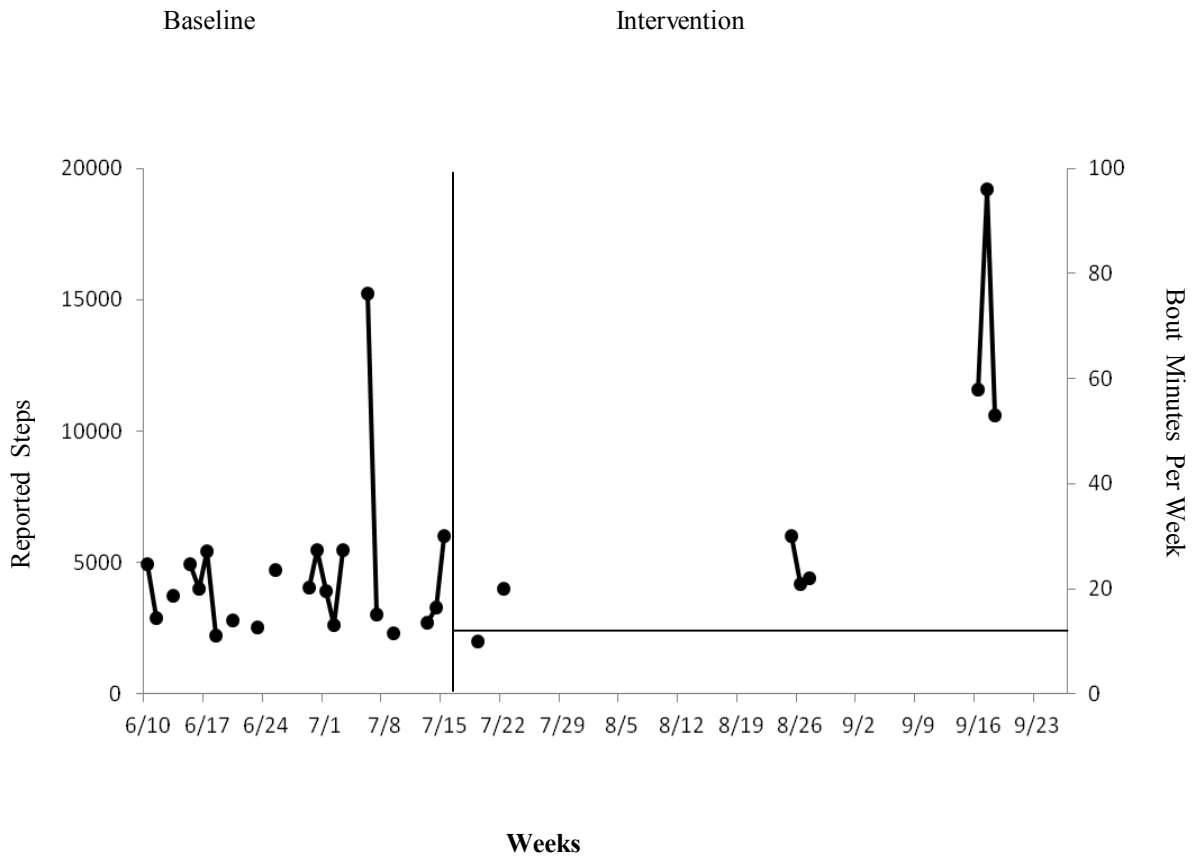


Figure 1. First Wave: SP steps during baseline and bouts per week during the intervention. Horizontal black line indicates minimum increase of 15 minutes per day needed to prevent weight gain.

## SP4



**Figure 2.** Second Wave: SP steps during baseline and bouts per week during the intervention. SP1, SP2, SP3 did not complete the baseline period. Horizontal black line indicates minimum increase of 15 minutes per day needed to prevent weight gain.

SP1

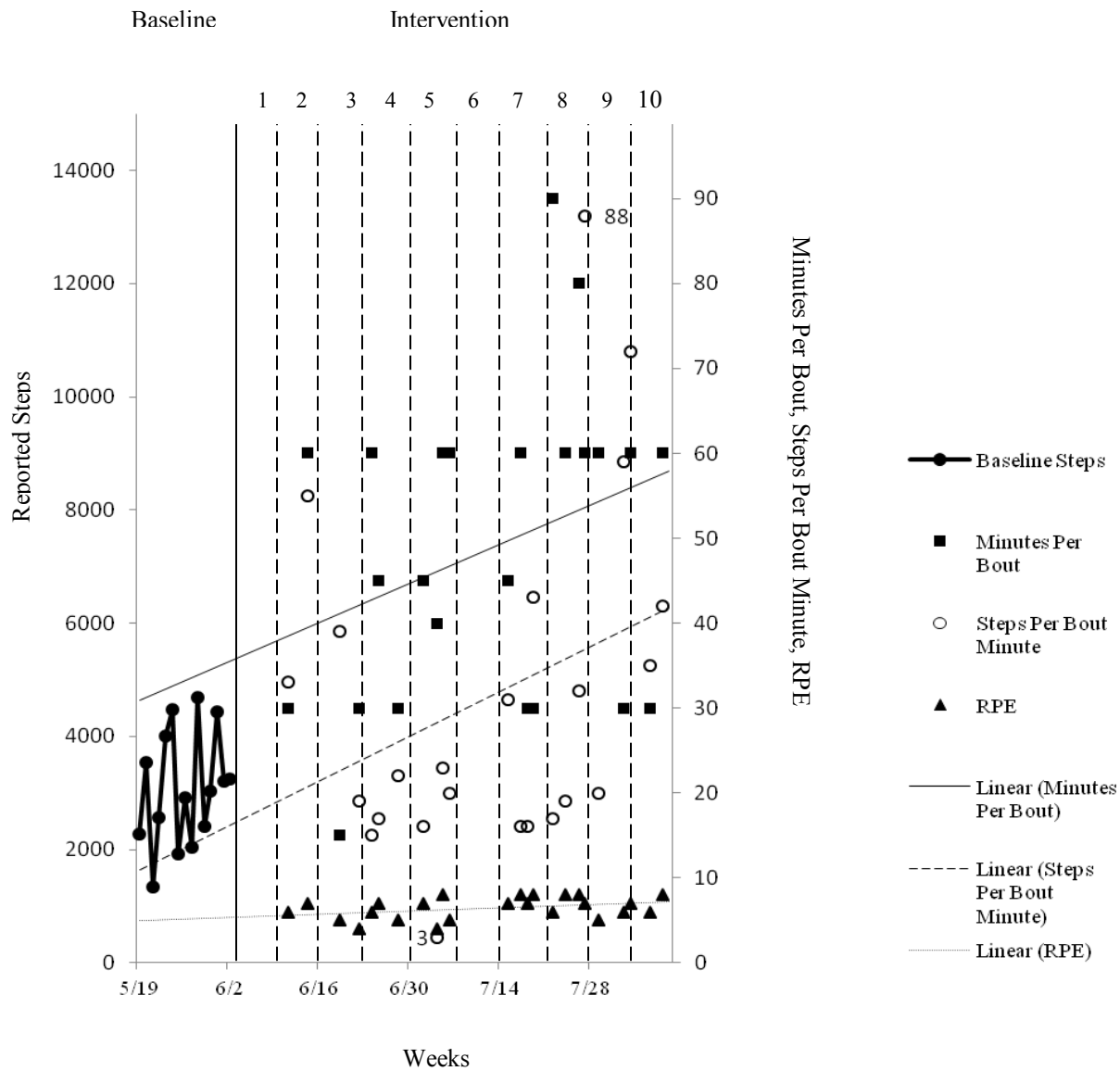


Figure 3. Bout time, steps per bout, and RPE for SP1. The dashed vertical lines represent 7-day weeks.



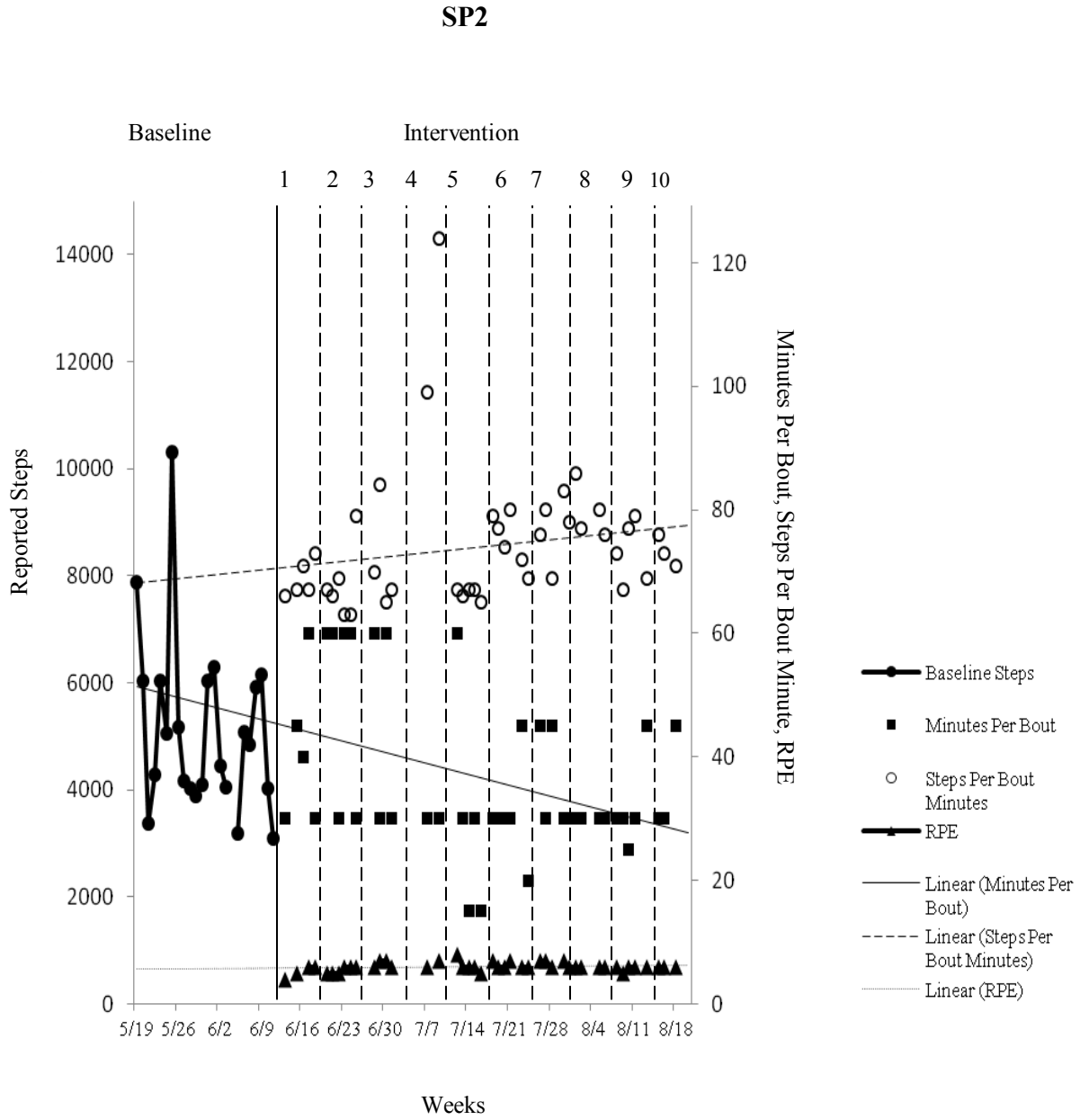


Figure 4. Bout time, steps per bout, and RPE for SP2. The dashed vertical lines represent 7-day weeks.

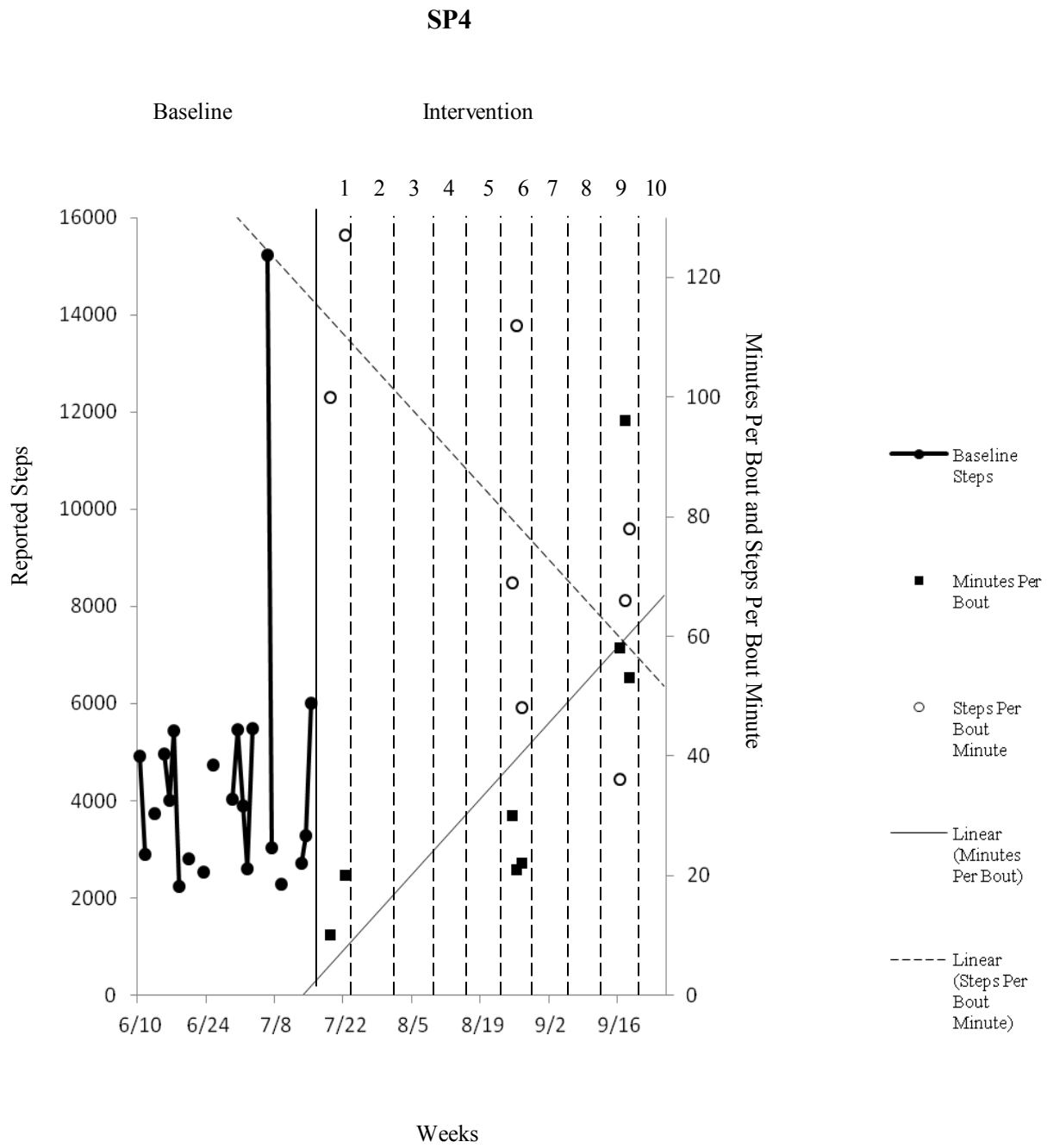


Figure 5. Bout time, steps per bout, SP4. The dashed vertical lines represent 7-day weeks.

walked met the recommendation of walking a minimum of an additional 15 minutes per day to prevent weight gain.

### **Secondary Results**

Secondary results for Experiment 1 include the (a) Social Support, (b) IPAQ-S, and (c) Social Validity Questionnaire. Results can be found in the text below along with corresponding tables.

**Social Support for Physical Activity Scale.** Only SP2 completed both pre- and post-intervention surveys. Support from family dropped from 53 to 47 or six points from pre to post, and support from friends increased from 32 to 45 or 13 points from pre- to post-intervention. This result corresponds with the social validity response below that SP2 found increased time with family and friends a benefit of the 10-Weeks program.

**IPAQ-S.** Results from the pre- and post-intervention scores can be seen in Table 1. Only SP2 completed the pre- and post-survey. She had a pre-intervention designation of low active for walking but moved to the moderate range post-intervention.

**Social Validity.** Social validity was measured through a series of questions prior to beginning the baseline-phase, and again at the close of the intervention-phase. As seen in Table 3, reasons for joining the 10-Week program centered around improving health status, which was closely aligned with the goals each SP planned to achieve. All SPs agreed it was important for AA/Bs to exercise and it was important to each SP that she exercise. Three of the four SPs had not considered modifying her hairstyle to better accommodate exercise, and three of the four had not exercised less or avoided exercise because of her hairstyle.

Responses regarding the social validity of procedures are seen in Table 4. Only SP2 completed the survey. Her responses included dissatisfaction with the baseline procedures, and

Table 1

*IPAQ-S Pre/Post Categorical Responses*

PA Category	SP1	SP2	SP3	SP4
VPA	moderate/	low/moderate	low/	moderate/
Daily Walking	moderate/	low/moderate	low/	moderate/
Other Moderate PA	moderate/	low/ moderate	low/	moderate/

*Note.* Categorical designation of pre/post responses to the IPAQ-S.

using and mailing the activity sheets. She was satisfied with procedures around using the pedometer, and she enjoyed setting her own goals. As seen in Table 5, responses from the post-intervention survey regarding the effectiveness dimension of social validity are highlighted. Only SP2 completed the questionnaire. She indicated she was pleased with having more contact with friends and family. Her overall satisfaction was presumed when asked if she would repeat or recommend the program to another stylist and she answered yes.

## **Discussion**

### **Primary Results**

The results of Experiment 1 to increase the intensity and frequency of PA using a 10-Week walking program were mixed. In follow-up to recommendations from a pre-focus group study, SPs were recruited to first complete the 10-Week program before they initiated recruitment with their respective clients to complete the program. Stylist-participants were asked to increase their steps by participating in 150 minutes of moderate aerobic activity per week in bouts of at least 10 continuous minutes. In Wave 1, SP1 and SP2 completed the program, while SP3 left after Week 1 of the intervention. Stylist-participant 1 met her goal of achieving 150 minutes of aerobic walking in at least 10 minute bouts. During the 10 weeks, she increased her walking speed to approximately 38 steps per minute with a range of 16 to 88 steps, below the “brisk” walking speed of approximately 100 steps per minute. Her minutes per bout and the overall number of bouts showed an upward trend while her RPE remained steady despite an increase in walking speed. She met the overall goal during Week 7, Week 8, and Week 9 but not Week 10. Stylist-participant 2 exceeded her overall goal by the end of the 10-Week program and also on most weeks during the intervention. She did not report her weekly goals, despite prompting from the researcher. Her minutes per bout showed a slight upward trend; her overall number of bouts

Table 2

*Pre/post Social Support Responses*

Participants	<u>Pre</u>		<u>Post</u>	
	Family	Friends	Family	Friends
SP1	28	37	--	--
SP2	53	32	47	45
SP3	44	35	--	--
SP4	25	51	--	--

*Note.* Pre/post responses to questions regarding social support for PA from family and friends.

Table 3

*Social Validity: Applied*

Applied Problem	SP1	SP2	SP3	SP4
Reason for joining the 10-Week program?	Increase PA	Improve Health	Curiosity/Health	Curiosity/Health
What do you hope to gain from the 10-Week program?	Weight loss	Life Balance	Weight Loss	Improve Health
Do you think it is important for AA/B to exercise?	Yes	Yes	Yes	Yes
Do you think it is important for you, personally, to exercise?	Yes	Yes	Yes	Yes
Have you ever considered modifying your hairstyle to accommodate exercise?	No	No	No	Yes
Do you ever exercise less than you would like because of your hair?	Yes	No	No	No
Do you ever avoid exercise because of your hair?	Yes	No	No	No

*Note.* Social validity survey responses on the applied importance of the intervention by SPs.

Table 4

*Social Validity: Procedures*

Procedures	SP1	SP2	SP3	SP4
Baseline period was well explained				
Baseline period was not well explained/confusing		X		
Length of baseline was shorter than expected				
Length of baseline was longer than expected		X		
Length of baseline was about what I expected				
Found it hard to keep up with steps/report daily		X		
Found it easy to keep up with steps/report daily				
Found it easy to remember to wear pedometer		X		
Found it hard to remember to wear pedometer				
10-Week program was explained well		X		
10-Week program was not explained well				
Activity sheets were easy/had no problems				
Activity sheets were hard to use/had problems				
Had no problems remembering to mail activity sheet				
Had problems remembering to mail activity sheet		X		
Would have preferred more help from researcher setting weekly goals				
Enjoyed setting my own weekly goals		X		
Could have walked more than 150 minutes per week		X		
Additional comments/suggestions:				

*Note.* Post-intervention survey responses on the social validity of the procedures from SPs.



Table 5

*Social Validity: Effectiveness*

Effectiveness	SP1	SP2	SP3	SP4
What benefits did you receive from participating in the 10-Week Program?				
Lost Weight				
Less Stress				
Increased time w/family		X		
Better Sleep				
Changed Diet				
Spiritual Gains				
Healthier Lifestyle				
Other?				
<i>Would you recommend this program to other stylists?</i>		Yes		

*Note.* Post-intervention social validity survey responses on effectiveness of the intervention by SPs.

showed a downward trend while her RPE remained steady. In Wave 2 of the research, SP1, SP2, and SP3 left the program during the baseline phase. SP4 did achieve her overall goal of 150 minutes of brisk walking during Week 9. Although she reported few bouts (e.g., 8), they showed an upward trend. Stylist-participant 4 did not report her RPE. The overall effects of Wave 1 of the research were stronger than those of Wave 2.

### **Secondary Results**

**IPAQ-S.** Secondary results were sparse as only SP2 completed all pre- and post-intervention surveys. As for the IPAQ-S, SP2 moved from a low-active designation for walking to the moderate range. There appears to be no relationship between pre-reporting PA levels and completion of or success in the 10-Week program.

**Social support.** Results of the pre-test on the Social Support for Physical Activity survey revealed the highest score for family support for SP2, while SP4 had the highest score for support from friends. Only SP2 completed the post-test, revealing that support from family dropped from 53 to 47 from pre to post-test, and support from friends increased from 32 to 45 points from pre- to post-test. Although SP1 completed the program, she had a lower score for family support at pre-testing, but one of the higher scores for support from friends. Overall, the social support from family and friends could not fully be evaluated because of the high attrition rates, and because of incompleteness of the post-tests.

**Social validity.** The social validity of the applied dimension of the program was confirmed. The SPs indicated exercise was not only important for AA/Bs in general, but important for them as individuals. Stylist-participants also agreed that it was important for them to help assist clients in becoming more physically active. Questions regarding the social validity of the procedures

were only answered by SP2 who indicated confusion about the length and purpose of the baseline phase and problems with remembering to fill-out and mail her activity sheets. She expressed satisfaction with wearing the pedometer and indicated she enjoyed setting her own goals. Despite numerous prompts from the researcher, she would not indicate her goals on her weekly Activity Sheets and did not provide an explanation for not doing so when asked. Questions regarding the social validity of the effectiveness were only answered by SP2. When asked what the benefits were of participating in the 10-Week program she indicated spending time with family and friends was a good result. She also indicated that she would recommend the program to other stylists. She was pleased with the effects based on her responses to these questions.

### **Strengths and Limitations**

**Strengths.** Two strengths can be noted from this experiment. First, three SPs completed the baseline and experimental phases of the research, despite their complaints about the length of the baseline procedures. Second, the SP who completed both the pre- as post-experiments surveys indicated socially valid results and satisfaction with the overall procedures and effectiveness.

**Limitations.** The limitations are both methodological and procedural. First, the baseline phase measured the number of steps taken per day, while the experimental-phase measured the number of bouts, bout minutes, and RPE. Therefore, this research had no baseline, leaving the results questionable at best. Second, SPs appeared not to understand the purpose or the length of the baseline. This led to numerous inquiries from about why the 10-Week portion of the research had not yet begun. Most said they perceived the baseline period as part of the 10-Week program and did not wish to remain in the baseline phase for an undetermined number of weeks, perhaps accounting for the attrition rate. Third, three SPs lost their pedometers multiple times. In some

instances, the researcher could not reach the participant immediately, but all pedometers were replaced within two days. Still, all three who lost their pedometers numerous times dropped out of the 10-Week program. Fourth, SPs often had trouble adjusting to wearing and positioning the pedometers for fear of breaking or tearing synthetic or natural nails. This fear may have led to incorrect placement of the pedometer. Fifth, the researcher did not ask the SPs to determine which incentives would be effective. The promise of free walking shoes along with a free foot and walking analysis was clearly not reinforcing. Comments were made that the particular vendor chosen to provide the new shoes carried inexpensive and therefore useless brands. Additionally, the vendor backed out of the agreement to provide the free footwear and analysis. Sixth, despite weekly prompting from the researcher, SP1 and SP2 never indicated their weekly goals. Stylist-participant 4 consistently listed her goals, but they were unrealistic. For example, although sedentary, she wanted to start with a goal of 150 minutes during Week 1, and continued to increase her goals even when she had not achieved her goal the previous week. Seventh, the goal of 150 minutes per week may not have been sufficiently challenging for SP2 as she appeared to easily and almost consistently meet and exceed the goal. She indicated a pre- and post IPAQ-S analysis in the moderate range so it is possible a more challenging goal would have been more appropriate. Discovery of a more realistic goal would have been possible had the baseline period measured bouts instead of steps.

### **Future Directions**

Future research studies should include the following: First, more attention should be placed on increasing the level of activity (e.g., walking) prior to beginning a more complex program that requires counting and recording bouts, and increasing speed, in addition to weekly goal setting. In the next study, CPs should be recruited by SPs and only required to record and increase the

number of steps walked per day. Participants should also be given the option of how they would like to report their steps each week by way of text, email, or telephone, in addition to mailing activity sheets. Second, increasing the level of social support appears to be a critical direction for future research. In the current study, the researcher, upon request, made daily calls periodically during the baseline phase to remind SPs to wear their pedometer each day. Although this is a form of social support, assistance from a person more closely related to the participant may be more effective and limit the attrition rate. Therefore, the next experiment should include prompts and other forms of social support from an SP that CPs have known at least six months. Third, the baseline-phase of the research should be more clearly explained. One suggestion to incorporate in future experiments is to describe the baseline as a period leading up to but in addition to the 10-Weeks during the experimental phase. Fourth, identify incentives that participants find useful and reinforcing is useful. Instead of incorporating assumptions made by the researcher, SPs and CPs should be given an opportunity to identify more appropriate incentives.

### **Summary**

Overall, future research studies should continue to examine the effects of increasing PA with goal setting and social support. The focus should be placed on increasing the frequency of PA before adding requirements to also increase the intensity with multiple goal setting procedures.

## **EXPERIMENT 2**

The purpose of Experiment 1 was to assess the effects of a 10-Week program to increase the frequency and intensity of PA with AA/B stylists. The experiment was conducted, in part, as a follow-up recommendation from the pre-study Focus Groups to train SPs to become more physically active so they could provide social support to the CPs they recruited for the 10-Week

program. The effects were evaluated using a pre/post, MBL design across seven participants in two waves. The independent variable was the 10-Week walking program, which included an assigned goal to engage in at least 150 minutes of brisk walking by the end of the program. The primary dependent variable was to increase the frequency and intensity of steps per week for at least one 30 minute bout, or in three 10- minute bouts totaling at least 30 minutes on most days of the week. The results were mixed. During the first wave of the intervention, which had three SPs, only SP1 and SP2 completed the program. Stylist-participant 1 reached the overall goal of 150 minutes of brisk walking by the end of the 10-Weeks. Stylist-participant 2 exceeded her goal with the exception of one week. During the second wave of the intervention, which had four SPs, only SP4 completed the program, and achieved her overall goal of 150 minutes of brisk walking during Week 9. Therefore, the overall effects of Wave 1 of the intervention were stronger than Wave 2.

The experiment had a number of methodological and procedural limitations. First, different behaviors were measured during the baseline (e.g., frequency of steps) and the intervention (e.g., intensity and frequency of steps), making it impossible to know for sure if the intervention was effective. Second, IOA was not obtained due in part to challenges explained in the introduction. Third, misunderstandings between the researcher and the SPs about the baseline of the intervention resulted in threats of as well as attrition from the program. Fourth, multiple instances of lost pedometers resulted in missing data. Fifth, reports of weekly goals were absent or, at best, inconsistent, which negatively impacted the fidelity of the procedures. Without reports of weekly goals it was impossible for the researcher to fully assess why SPs were or were not achieving their weekly goals.

These limitations were addressed in Experiment 2 in the following ways. First, behaviors measured during the baseline were the same behaviors measured during the intervention. Second although IOA was not collected in this experiment, it was collected in Experiment 4. Third, the researcher placed more emphasis on explaining the baseline procedures, including what to expect, to eliminate as many misunderstandings as possible. Fourth, the researcher placed more emphasis on the importance of safekeeping the pedometer so that the probability of it being lost would be negligible. For example, participants in Experiment 2 were asked not to allow their children and friends to play with the pedometer. Fifth, the goal setting procedures were simplified so that participants were only required to provide weekly goals for the number or frequency of steps they planned to take. Goal setting in Experiment 1 may have been too complicated. For instance, SPs were asked to project goals for each week regarding the total amount of bout time they intended to take. In addition, they were asked to record the intensity or RPE of each bout, the start and stop time, the number of steps per bout in addition to recording and reporting the total number of steps taken each day and the start and stop time for wearing the pedometer.

## **Method**

### **Recruitment**

The recruitment of SPs and CPs was conducted in Lawrence, Kansas between March, 2011 and April, 2011. None of the SPs in Experiment 1 participated in Experiment 2, so new SPs had to be recruited. Recruitment of SPs was conducted by the researcher using similar methods identified in Experiment 1. The researcher identified potential enrollees by soliciting assistance from friends, members of her sorority, and colleagues in the Lawrence, Kansas area. The researcher followed up on each recommendation and used a flier to help explain the program.

Stylist-participants recruited CPs from their respective customer bases using a flier developed by the researcher and a checklist of inclusion criteria.

### **Stylists**

**SP8.** Stylist-participant 8 was a 47-year-old female. Her BMI was not calculated as she was not weighed. She wore a short, chemically straightened hairstyle. She had an income of \$35,000 to \$50,000 per year and indicated high school was the highest level of education she had achieved. She was diagnosed with anxiety, obesity, and she smoked approximately one pack of cigarettes per week. Her general health was self-rated on the BWWS as good, but self-rated as very good when compared to other AA/B women her age.

**SP9.** Stylist-participant 9 was a 58-year-old female. Her BMI was not calculated as she was not weighed. She wore a short, natural hairstyle. She had an income of \$35,000 to \$50,000 per year and indicated a bachelor's degree was the highest level of education she had achieved. No additional information is available for SP9.

### **Participants**

Stylist-participant 8 recruited one CP; SP9 recruited two CPs. See Table 1 for a summary of their demographics. Also, see Table 1 in Experiment 1 for SP demographics.

**CP1.** Customer-participant 1, recruited by SP8, was a 51-year-old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S, she participated in VPA one day a week for approximately 15-30 minutes, but did not participate in walking or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active, but intended to become active within the following 30 days, placing her in the Preparation or Stage 3 of change. She was married, had an income of between \$25,000 to \$35,000 a year, and reported having completed a bachelor's degree as her highest level of education. Customer-



participant 1 was diagnosed with anxiety and overweight. Her general health was self-rated on the BWWS as very good and also very good when compared to other AA/B women her age.

**CP2.** Customer-participant 2, recruited by SP9, was a 53-year-old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she participated in VPA, walking, and MPA three days a week for 10-15 minutes per day. Her TTM survey indicated she had been physically active for less than 6-months, placing her in Active or Stage 2 of change. She was married, had an income of over \$75,000, and reported having completed a law degree as her highest level of education. Customer-participant 2 was diagnosed with HBP, high cholesterol, and obesity and required a medical clearance to participate in the research program. Her general health was self-rated on the BWWS as very good, but rated good when asked how her health compared to other AA/B women her age.

**CP3.** Customer-participant 3, recruited by SP9, was a 42-year-old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, walking, or MPA on any day for more than 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to become active within the next 30 days, placing her in the Preparation or Stage 3 of change. She was single, had an income of \$25,000 to \$35,000, and reported having completed a bachelor's degree as her highest level of education. Customer-participant 3 was diagnosed with HBP and required medical clearance to participate in the research program. Her general health was self-rated on the BWWS as excellent and also excellent when asked how her health compared to other AA/B women her age.

### **Settings**

**Salon.** Stylist-participant 8 owned a building at the corner of a well traveled thoroughfare in a residential area. The salon was situated on a corner, surrounded by houses and open space in

a primarily AA/B neighborhood. The one-story building had a separate and private parking lot. Two work stations, dryers, and wash bowls were included in an open work area. The reception area merged into the work area and included four chairs for waiting customers to sit. A spa area was separated by a wall and included a pedicure throne and nail station. Stylist 8 worked as a sole proprietor and employed one additional stylist periodically.

Stylist-participant 9 converted the downstairs of her home into a salon. Entrance could be obtained through the garage door or through the front of the two-story house, with street parking for customers. The home was located in a residential neighborhood with AA/B and non-Hispanic white residents. The salon area included one work station, washbowl, and dryer. A separate reception area with an adjoining doorway could seat three waiting customers.

**Intervention.** The settings for the baseline, experimental, and post-experimental sites varied. Walking during the baseline phase presumably took place in local neighborhoods, while shopping or engaging in a leisure activity, or at work. The assessments (e.g., BMI, pre-tests) during baseline for each CP took place at their respective places of employment in small rooms or office settings. Walking for CPs during the intervention also presumably occurred in a variety of locations. For SPs, the researcher met each at their respective salons, as described earlier. During the post-intervention, immediately following the 10-Week program, assessments for each CP again took place at their respective places of employment.

**Post.** Following the intervention, the researcher met with each CP at her employment site within a day or two of completing the 10-Week intervention to conduct the post interview and screenings.

## **Experimental Design**

The effects of the 10-Week walking program, with an assigned goal to increase the average number of steps per week by 2000 by the end of 10 weeks was evaluated using a pre/post, three-leg MBL design across participants. The specifics of the design are described under the general methods section. The intervention phase for Experiment 2 included a changing criterion design, defined as "...the effect of the intervention is demonstrated by showing that behavior changes gradually over the course of the intervention phase." (Kazdin, 2011, p. 167).

Pre-analysis was performed prior to the no-intervention baseline-phase for CPs and consisted of assessments to determine (a) activity level using the IPAQ-S, (b) fitness level using the PAR-Q, (c) perceptions about hair care and exercise using the Wake Forest Hair Care Survey, (d) general health and wellness using scales from the Black Woman's Wellness Study (BWWS), (e) Social Support and Physical Activity, (f) TTM Survey, (g) PA decision making using the Decisional Balance Scale, (h) PA confidence using the Efficacy Scale, and (i) social validity of the problem. Post-testing consisted of anthropometric measures to determine BMI, and assessments to determine (a) activity level using the IPAQ-S, (b) Social Support and Physical Activity, (c) PA decision making using the Decisional Balance Scale, (d) PA confidence using the Efficacy Scale, and (e) social validity of the procedures and outcomes.

### **Dependent Variable**

The primary dependent variable (DV) was to achieve an increase in the frequency of steps by an average of at least 2000 by the end of the 10-Week program.

Secondary dependent variables were (a) social support, (b) an increase in self-efficacy, (c) an increase in decisional balance, and (d) an increase in PA as indicated on the IPAQ-S.

### **Independent Variable**

The independent variable (IV) was a modification of the AARP 10-Week Walking Program, which included social support from SPs, and weekly goal setting procedures. Customer-participants were asked to increase the average number of steps taken weekly by 2000 as an assigned goal. Customer-participants self-selected their weekly goals during the 10-Weeks.

### **Procedures**

Before implementing the research, SPs were asked to review and approve a survey packet of information regarding the proposed research and then provide feedback to the researcher (Appendix FF). Stylist-participants were asked to (a) review the recruitment flier and make suggestions about the design and purpose of the flier, (b) review the activity sheet for CPs and comment on the design and whether the sheet was the best method for collecting data, (c) review the activity sheet for SPs and comment on whether the sheets would be easy to use, and (d) review an example of a MBL graph and comment on its use in motivating participants.

Additional survey questions included in the packet asked about the benefits of PA, whether SPs agreed that hair-care has generally been cited as one reason AA/B women chose not to exercise, and solicited suggestions on incentives that might be effective. Feedback from SPs resulted in adjustments made to increase the brightness of the fliers by placing the information on neon, bright-color paper before distributing them to the SPs. Stylist-participants were then trained on how to recruit CPs using the flier and checklist developed by the researcher. Stylist-participants were also trained by the researcher to provide social support in the form of encouraging CPs to stay with the program, to provide hair care support as necessary, and then shown how to fill out the weekly activity sheets.

Table 1

*Demographic Profile of CPs*

Demographic	CP1	CP2	CP3
Age	51	53	42
Gender	F	F	F
Ethnicity	AA/B	AA/B	AA/B
Education	BA	JD	BA
Income	<\$35k	\$75k+	<\$35k

*Note.* Demographic profile of customer-participants (CPs). African American/Black is abbreviated using the letters AA/B.

Stylist-participants recruited potential enrollees and asked them to contact the researcher as indicated on the recruitment flier. The researcher then followed up with each potential CP either over the telephone or in person.

Potential enrollees were provided with the informed consent form, including the one-page summary form that was read aloud to them upon request. Upon signing the consent form, they were asked PA fitness questions from the PAR-Q to determine if a medical clearance was needed to proceed. For participants who needed clearance, a medical consent form was provided.

Once all medical clearance forms were received, all CPs were asked to participate in the pre-analysis as outlined under the experimental design section. The researcher met with each CP at her place of business and provided them with a pedometer and written guidelines on how to use it. The researcher provided instructions on how to use the activity sheets, how to open and close the pedometer, and proper placement of the pedometer using the 20-step test as described earlier.

The researcher notified each SP in writing as well as over the telephone or in person that her CP was actively participating in the program but was in the baseline phase of the experiment. During baseline, the researcher recorded and graphed information reported about the number of steps taken each day. Customer-participants either called or sent a text each day, in addition to sending in their weekly reports.

As each CP completed baseline, the researcher hand-delivered a letter explaining the next steps in the research, with a copy sent to the appropriate SP, in addition to verbally reviewing the baseline results and discussing the 10-Week program. Each CP was asked to increase her daily steps an average of 2000 over the course of the 10 weeks. The researcher discussed weekly goal

setting, how to use the new activity sheets and the incentives schedule. At the close of the meeting the researcher provided each CP with a packet that included an Instant Recess video for warm-ups, a Cool-Cloth to help control sweating, and 11 activity sheets and stamped envelopes as explained in the general methods section of this document.

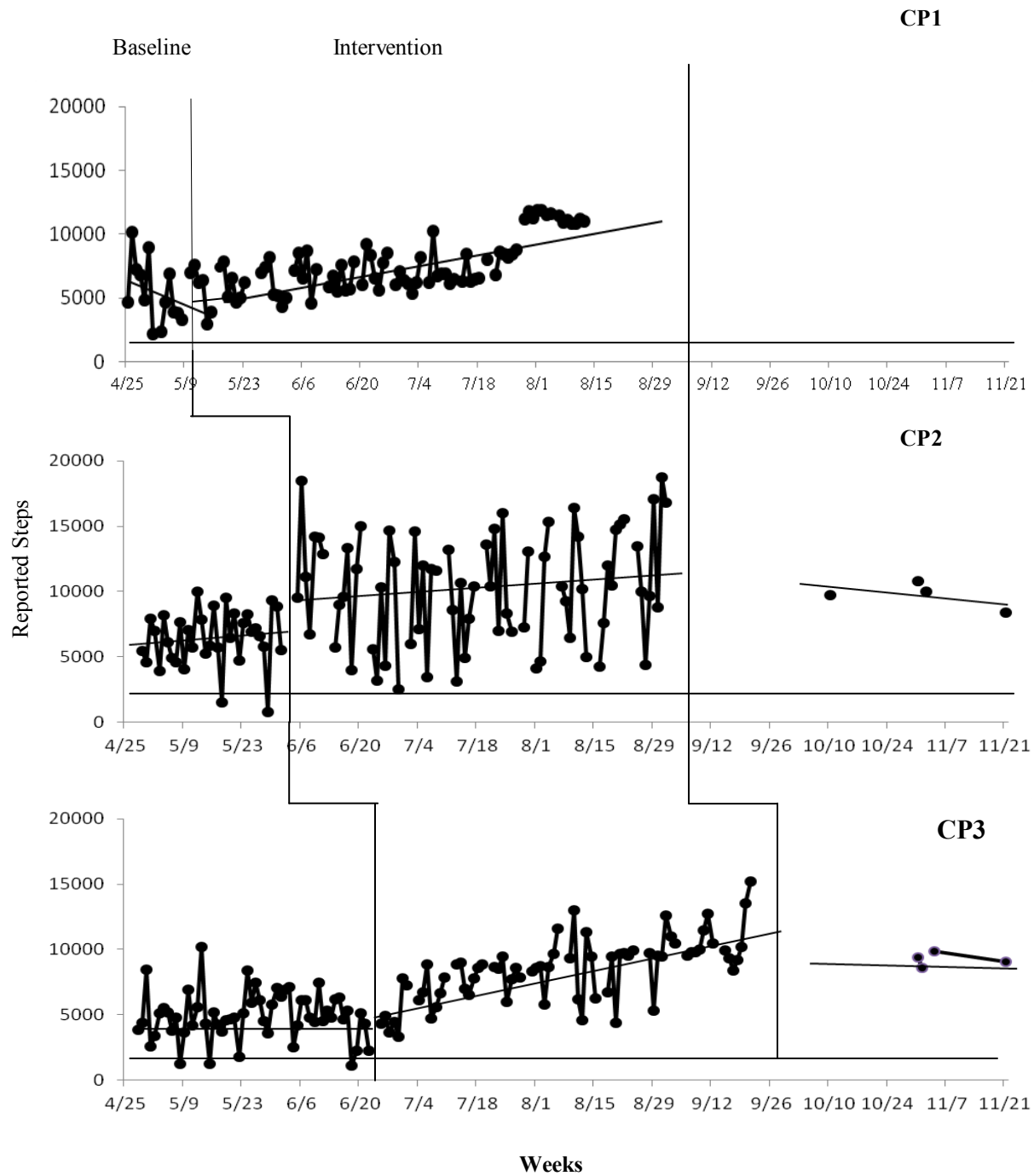
During the 10-Weeks, the researcher shared the progress of each CP with her corresponding SP. Feedback from the researcher to the SPs was provided verbally as well as through a graphed demonstration of progress. Feedback from the SPs to the researcher was collected each week in person using the activity sheets for which each SP received \$5.00. Customer-participants who were making sufficient progress received incentives according to schedule with a \$15.00 reduction in hair care services at the end of the first week, \$25.00 reduction in hair care services at the end of the 5<sup>th</sup> week, and a \$50.00 reduction at the end of the 8<sup>th</sup> week .

At the end of the 10-Weeks, the researcher met with the CP to collect post-research data as outlined under the experimental design section. She then met with the CP and the SP simultaneously, when possible, at the respective salon to review the progress and present the CP with a copy of the final graph of their progress. Each CP was then asked if the researcher could stay in touch for the next few months to check on their progress and collect post-intervention step data. Customer-participant 2 and CP3 responded in the affirmative while CP1 declined.

## **Results**

### **Primary Results**

The total number of steps taken by each CP in Experiment 2 can be seen in Figure 1. All CPs met their long-term goal and increased their step average by at least 2000 steps above



*Figure 1.* Customer-participant's steps during the baseline, experimental, and post-experimental phases. Horizontal black line indicates minimum increase of 2000 steps per day needed to prevent weight gain.



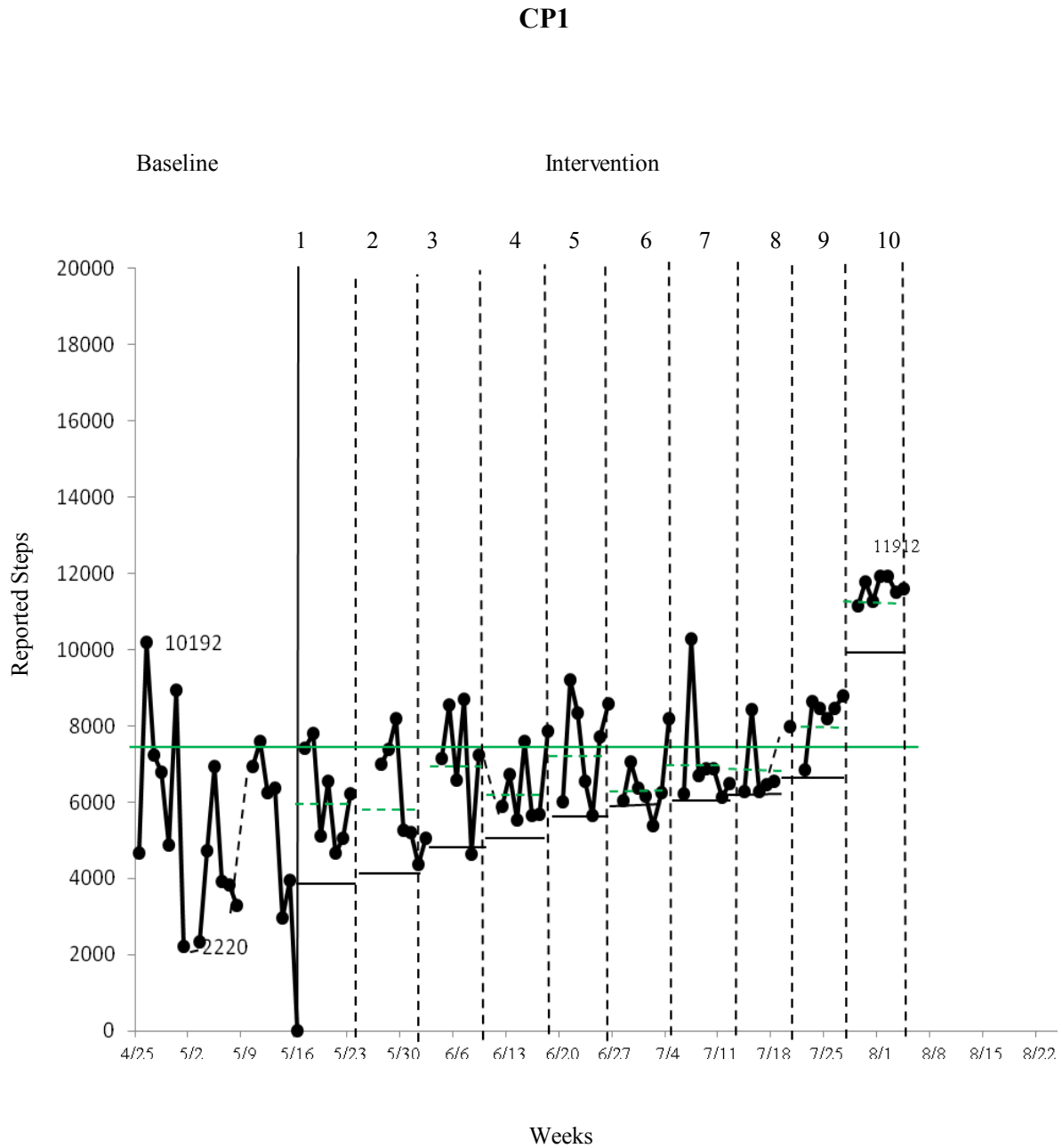
baseline. All CPs received the reduction in hair care services as incentives according to the pre-determined schedule.

Customer-participant 1 had an average of 5680 steps during the last seven days of baseline. Her long-term goal, after adding 2000 steps, was to achieve an average of 7680 steps per week by the end of the 10-Week program. Her steps per day during baseline ranged from 2201 to 10,192 as seen in Figure 2. During the intervention, she self-selected a goal each week. The goals are depicted by the solid horizontal black lines in Figure 2, beginning with a goal of an average of 4000 steps per day for Week 1, followed by goals of 4200, 5000, 5200, 5800, 6000, 6100, 6200, 6800, and 9000 steps per day goal for Week 10. As seen in Figure 2, her weekly goals, ranging from 4000 to 5200 did not exceed her baseline average of 5680 until Week 5 of the intervention. Customer-participant 1 consistently exceeded her goals, as depicted by the dotted horizontal green lines, which show the average number of steps taken that week beginning with an average of 6115 steps during Week 1, followed by 6068, 7139, 6411, 7432, 6490, 7079, 6997, 8233, and a 11,586 step average for week 10. Her average number of steps during Week 1 was 6115, with steps ranging between 6068 to 7432 during the first eight weeks. At Week 9, her average increased to 8233, and 11,586 during Week 10. Figure 1 indicates an upward trend for CP1, with steps per day ranging from 4370 during the first nine weeks, to 11,912 during week 10. Customer-participant 1 was a graduate school student during the first eight weeks of the program, and on a break during weeks nine and 10, which may explain the steep increase in steps during those weeks. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Her final average during week 10 of 11,058 steps represents an increase of 5378 steps or 95% over baseline steps.

Customer-participant 2 had an average of 6301 steps during the last seven days of baseline. Her long-term goal, after adding 2000 steps, was to achieve an average of 8301 steps per day by the end of the 10-Week program. Her steps during baseline ranged from 817 to 9979 as seen in Figure 3. Each week, she self-selected a goal, depicted by the solid horizontal black lines in Figure 3. Her goal was an average of 7250 steps per day for Week 1, followed by goals of 9000, 10,000, 8500, 10,000 for weeks five through nine, and 11,500 steps per day for week 10. Customer-participant 2 exceeded her weekly goals with the exception of weeks three, five, and seven as depicted by the dotted horizontal green lines. They show the average number of steps taken each week beginning with an average of 12,448 steps during Week 1, followed by averages of 9765, 7560, 9498, 8403, 11,000, 8748, 10,275, 11,395, and a 12,362 step average for Week 10. Her average number of steps during Week 1 was 12,448 with steps ranging from 2556 to 18,479 during the 10-Week program. Step averages for CP2 demonstrated a wide degree of variability, which may have correlated with the variability in her schedule as a law professor and her scheduled participation in a walking group several days of the week during her lunch hour. During the first five weeks, her self-selected goals varied then increased and remained stable at 10,000 steps during the next four weeks. Her goal increased to 11,500 at Week 10, which she exceeded by walking an average of 12,362. Her final average during week 10 of 12,362 steps represents an increase of 6061 steps or 96% over baseline steps. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Figure 1 indicates an upward trend for Customer-participant 2 during the intervention, but a downward trend in the post-experimental phase. During the post-experimental phase, CP2 averaged 5872 steps one-month post, a 429 step or 6% decrease over baseline steps of 6301, and a 6490 step or 52% decrease post experiment. During the second

month post experiment, she averaged 9198 steps, an increase of 2897 steps or 45% increase over baseline. Her overall average steps for both months was 9735, a 3434 step or 54% increase over baseline, and a 2627 or 21% decrease post experiment.

Customer-participant 3 had an average of 3585 steps during the last seven days of baseline. Her long-term goal, after adding 2000 steps, was to achieve an average of 5585 steps per week by the end of the 10-Week program. Her steps during baseline ranged from 1206 to 10,194 as seen in Figure 4. Each week she self-selected a goal, depicted by the solid horizontal black lines in Figure 4. They show a goal of an average of 6000 steps during Week 1, followed by gradually increasing goals of 7000, 8500, 8500, 8600, 9000, 9500, 10,000, 15,000, with no goal indicated for Week 10. Customer-participant 3 continued to increase her weekly goal though, With the exception of Week 5, she did not meet them as depicted by the dotted horizontal green lines. The average number of steps taken during Week 1 was 4110, followed by averages of 6629, 8090, 8106, 8770, 8600, 8495, 9734, 10,534, and 10,444 steps during Week 10. Her final average of 10,444 steps during Week 10 steps represents an increase of 6859 or a 91% over baseline. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Figure 1 indicates an upward trend for CP3 during the intervention and post-experimental phases. During the post experimental phase, CP3 averaged 8,994 steps one month post-experiment, a 5409 step or 66% increase over baseline and a 1450 step or 14% decrease post experiment. During the second month post experiment, she averaged 9440 steps, a 5855 step or 60% increase over baseline, and a 1004 step or 10% decrease post experiment. Her overall average steps for both months was 9217, a 5632 step or 63% increase over baseline and a 1227 step or 11% decrease post experiment.



*Figure 2.* Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent customer-participant's self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.

CP2

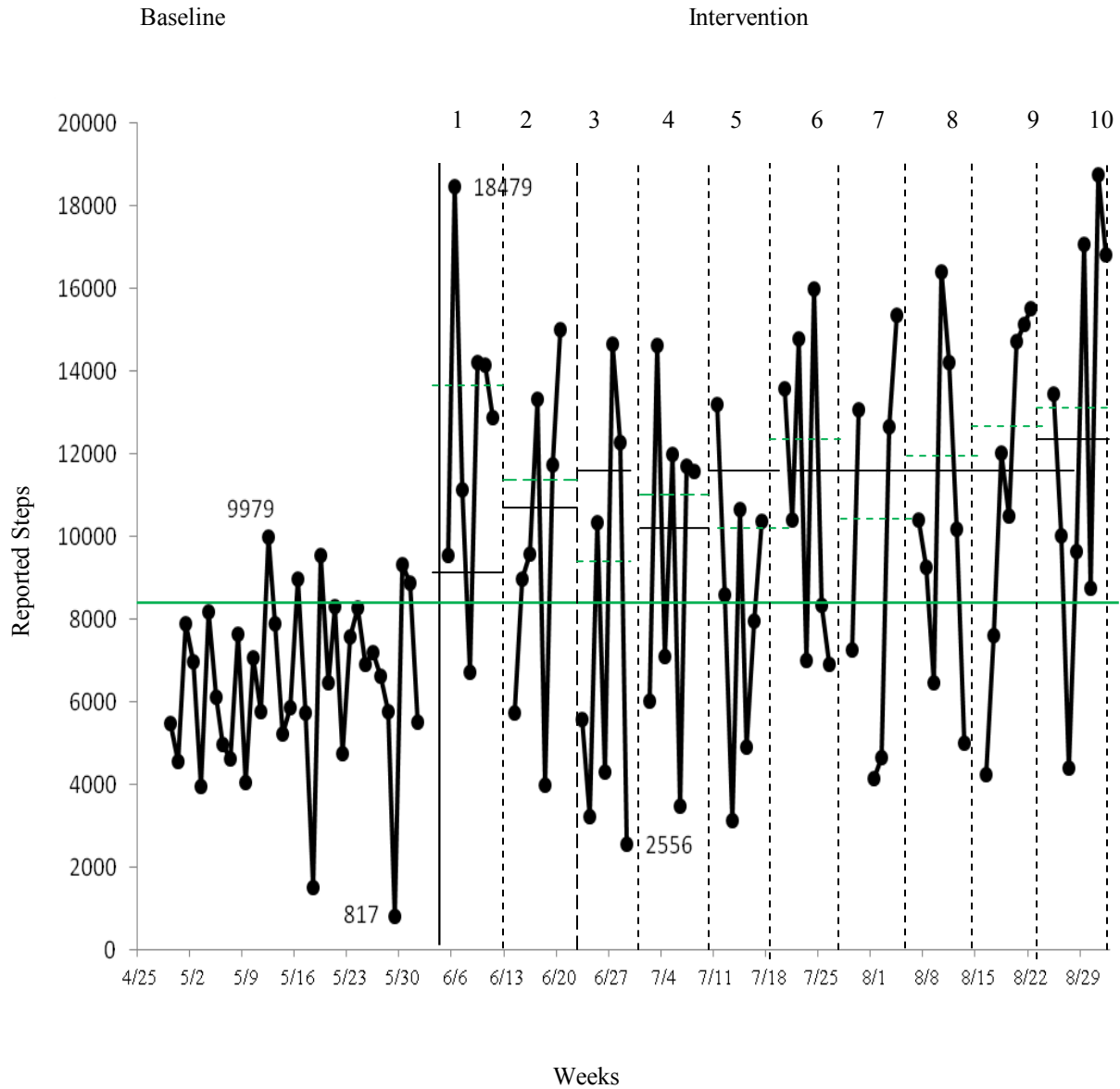
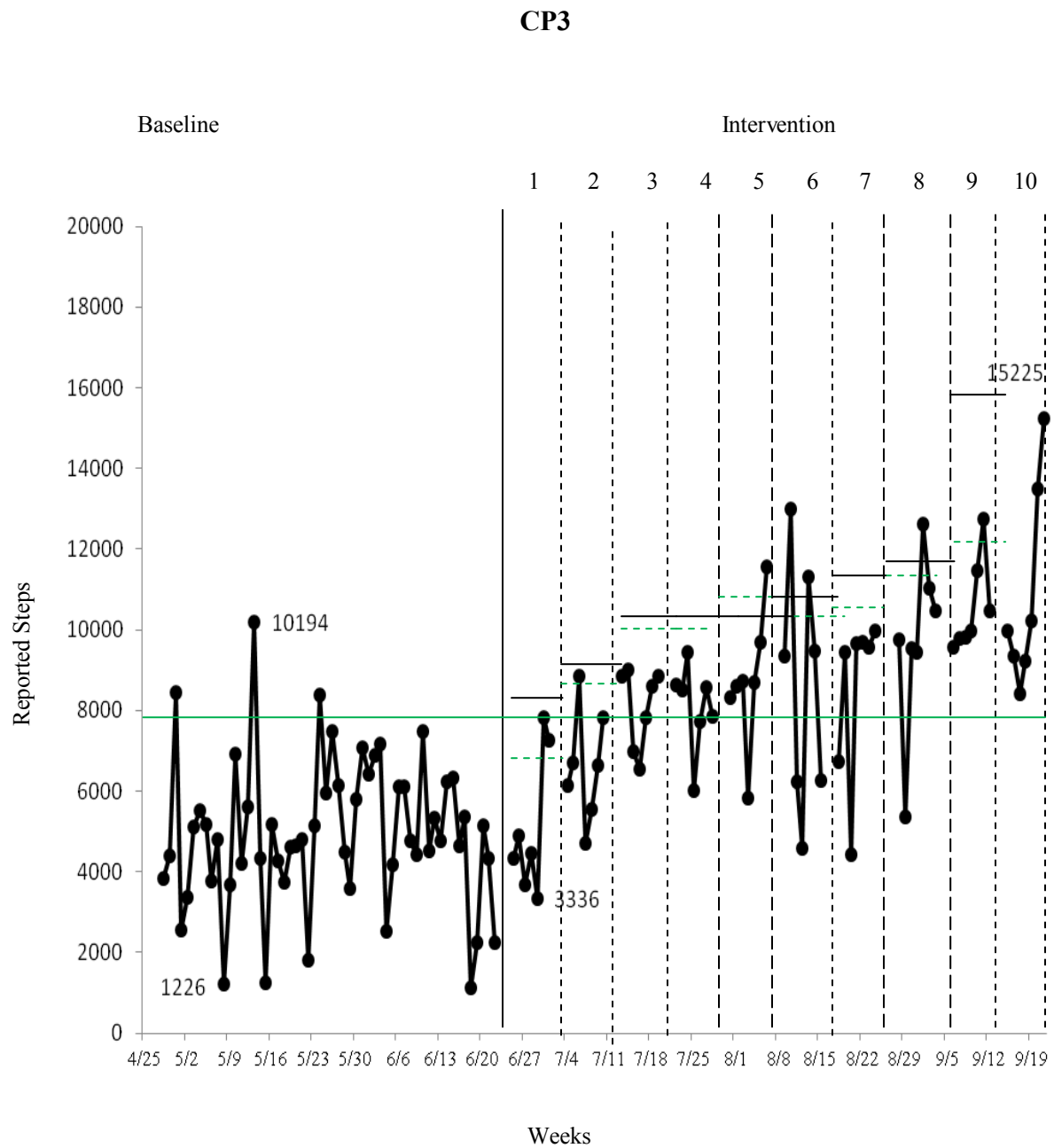


Figure 3. Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent customer-participant’s self-selected goal average, and dotted horizontal green lines represent actual step average per week.



*Figure 4.* Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent customer-participant's self-selected goal average, and dotted horizontal green lines represent actual step average per week.

## Secondary Results

Secondary results for Experiment 2 include the (a) Social Support, (b) IPAQ-S, (c) Self-Efficacy Scale, (d) Decisional Balance Scales, and (e) Social Validity Questionnaires. Results can be found in the text below, along with corresponding tables.

**Social Support.** Results from the Social Support for Physical Activity Scale pre- and post- can be seen in Table 2. Results recorded in Table 2 suggest that CP1 had an increase in social support from family and a slight decrease in support from friends. Customer-participant 2 had a slight decrease in social support from family and a slight increase in support from friends. Customer-participant 3 indicated the highest degree of change with a larger decrease in support from family and a larger increase in support from friends. Most importantly is the change in perceived social support from the SP.

Customer-participant 1 recorded a five point increase in social support on the Social Support for Physical Activity Scale, moving from a 10 pre- to a 15 post-experiment score in the amount of social support for PA from her stylist. The increase may possibly be correlated with the number of contacts her SP recorded on the SP activity sheet. During Week-1, CP1 visited her SP for her regularly scheduled salon appointment and was reportedly very excited and curious about the 10-Week program. During Week 2, she visited the salon for her regularly scheduled appointment and also walked 1 mile with her SP. During Week 3 she missed her appointment due to migraine headaches. During Week 4 she made her regularly scheduled visit to the salon and received hair care and social support. During Weeks 5 and 7 she canceled her appointment because of school exams. During Week 6 she visited for her regularly scheduled appointment and changed her hairstyle, but not because of the walking program. For Weeks 8 and 9 she made

her regularly scheduled salon appointments. She canceled her appointment for Week 10 due to vertigo, but was called by the SP who encouraged her. Social support appears to have kept CP1 in the program despite the demands of school and serious medical concerns. It is difficult to know if support from her SP was responsible for her achieving her goal, since she did not increase her effort until after she had a break from school, and there was an eight point increase in family support.

Customer-participant 2 recorded a seven point decrease in the amount of social support for PA from her SP, moving from a 35 pre to a 29 post-experiment score in the amount of social support for PA from her stylist. The decrease may possibly be correlated with the number of times her SP recorded contact on the SP Activity Sheet. During the 10-Weeks, her SP recorded contact with her three times, as indicated by the hollow square in Figure 6. During Week 1, there was no contact between the CP and SP. During Week 2 the SP called her but did not reach her because the CP was on a business trip. During Weeks 3 and 4 there was no contact because the CP was visiting her first grandchild out of state. During Week 5, an appointment was made and the 10-Week program was discussed and encouragement given by the SP. There was no contact during Week 6. During Week 7 she visited for her regularly scheduled salon appointment and received social and hair care support. There was no contact during Weeks 8, 9, and 10. It is difficult to know if the minimal contact between the SP and CP is responsible for the recorded seven point decrease in social support or what impact the minimal contact had on achieving her goal.

Customer-participant 3 recorded a seven point increase in the amount of social support for PA from her SP, moving from a 26 pre to a 33 post-experiment score in the amount of social support for PA from her stylist. The increase may possibly be correlated with the number of



Table 2

*Pre/post Social Support Responses*

Participants	<u>Pre</u>			<u>Post</u>		
	Family	Friends	Stylist	Family	Friends	Stylist
CP1	04	03	10	12	00	15
CP2	45	49	35	40	51	29
CP3	51	38	26	33	51	33

*Note.* Pre/post responses to questions regarding social support for PA from family, friends, and stylists.

# CP1

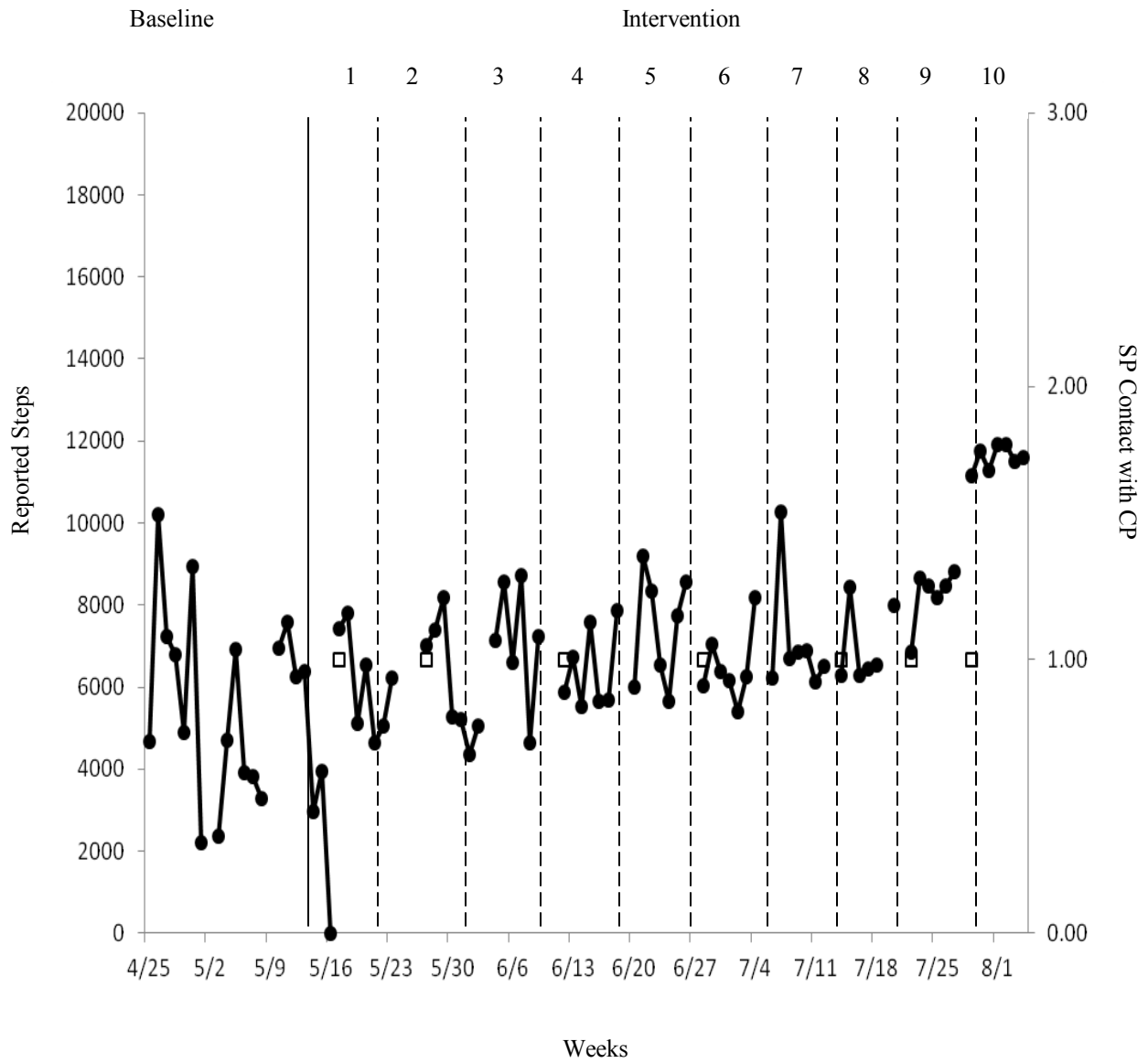
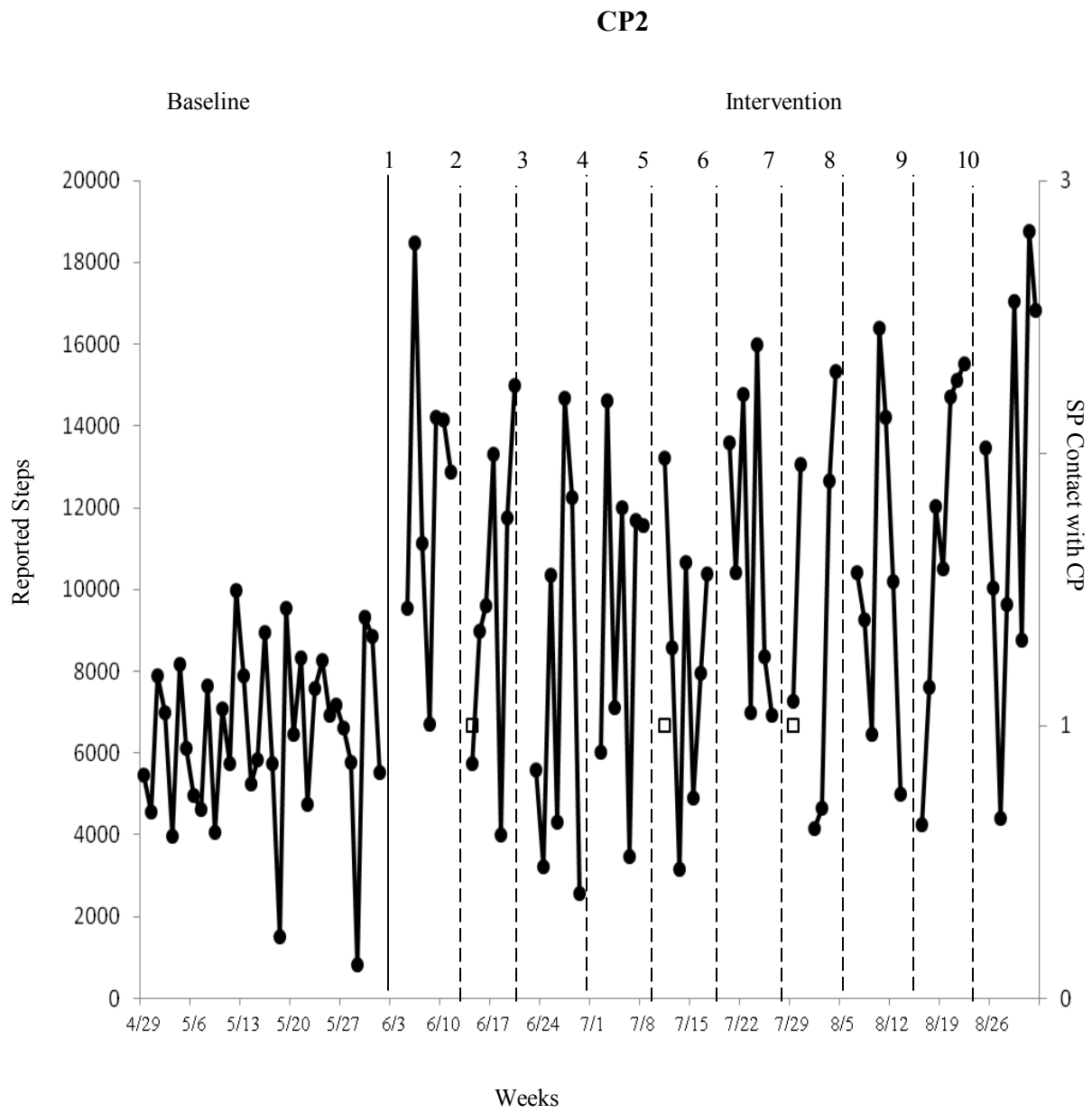


Figure 5. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.



*Figure 6.* Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

CP3

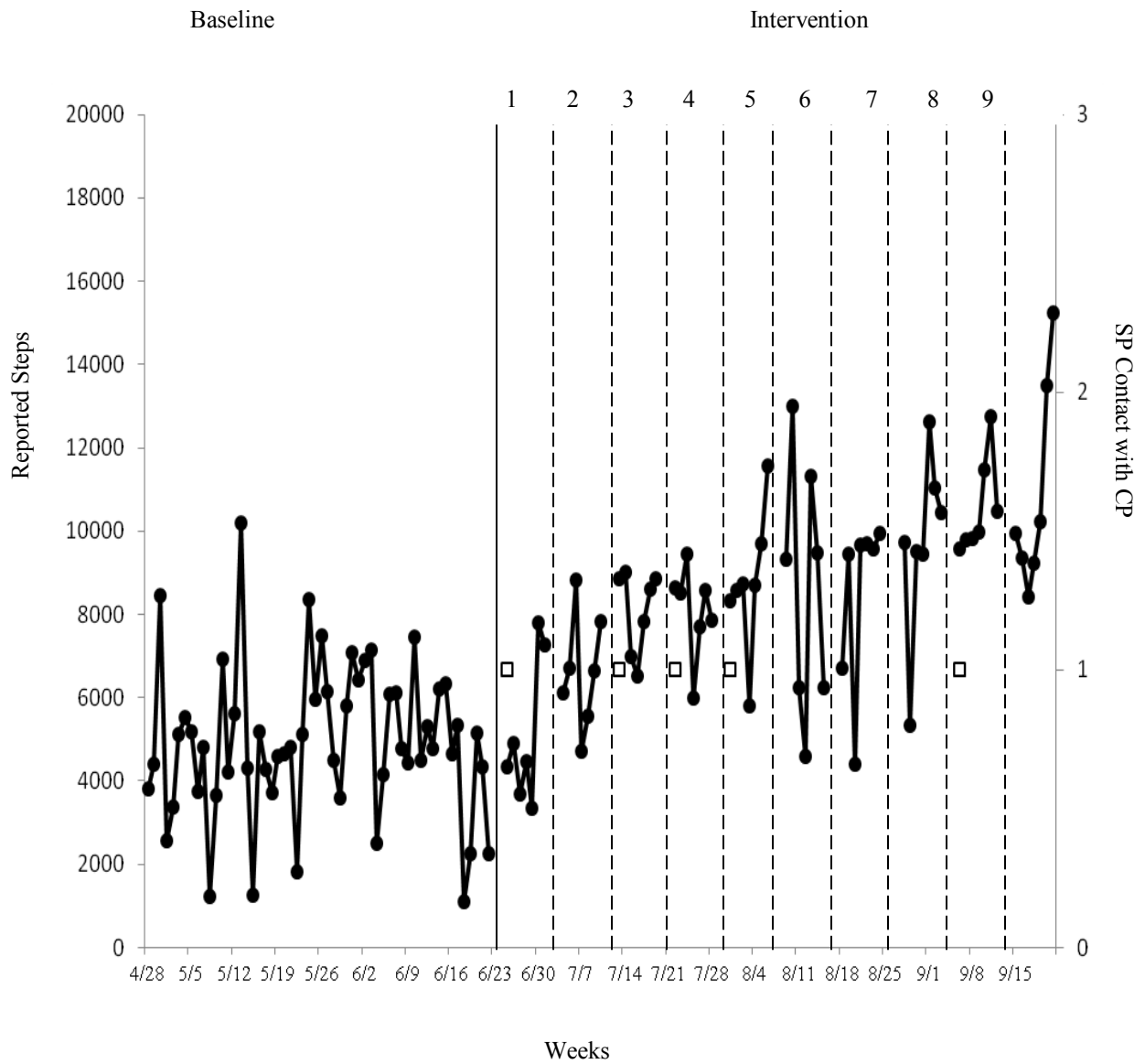


Figure 7. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

times her SP recorded contact on the SP Activity Sheet. During the 10-Weeks, her SP recorded contact with her five times, as indicated by the hollow square in Figure 7. During Week 1, CP3 called to make an appointment with her SP and discussed the walking program. There was no contact between the SP8 and CP3 during Week 2. During Week 3 she visited the salon for her regularly scheduled appointment and during that time she discussed the 10-Week program and received social support. During Week 4 CP3 visited the salon but not for her regularly scheduled visit. During that time she received social support. During Week 5 the SP8 was away on travel. During Week 6 the CP3 did not make her appointment due to death in the family but the SP called and provided her with support. There was no contact during Weeks 7 and 8. The CP made her regularly scheduled salon. Again it is difficult to know if the contact between the SP and CP is responsible for the recorded seven point increase in social support or what impact the contact had on achieving her goal given the 18 point decrease in family support but 13 point increase in support from friends.

Overall, there is no clear correlation of social support from stylists and achieving the 10-Week walking goals for each participant. Two CPs had small increases ranging from five to seven points, and one CP had a small decrease of seven points. It is impossible to know, was no contact between the CP and SP. During Week 2 the SP called her but did not reach her because the CP was on a business trip. During Weeks 3 and 4 there was no contact because the CP was visiting her first grandchild out of state. During Week 5, an appointment was made and the 10-Week program was discussed and encouragement given by the SP. There was no contact during Week 6. During Week 7 she visited for her regularly scheduled salon appointment and received social and hair care support. There was no contact during Weeks 8, 9, and 10. It is difficult to know if the minimal contact between the SP and CP is responsible for the recorded

seven point decrease in social support or what impact the minimal contact had on achieving her goal.

**IPAQ-S.** As seen in Table 1, CP1 had a pre-intervention categorical analysis designation of low-active for VPA, daily-walking, and other moderate PA, the three measured categories of PA recorded on the *IPAQ-S*. The low-active pre-intervention designation correlates with her baseline average of 5680 steps per day, which falls within the low-active step range (e.g., 5000 – 7499), as seen in Figure 2. Her post-intervention categorical analysis designation for daily-walking moved from low-active to moderate. Her post-intervention steps of 11,586 may correlate with her *IPAQ-S* designation and placed her in the active category (e.g., 10,000 – 12,499).

Customer-participant 2 had a pre-intervention categorical analysis designation of moderate-active for VPA, daily-walking, and other moderate PA. The moderate-active *IPAQ-S* designation may correlate with her low-active step baseline average of 6301 steps per day, which falls within the low-active step range (e.g., 5000 – 7,499), as seen in Figure 3. Her post-intervention designation for daily walking moved from moderate to vigorous. Her post-intervention steps of 12,362 may correlate with *IPAQ-S* designation and placed her in the active category (e.g., 10,000 – 12,499).

Customer-participant 3 had a pre-intervention categorical analysis designation of low-active for VPA, daily-walking, and other moderate PA. The low-active *IPAQ-S* designation may be correlate with her low baseline average of 3585 steps per day, which placed her in the sedentary range (e.g., <5000), as seen in Figure 4. Her post-intervention designation for daily walking moved from low-active to vigorous. Her post-intervention steps of 10,444 may correlate with the *IPAQ-S* designation and placed her in the active category (e.g., 10,000 – 12,499).

**Self-Efficacy Scale.** Results from the Self-Efficacy Scale can be seen in Table 3. The final score represents an average of each of the 12 questions on the scale. There is no optimum score; higher scores indicate greater self-efficacy or confidence in the ability to perform PA under a variety of circumstances (e.g., inclement weather). The main sources of self-efficacy information include (a) performance accomplishments, (b) vicarious experiences of others, (c) verbal persuasion, or (d) physiological arousal (see introduction for full explanation: Bandura & Adams, 1977).

As seen in Table 4, CP1 had a pre-intervention self-efficacy score of 60, and a post-intervention score of 37. The post-intervention score of 37, a 23 point decrease, cannot be explained without more information from CP1. One possible explanation may be based on As a graduate student who was also married and employed full time, the downward change in her post-intervention score may indicate her attempt to more realistically project her ability to perform PA given the challenges in her life. Also, the huge change in step data between weeks nine and 10 indicate the difference between her performances while in school, versus when she was not.

Customer-participant 2 had a pre-intervention self-efficacy score of 39 and a post-intervention score of 52. The post-intervention score of 52, a 22 point increase, cannot be explained without additional information. One possible explanation may be based on her performance accomplishments. Despite a demanding schedule, she was not only able to meet but also exceed her goal.

Customer-participant 3 had a pre-intervention score of 60 and a post-intervention score of 58. The post-intervention score of 58, a two point decrease, is somewhat surprising given her IPAQ-S change from a low-activity to vigorous-activity daily walking. More information is

Table 3

*IPAQ-S Pre/Post Categorical Responses*

PA Category	CP1	CP2	CP3
VPA	low/low	moderate/low	low/vigorous
Daily Walking	low/moderate	moderate/vigorous	low/vigorous
Other Moderate PA	low/moderate	moderate/low	low/vigorous

*Note.* Categorical designations of pre/post responses to the IPAQ-S.



needed to explain the slight change. It is possible that verbal persuasion from her SP may be a source of efficacy for her. Based on information gleaned from the activity sheets and reports, her SP was proactively supportive of her participation in PA. It is perhaps the strong support of persuasion at the beginning of the 10-weeks coupled with her accomplishments that may have led to an almost identical pre- and post-intervention score.

Overall, there does not appear to be a consistent relationship between self-efficacy changes and performance. Customer-participants with decreased scores were successful in meeting their overall goals as were CPs with increased scores.

**Decisional Balance Scale.** Results from the Decisional Balance Scale can be seen in Table 5. The final score represents an average of the 10 pro-PA items and the six con items. The differences in the averages, or the pros minus the cons, is the decisional balance score. Larger scores represents a perception of more benefits to PA relative to barriers. Scores less than zero indicate a perception of more barriers than benefits to PA. The larger the negative score, the more barriers relative to benefits

As seen in Table 5, CP1 had a pre-intervention decisional balance score of 41 and a post-intervention score of 42. The one-point difference between pre- and post-intervention may be an indication that she did not change her perception of the pros versus the cons of PA participation. Similar interpretations can be gathered for CP2 with scores of 28 and 31, and CP3, with scores of 34 and 33.

Overall, there does not appear to be a correlation between decisional balance scores and achievement of PA goals. The relatively stable scores for all three CPs may indicate that there was no difference in the pros and cons of PA, despite going through the 10-Week program.

Table 4

*Self-Efficacy Pre/Post Scores*

---

Participants	<u>Pre</u>	<u>Post</u>
CP1	60	37
CP2	39	52
CP3	60	58

---

*Note.* Pre- and post-scores for self-efficacy.

**Social validity.** As seen in Table 6, CPs most often indicated that they joined the research program because their SP invited them, they wanted to be part of research to help other AA/B women, and they wanted to help solve the applied problem of hair care during PA. Additional reasons for joining the research are indicated with the numerical number assigned to each customer-participant. All customer-participants agreed that it was important for AA/Bs to exercise and for each of them to exercise.

As seen in Table 7, customer-participants most often indicated they liked the following about the procedures of the research program: (a) length of time, (b) weight loss, (c) free gifts, (d) support from their stylist, (e) recognition stylists are important, (f) learned new things, and (g) health benefits. Other favorable aspects of the research program are also indicated with the numerical number assigned to each customer-participant. Customer-participants also indicated procedures they would change about the research program. Customer-participant 1 indicated more contact from the researcher was preferred, as well as a better explanation of the study. Customer-participant 2 indicated she would have preferred email instead of activity sheets. Customer-participant 3 indicated she would have preferred to extend the 10 week program to include more time.

As seen in Table 8 customer-participants were satisfied with the effectiveness of the research program. They achieved all individual goals, which included weight loss, health benefits, and solving hair care concerns. indicate a perception of more barriers than benefits to PA. The larger the negative score, the more barriers relative to benefits.

## **Discussion**

### **Primary Results**

The results of Experiment 2 to increase PA using a 10-Week walking program by increasing the frequency of steps by 2000 over baseline were effective. Changes to the procedures were also implemented, including a change from participants receiving social support from the researcher to participants receiving social support from stylist-participants. All three CPs met and exceeded the overall 10-Week goal, but did not consistently meet their self-selected weekly goals. Customer-participant 1 had an overall goal of 7680 steps per day; her steps ranged from 4370 during the first nine weeks, to a high of 11,912 during week 10. Her final average during of 11,058 steps represented an increase of 95% over baseline steps. Customer-participant 2 had an overall goal of 8301 steps per day; her steps ranged from 2556 to 18,479 during the 10 weeks. Her final average of 12,362 steps represented an increase of 96% over baseline. Customer-participant 3 had an overall goal of 5585 steps per day; her steps ranged from 3336 to 15,225. Her final average of 10,444 represented a 91% increase over baseline. Final averages for all three customer-participants placed them in the active range (e.g., >10,000 steps per day) of PA.

### **Secondary Results**

**Social Support.** The results from the Social Support for Physical Activity Scale indicated small changes in social support from the SP. Customer-participant 1 reported a five point increase, moving from a pre-experiment score of 10 to a post experiment score of 15. Customer-participant 2 reported a six point decrease, moving from 35 to a score of 29. Customer-participant 3 reported a seven point increase, moving from a 26 to a score of 33. According to the SP Activity Sheet, social support was provided to CP1 seven times, to CP2 three times, and CP3 five times during the 10-Week program.

Table 5

*Pre/Post Scores for Decisional Balance*

---

Participant	<u>Pre</u>	<u>Post</u>
CP1	41	42
CP2	28	31
CP3	34	33

---

*Note:* 10 pro-PA questions averaged minus six con-PA questions to arrive at decisional balance score.

Table 6

*Social Validity: Applied*

Applied Problem	CP1	CP2	CP3
Health related benefits	X	X	
My stylist invited me	X	X	X
My friend joined			
Doctor encouragement			
Help other AA/B women	X	X	X
Lose Weight		X	
Curiosity		X	
Free Gifts		X	
Family encouragement			X
Solve hair care/exercise problem	X	X	X
Other			

*Note.* Social validity of the applied problem.

Table 7

*Social Validity: Procedures*

Procedures	CP1	CP2	CP3
Length of time	X	X	X
Lost weight	X	X	X
Helping solve health problem	X	X	
Met new friends		X	
Free gifts	X	X	X
Activity video	X	X	
Created new hairstyle	X	X	
Support from stylist	X	X	X
Recognition stylists are important	X	X	X
Learned new things	X	X	X
Health benefits	X	X	X
Reached my goal	X	X	
Cool Cloth		X	
Other:	accountability	pedometer	social aspect
<b>Changes</b>			
Shorter Time (< 10 weeks)			
Longer Time (> 10 weeks)		X	
More contact from stylist			
Less contact from stylist			
More contact from researcher	X		
Less contact from researcher			
<b>Activity Sheets</b>			
Text instead of activity sheets			
Email instead of activity sheets		X	
Better explanation of the program	X		
More information about the program			
Other:			

*Note:* Social validity of the procedures.

Table 8

## Social Validity

Effectiveness	CP1	CP2	CP3
Yes	X	X	X
No			
Did you change your hairstyle?			
Yes	X	X	X
No			

*Note:* Social validity of the effectiveness.



**IPAQ-S.** Secondary results for daily walking on the IPAQ-S are somewhat consistent with step data, as follows. Customer-participant 1 had a pre-experiment designation of low-active, which is consistent with her low-active baseline step average of 5680 (5000-7,499). She reported a post-experiment moderately-active designation, which is consistent with her active step average of 11,058 (10,000 – 12,499) at the end of the 10-Weeks. Customer-participant 2 had a pre-experiment designation of moderately-active, which is somewhat consistent with her low-active (5000-7,499) baseline step average of 6301. She reported a post-experiment designation of vigorous active, which may be consistent with her step average of 12,362 which placed her in the active range (10,000-12,499) and close to the highly active range (>12,500). Customer-participant 3 had a pre-experiment designation of low-active, which is somewhat consistent to her sedentary (<5000) baseline step average of 3586. She reported a post-experiment designation of vigorous-active, which is not consistent with her active (10,000-12,499) step average of 10,444 at the end of the 10-Weeks.

**Self-Efficacy.** Customer-participant 1 had a 23 point decrease from pre- to posttest, CP2 had a 13 point increase, and CP3 had a two point decrease. There did not appear to be a relationship between pre/post scores and goal attainment.

**Decisional Balance.** Decisional balance scores remained basically unchanged from pre- to post-intervention. CP1 had a one-point increase, CP2 had a three-point increase, and CP3 had a one-point decrease. There did not appear to be a relationship between pre/post scores and goal attainment.

**Social validity.** Social validity results suggest that CPs agreed with the importance of PA, with “solving hair care issues” as one of the goals to be accomplished. Customer-participants approved of the overall procedures and indicated that areas for improvement could include more

contact with the researcher, a better explanation of the program, and a different mode of communication during the intervention (e.g., email instead of activity sheets). Customer-participants reported overall satisfaction with the results, indicating they had achieved all of their goals. The issue of hair care competing with PA participation may have been resolved by each of them changing their respective hairstyles.

### **Strengths and Limitations**

#### **Strengths**

Several strengths can be noted from this experiment. First, all three CPs reached and exceeded their goals. Second, there was general agreement between the IPAQ-S and step data results. Third, the results were socially valid, with all CPs reporting agreement with the problem under study, satisfaction with most of the procedures, as well as satisfaction with the results.

#### **Limitations**

The limitations are both methodological and procedural. First, the assigned long-term goal of increasing baseline averages by 2000 steps may not have been challenging enough as all three CPs appeared to easily achieve and exceed their goals. Second, inter-observer agreement was not conducted, so all results were self-reported. Third, it is impossible to know which components of this package intervention were most effective without conducting a component analysis.

#### **Future Directions**

Future research should include the following. First, a better explanation of the 10-Week program should be provided, with a special emphasis on explaining that baseline days or weeks are in addition to the actual 10-Weeks of walking with goal setting. The extended baseline was particularly labor-intensive when CPs realized their respective programs began only after the baseline had been completed. Second, the role of the researcher should be more thoroughly

explained, given some CPs felt the researcher was not as active during the intervention phase as she was during the baseline phase because of a lack of her time or availability. They did not fully understand her withdrawal was part of the research protocol. Third, participants should be asked to develop weekly goals that are above their respective baseline averages. They should also be asked to achieve daily step averages above their baseline average. Fourth, the weekly activity sheets should be revised to simplify recording and to prompt more feedback from the SPs. Fifth, to augment and clarify the incentives schedule, the researcher should develop certificates with the appropriate monetary value specified for CPs to redeem at their leisure. The researcher should pay the SP once she is notified that a CP has presented the certificate to be redeemed. And sixth, all written letters to the CP with a copy to the SPs should be eliminated. The one-page letters were meant to augment discussions the researcher had with the CP and SP by notifying the SP that a CP had enrolled in the program, had finished baseline or to notify the SP of the overall baseline average, the 10-Week walking goal, and the start and end dates of the 10-Week program. A more comprehensive discussion of future directions addresses additional limitations and recommendations.

### **Summary**

In summary, future research studies should continue to examine the effects of increasing PA with goal setting and social support from SPs. Regardless of the level of social support received, all three CPs achieved their goals with final step averages slightly 50% above their respective baselines. Customer-participant 2 and CP3 also maintained levels above their baselines during the three month maintenance period. It is impossible to know which component of the package intervention is responsible for change without conducting an environmental scan and component analysis. Participants, for example, achieved their goals regardless of the overall

step goal, level of social support reported, changes in self-efficacy and/or decisional balance. The results are a demonstration that individual differences are important because diverse environmental factors (e.g., weather, neighborhood, work schedule, family configurations, etc) and levels of social support (e.g., zero to five times a week) can be successful in assisting an individual with achieving a PA goal.

### **EXPERIMENT 3**

The purpose of Experiment 2 was to assess the effects of a 10-Week program to increase the frequency of PA with AA/B women who were customers of hair stylists. In Experiment 2, SPs recruited CPs from their respective salons to participate. The effects were evaluated using a pre/post, MBL design across three participants. The MBL included a changing criterion design. The independent variable was the 10-Week walking program. It included self-selected weekly goals with an overall assigned goal to reach by the end of the 10-Weeks and social and hair care support from each respective SP. The primary dependent variable was to gradually increase PA by increasing the frequency of steps to at least 2000 steps above the baseline through goal setting and with social and hair care support. Results indicated CPs were inconsistent with meeting their short-term weekly goals, but all participants met and exceeded their long-term goals and increased their step average by at least 2000 steps above baseline. The impact of social support and goal setting was unclear because it is impossible to fully separate the two components of this package intervention. Customer participants 1 and CP2 participated in a three-month maintenance program post-intervention with no SP social support and no goal setting. Both CPs maintained averages above baseline but reported a decrease in step averages.

There were a number of methodological and procedural limitations. First, establishing the long-term goal of 2000 steps above baseline may not have been challenging enough for the

participants. Goals should be obtainable but challenging. Second, the feedback to SPs from the researcher was done by way of a number of venues, including face to face and telephone conversations, graphs, and letters. The process appeared to be labor-intensive to the SPs as they would sometimes forget a conversation or they did not have time to read a graph or letter, resulting in confusion about the role of the SP in providing social support. Third, the incentive program may not have been evenly applied from SPs across CPs. The researcher verbally provided information about when a CP was to receive the reduction in hair care services and paid the requisite amount of cash simultaneously. In some cases, the SPs did not apply the discount without prompting from the researcher. And fourth, feedback on the number of times SPs had contact with CPs is questionable. In some cases, for example, activity sheets were not provided to the researcher each week. There were times when the researcher received each individual activity sheet from SPs in groups of three or four, with SPs filling out each sheet based on her memory over the past month, or by checking her appointment book, which was not always accurate. An activity sheet for CPs that included information on how often they had contact with their SP could have provided a more reliable accounting of the number of social support contacts they received.

Limitations in Experiment 2 outlined above were addressed in Experiment 3 in the following ways. First, a more challenging goal of achieving 4000 steps above baseline was assigned to each participant. Second, the researcher eliminated letters and made a point of talking to SPs at their salons whenever possible. Third, the researcher developed certificates with the appropriate amount of discount on the front and gave them to CPs each time they earned the incentive. CPs could then present the certificate to the SP, thus eliminating the confusion SPs had regarding when to apply the discount. The researcher asked CPs to let her know in advance

when they planned to present the certificate so that she could ensure the SP was paid promptly. Fourth, the researcher pre-populated the SP Activity Sheets to include the name of the CP and the relevant dates or period of time for which the information was needed. Therefore, if the SP did not submit her Activity Sheets on time, she at least had the name and dates already pre-populated on her sheet, which presumably would be helpful particularly if she was supporting more than one CP.

Additional changes in Experiment 3 included changes made to the recruitment flier, based on feedback from SPs. They indicated discomfort in selecting CPs for recruitment on occasion due to concerns potential CPs may feel they were chosen because they were overweight. The researcher modified the language to read eligibility included “Not involved in physical activity at least 30 minutes, 5-7 days per week, regardless of your weight” which seemed to satisfy the concerns.

## **Method**

### **Recruitment**

The recruitment of SPs was conducted in Kansas City, Kansas between May, 2011 and August, 2011. Stylist-participant 2, SP8, and SP9 were recruited and participated in this study. An additional SP indicated interest, enrolled in the program by signing the informed consent form, but could not participate because she did not return her medical clearance form or participate in any of the pre-screening activities.

Stylist-participants recruited six CPs from their respective customer bases using a flier developed by the researcher and a checklist of inclusion criteria. Stylist-participant 2 recruited three CPs, one of whom did not return her medical clearance form and did not participate. Stylist-participant 8 recruited two CPs, one of whom did not return her medical clearance form

and did not participate. Stylist-participant 9 recruited one CP for a total of four CPs for Experiment 3. See Table 1 for a summary of their demographics.

### **Participants**

**CP1.** Customer-participant 1, recruited by SP2, was a 29-year old female. She wore a long, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to become active within the following six months, placing her in Contemplation, or Stage 4 of change. She was married, had an income of between \$50,000 and \$75,000 a year, and she reported having a vocational diploma as her highest level of education. Customer-participant 1 was diagnosed with overweight and obesity. Her general health was self-rated on the BWWS as poor, and also poor when asked how her health compared to other AA/B women her age.

**CP2.** Customer-participant 2, recruited by SP9, was a 52-year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she participated in VPA two days per week for 30-45 minutes per day, daily walking two days per week for 30-45 minutes, and other moderate PA one day a week for 10-15 minutes. Her TTM survey indicated she was not physically active but intended to become active within the next 30 days, placing her in the Preparation or Stage 3 of change. She was married, had an income of more than \$75,000, and reported having completed a bachelor's degree as her highest level of education. She did not identify any health concerns. Her general health was self-rated on the BWWS as very good, and also very good when asked how her health compared to other AA/B women her age.

**CP3.** Customer-participant 3, recruited by SP2, was a 66-year old female. She wore a short, heat straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA,

daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to become active within the following 30 days, placing her in the Preparation or Stage 3 of change. She was married, had an income of more than \$75,000, and reported having completed graduate school as her highest level of education. Customer-participant 3 was diagnosed with HBP, arthritis, respiratory problems, overweight, and obesity and required medical clearance to participate in the research program. Her general health was self-rated on the BWWS as fair, but rated good when asked how her health compared to other AA/B women her age.

**CP4.** Customer-participant 4, recruited by SP 8, was a 37 year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to become active within the next 30 days, placing her in the Preparation or Stage 3 of change. She was single, had an income of between \$35,000 and \$50,000, and reported having completed graduate school as her highest level of education. She did not identify any health concerns. Her general health was self-rated on the BWWS as good, but rated very good when asked how her health compared to other AA/B women her age.

### **Settings**

The settings for the baseline, intervention, and post sites are similar to those in Experiment 2. Walking during the baseline and intervention presumably took place in each CP's respective community.

### **Experimental Design**



The effects of the 10-Week walking program with an assigned goal to increase the frequency or the average number of steps per week by 4000 by the end of 10 weeks was evaluated using a pre/post, MBL design across participants. The specifics of the design are described under the general methods section. The changing criterion intervention phase is described under this section in Experiment 2.

As with Experiment 2, pre-analysis was conducted prior to the no-intervention baseline-phase for CPs. All pre-intervention tools used in Experiment 3 are identical to those used in Experiment 2.

### **Dependent Variable**

The primary DV was to achieve an increase in the frequency of steps by an average of at least 4000 by the end of the 10-Week program.

Secondary dependent variables were (a) an increase in self-efficacy, (b) an increase in decisional balance, and (c) an increase in PA as indicated on the IPAQ-S.

### **Independent Variable**

The independent variable (IV) was a modification of the AARP 10-Week Walking Program, which included social support from SPs, and weekly goal setting procedures. Customer-participants were asked to increase the average number of steps taken weekly by 4000 as an assigned goal. Customer-participants self-selected their weekly goals during the 10-Weeks.

### **Procedures**

The procedures for Experiment 3 are similar to those of Experiment 2, with the following modifications: (a) Stylist-participants were asked informally to make recommendations regarding the flier and procedures prior to implementing the research program. (b) Stylist-participants recommended an additional bullet be added to the recruitment flier to assist them in

Table 1

*Demographic Profile of CPs*

Demographic	CP1	CP2	CP3	CP4
Age	29	52	66	37
Gender	F	F	F	F
Ethnicity	AA/B	AA/B	AA/B	AA/B
Education	HS	BS	MS	HS
Income	<\$75K	>\$75K	<\$75K	<\$50K

*Note.* Demographic profile of customer-participants (CPs). High-School is abbreviated using the letters HS. African American/Black is abbreviated using the letters AA/B.

not offending women they approached; they did not want women to feel they were being approached because they were fat or somehow looked unhealthy. The researcher added the following language to the SPs checklist for recruitment “Identifies herself as not being physically active—does not exercise at least 30 minutes per day (regardless of her weight).” (c) The researcher developed certificates with the appropriate amount of discount on the front and gave them to CPs each time they earned the incentive.(d) The researcher pre-populated the SP Activity Sheets to include the name of the CP and the relevant dates or period of time for which the information was needed. (e) CPs were asked to increase their steps by an average of 4000 by the end of the 10-Weeks. (f) Customer-participants were not asked to participate in a post-intervention study; and (6) All CPs were recruited from Kansas City, Kansas. In Experiment 2, all CPs were recruited from Lawrence.

## **Results**

### **Primary Results**

The total number of steps taken by each CP in Experiment 3 can be seen in Figure 1. Only CP4 met her step goal. Customer-participant 1 came within only a 111 steps of meeting her goal. None of the CPs received the full reduction in hair care services as incentives because they either did not turn in their activity sheets, provide information to the researcher on time, or they were not within the goal range specified by the incentives schedule.

Customer-participant 1 had an average of 3408 steps during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 7408 steps per week by the end of the 10-Week program. Her steps during baseline ranged from 1036 to 4964 as seen in Figure 2. During the intervention, she self-selected a goal each week, ranging from 3808 to

7415. The goals are depicted by the solid horizontal black lines in Figure, 2, beginning with a goal of an average of 3808 steps per day for Week 1. She had a goal of 4000 for Weeks 2, 3, and 4, followed by a goal of 4600 for Weeks 5 and 6, 6000 for Week 7, 7000 for Weeks 8 and 9, and a goal of 7415 for Week 10. Customer-participant 1 did not meet her goal for seven of the 10 weeks as depicted by the dotted horizontal green lines, which show the average number of steps taken that week beginning with an average of 3230 steps during Week 1, followed by 4115, 3185, 4361, 4528, 4284, 5800, 6746, 7047, and 7297 step average for Week 10. Her steps during the intervention ranged from 6766 to 8136. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Figure 1 shows a steady upward trend line. Her final average of 7297 represents a 3889 or 87% increase over baseline steps.

Customer-participant 2 had an average of 3707 steps during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 7707 steps per week by the end of the 10-Week program. Her steps per day during baseline ranged from 1671 to 6144 as seen in Figure 3. During the intervention, she self-selected a goal each week, ranging from 7700 to 7707. The goals are depicted by the solid horizontal black lines in Figure 3, beginning with a goal of an average of 7707 steps per day for Week 1, followed by goals of 7700 for Weeks 2 through 8, with the exception of Week 3, and a goal of 7707 steps per day goal for Weeks 9 and 10. No goal was provided for Week 3. Customer-participant 2 consistently did not

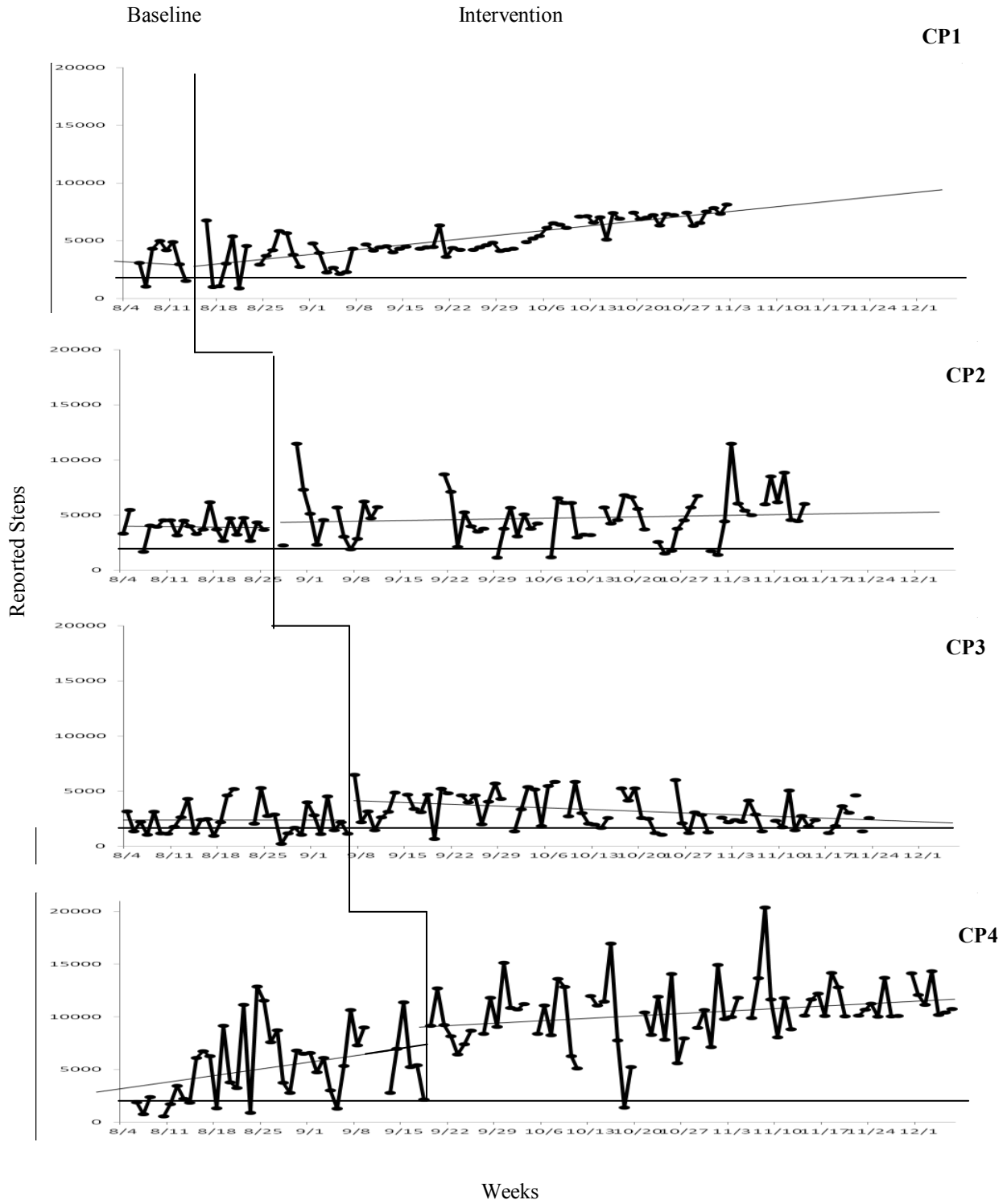


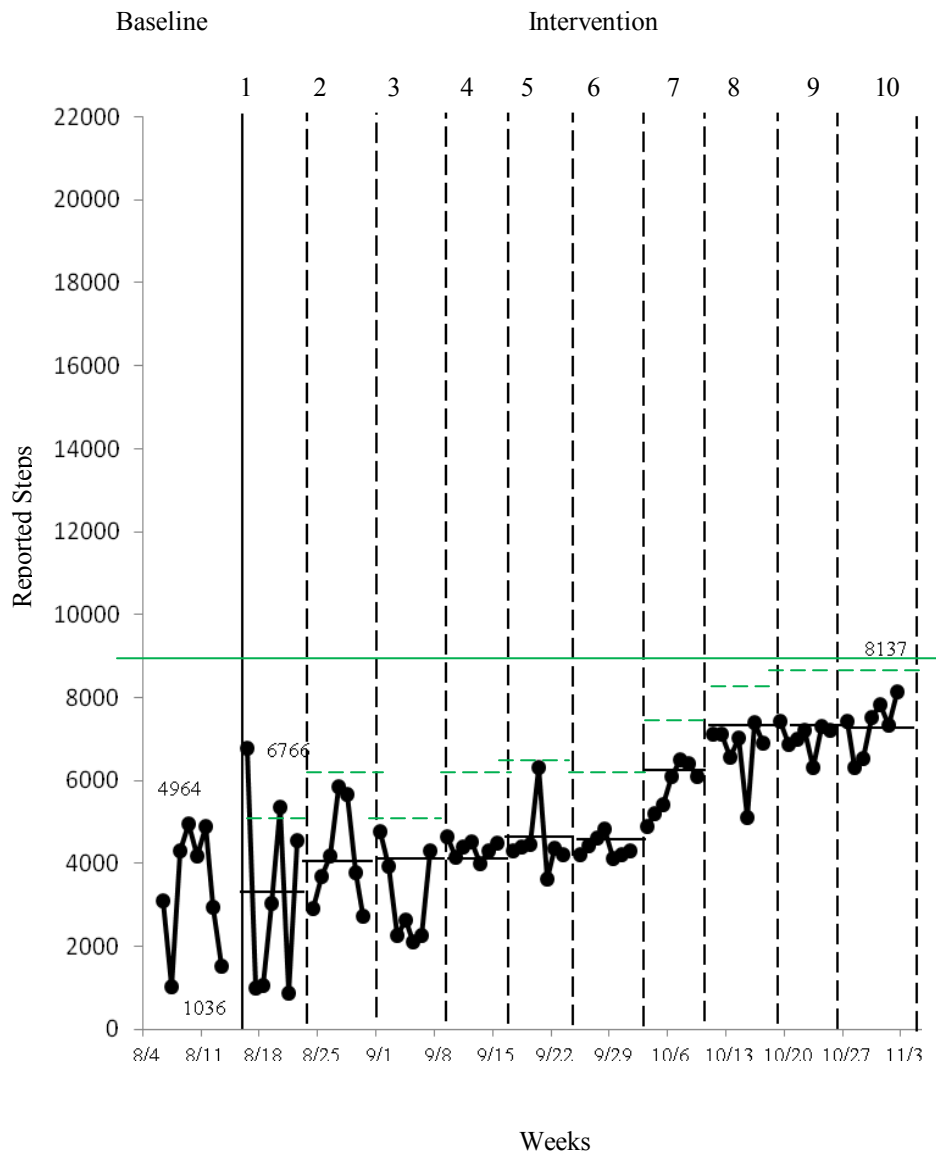
Figure 1. Customer-participant’s steps during the baseline and intervention.

The solid horizontal line indicates minimum of an additional 2000 steps per day needed to prevent weight gain.

meet her goals, as depicted by the dotted horizontal green lines, which show the average number of steps taken that week beginning with an average of 5503 steps during Week 1, followed by 4302, 4918, 3807, 4182, 5301, 3783, 5505, and a 6357 step average for Week 10. No information was provided for Week 3. Her steps during the intervention ranged from 1126 to 11469, which occurred on day two of the intervention. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Figure 1 indicates an almost level trend line with a slight upward angle. Her final average during week 10 of 6357 steps represents a 2650 step or 71% increase over baseline steps.

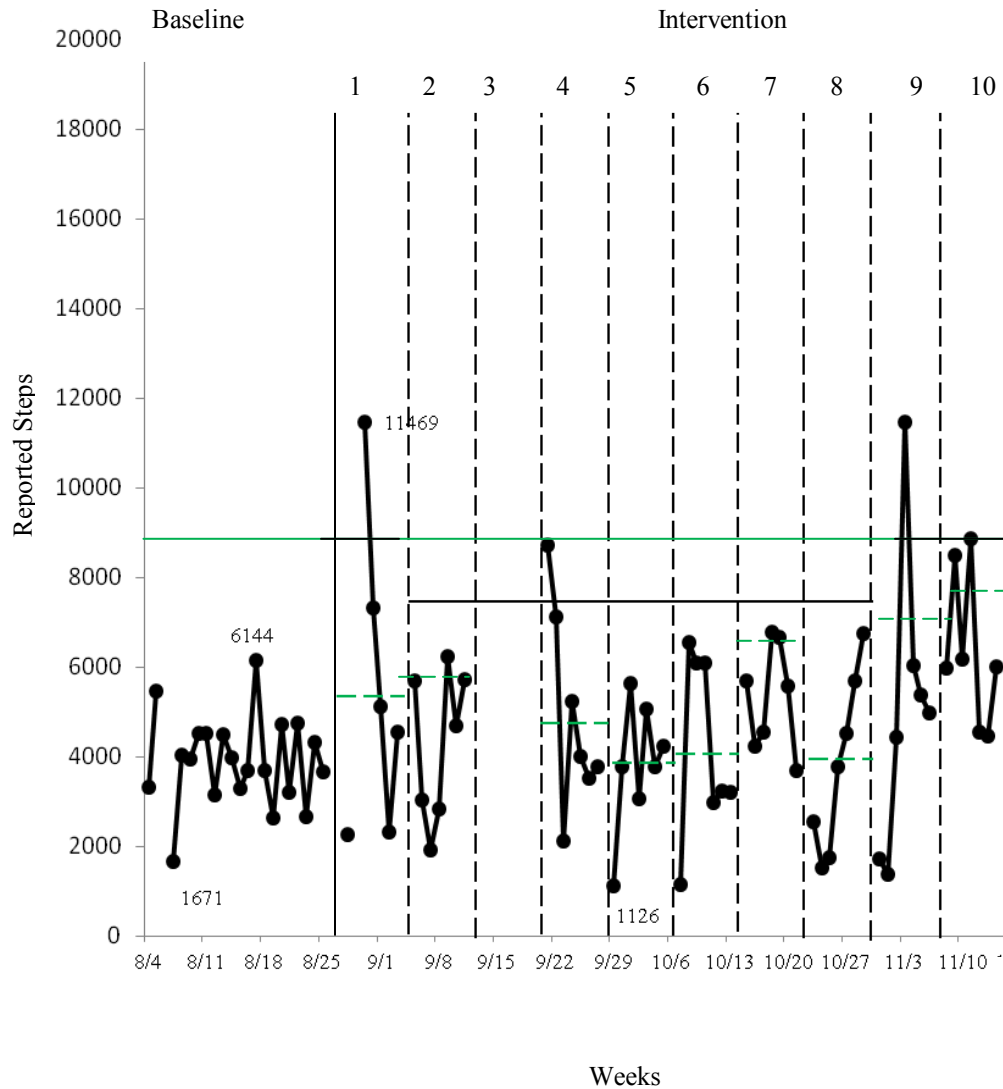
Customer-participant 3 had an average of 2450 during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 6450 steps per week by the end of the 10-Week program. Her steps during baseline ranged from 226 to 5284 as seen in Figure 4. During the intervention, she self-selected a goal each week, ranging from 2500 to 5000. The goals are depicted by the solid horizontal black lines in Figure 4, beginning with a goal of an average of 4000 steps per day for Weeks 1 and 2, followed by goals of 4500 for Week 3, 5000 for Weeks 4, 5, and 6, 4000 for Weeks 7 and 8, 2500 for Week 9, and 3000 for Week 10. Customer-participant 3 consistently did not meet her goals, as depicted by the dotted horizontal green lines that show the average number of steps taken that week, beginning with an average of 3462 steps during Week 1, followed by 3779, 4174, 4052, 2826, 3131, 2351, 2527, 2490, and 2608 during Week 10. Her steps during the intervention ranged from 654 to 6480, which occurred the first day of the intervention. The solid horizontal line indicates that she did not meet the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Figure 1 indicates a downward trend in steps. Her final average during Week 10 of 2608 represents a 158 step or 6% increase over baseline steps.

## CPI



*Figure 2.* Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.

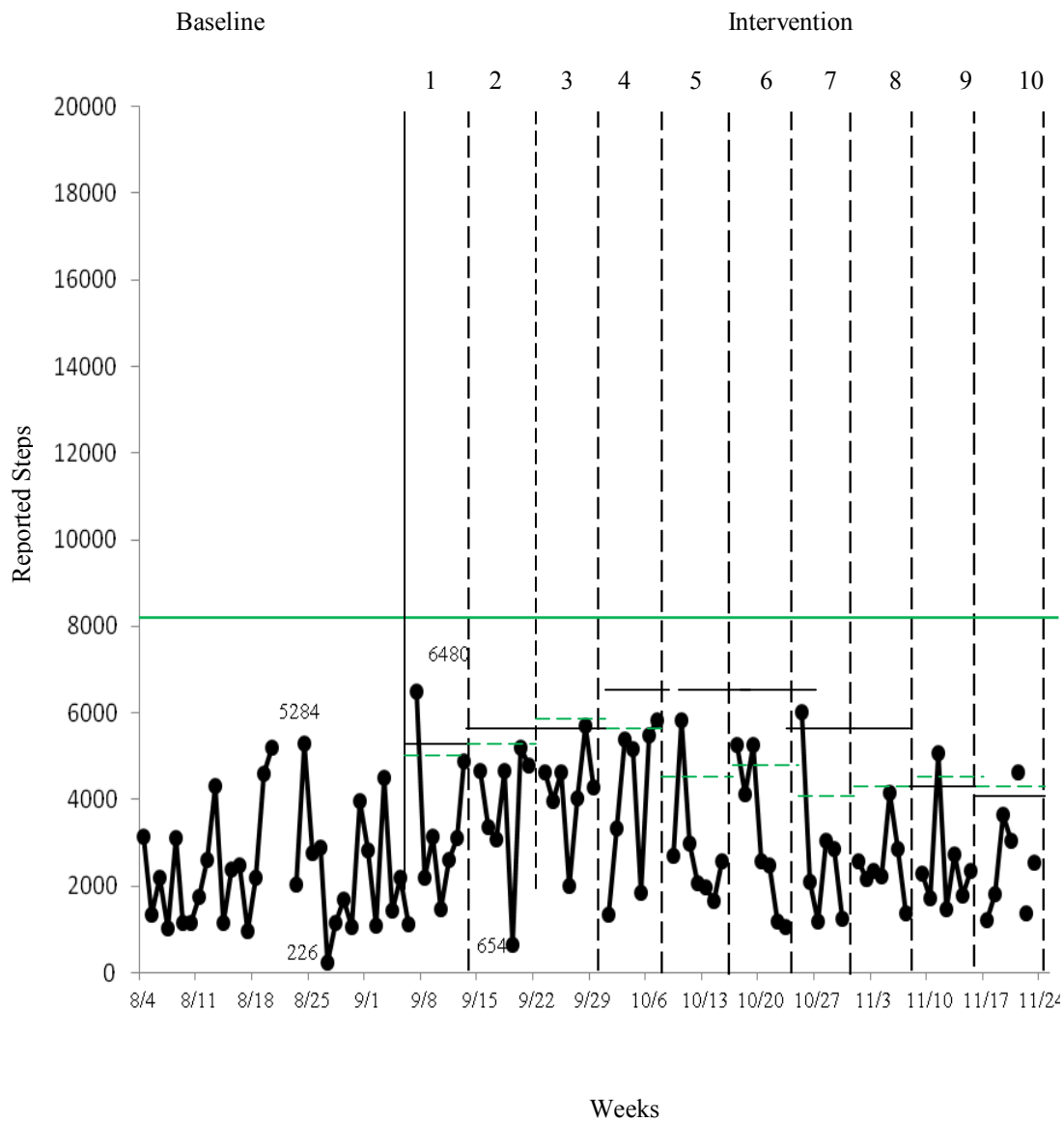
## CP2



*Figure 3.* Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.



## CP3



*Figure 4.* Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.

CP4

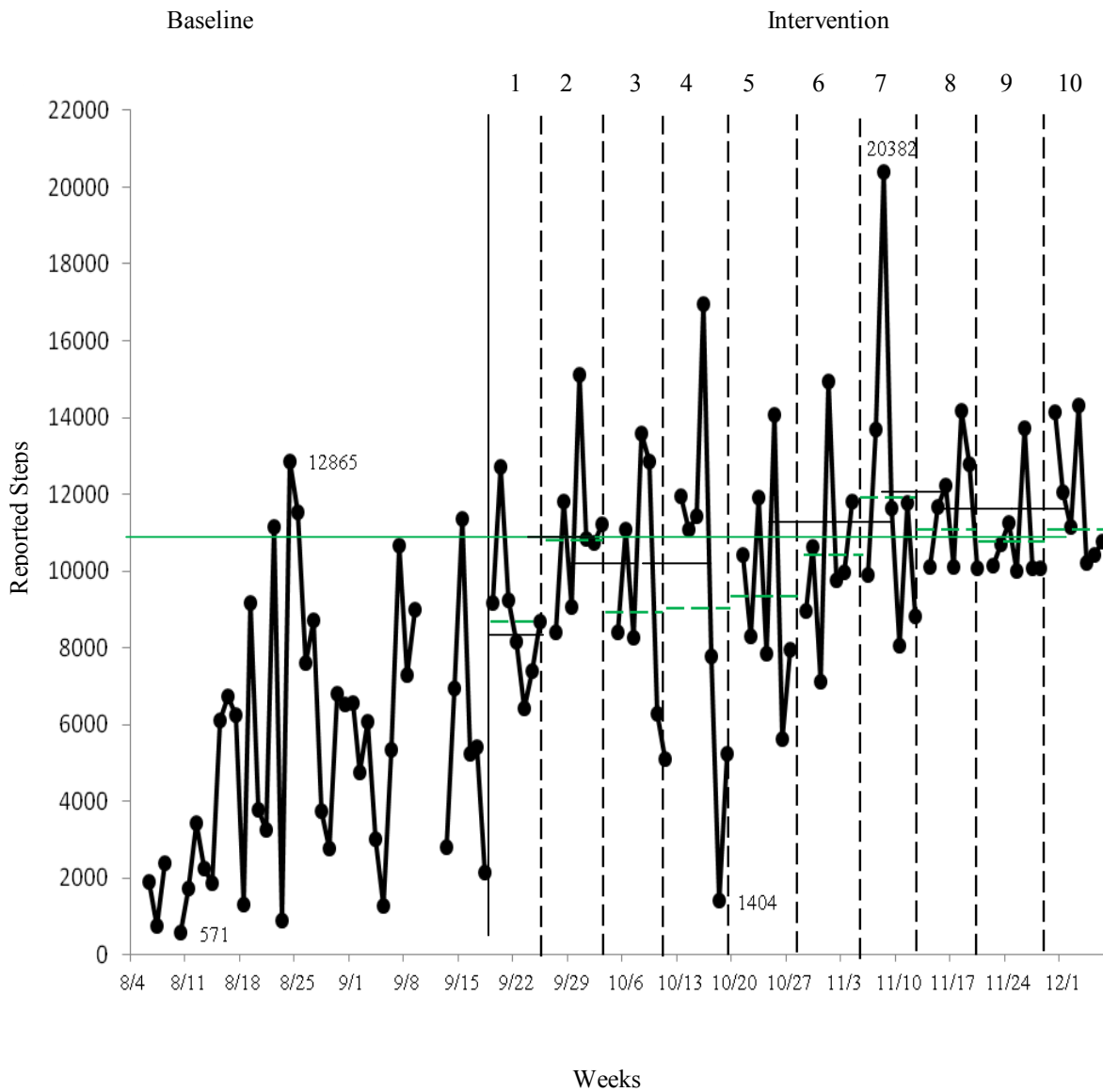


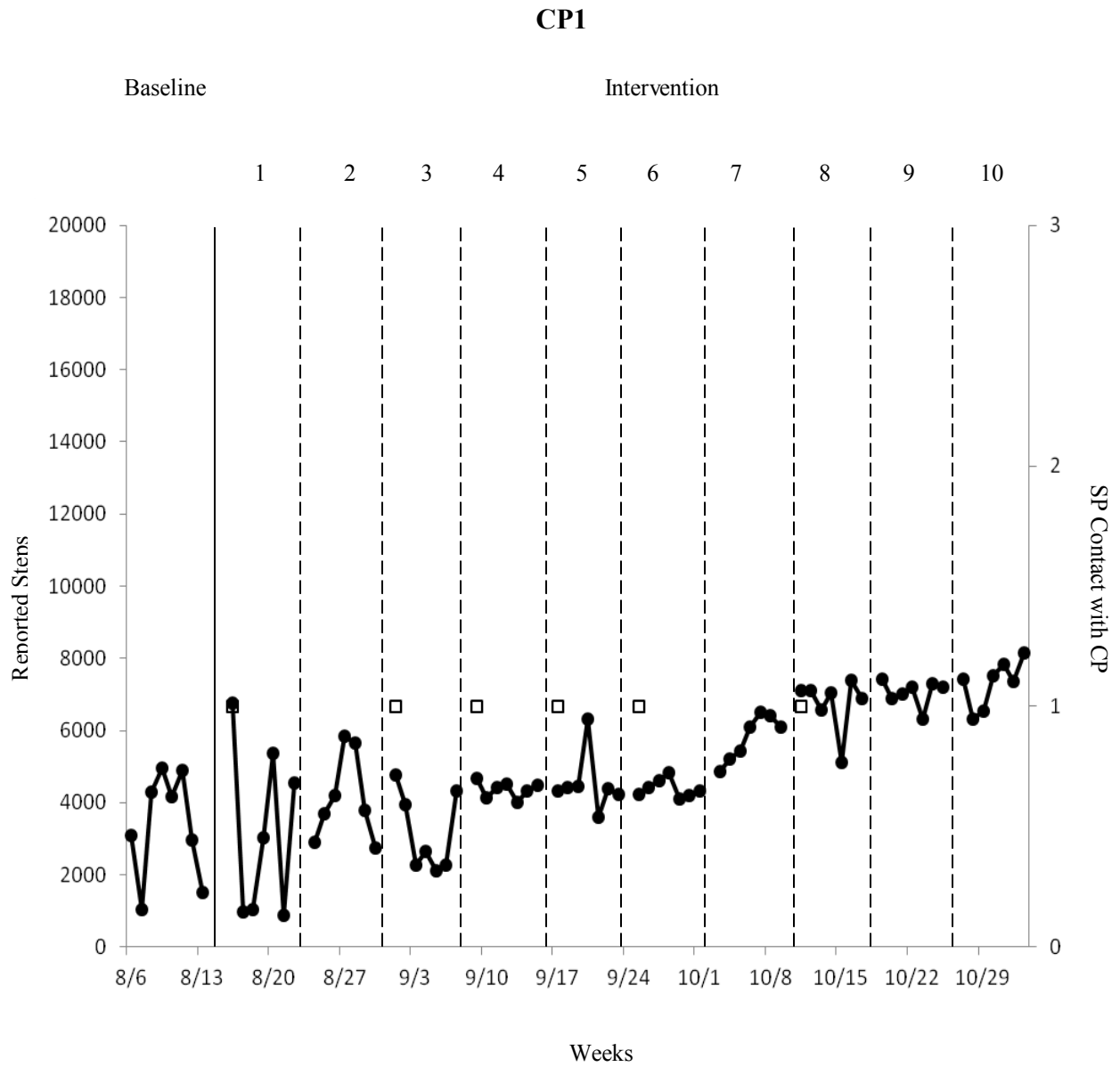
Figure 5. Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.

Customer-participant 4 had an average of 6127 during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 10,000 steps per week by the end of the 10-Week program, the maximum number of steps permissible as outlined in the informed consent agreement. Her steps during baseline ranged from 571 to 12,865 as seen in Figure 5. During the intervention, she self-selected a goal each week, ranging from 7000 to 11,000. The goals are depicted by the solid horizontal black lines in Figure 5, beginning with a goal of an average of 7000 steps per day for Week 1, followed by goals of 10,000, 9000, 10,000, 10,250, 11,000, and 10,000 for Weeks 8, 9, and 10. Customer-participant 4 met and exceeded her goals, with the exception of Weeks 4 and 5, as depicted by the dotted horizontal green lines. Figure 5 shows the average number of steps taken each week, beginning with an average of 8821 steps during Week 1, followed by 11,032, 9367, 9406, 9442, 10,462, 12,035, 11,588, 10,847, and 11,864 during Week 10. Her steps during the intervention ranged from 1404 to 20,832. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain. Figure 1 shows a moderate upward trend in steps. Her final average during Week 10 of 11,864 steps represents a 5737 step or 93% increase over baseline steps.

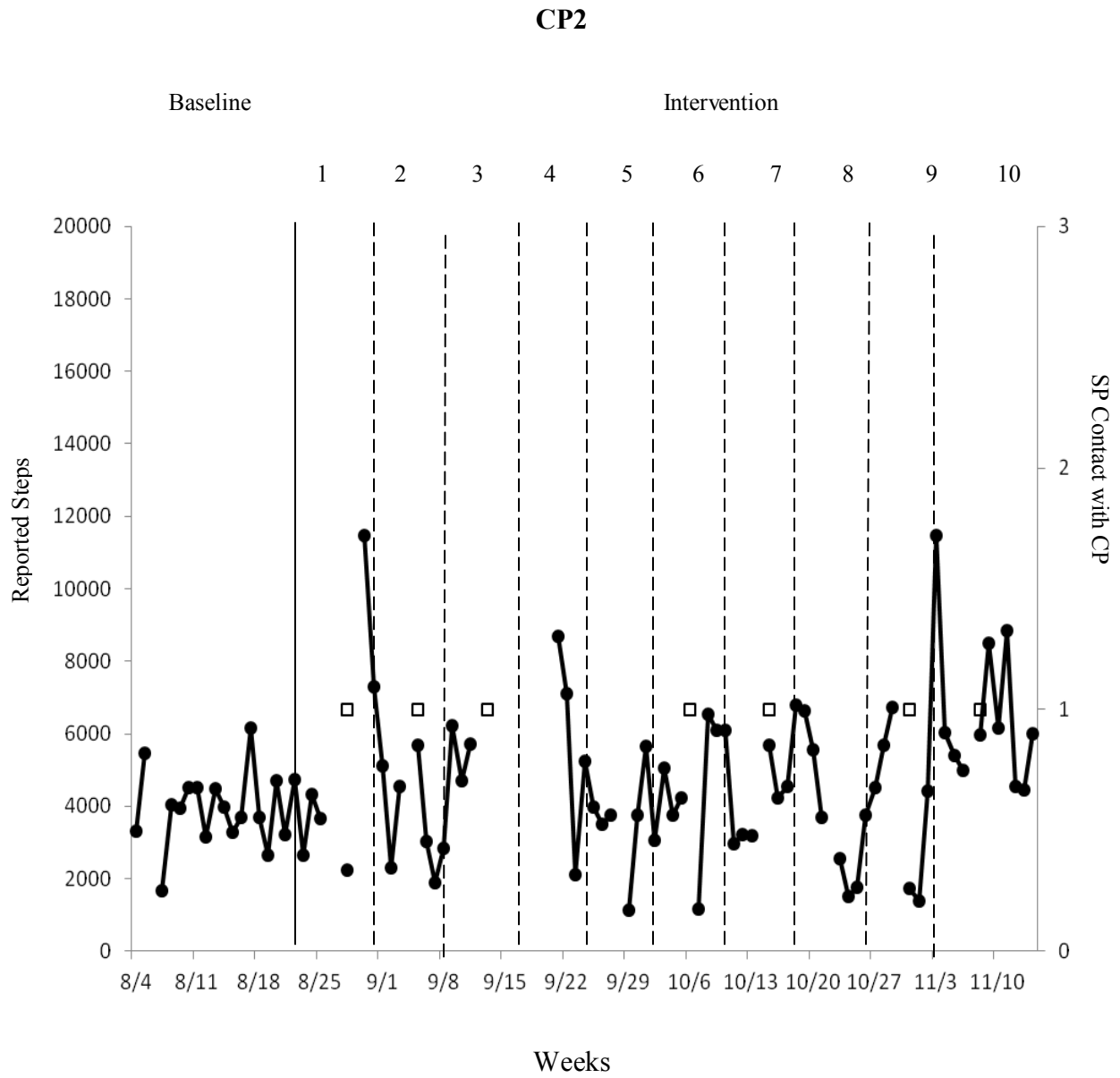
### **Secondary Results**

Secondary results for Experiment 3 include the (a) Social Support, (b) IPAQ-S, (c) Self-Efficacy Scale, (d) Decisional Balance Scales, and (e) Social Validity Questionnaires. Results can be found in the text below, along with corresponding tables.

**Social support.** Results recorded in Table 2 indicate that CP1 had an increase in social support from family and friends. Customer-participant 2 had a slight increase in social support from family but support from friends remained stable. Customer-participant 3 did not complete



*Figure 6.* Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.



*Figure 7.* Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

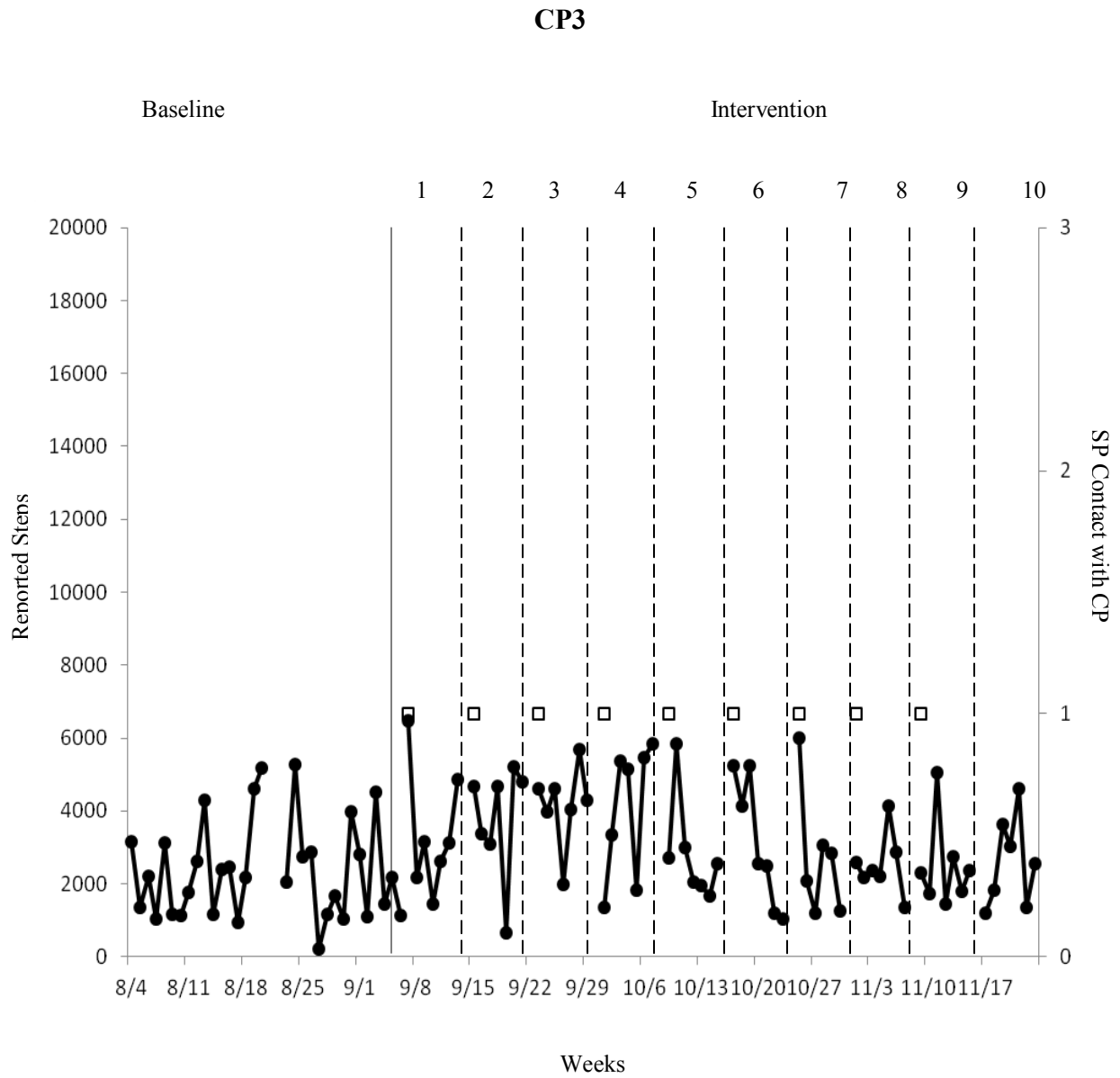


Figure 8. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

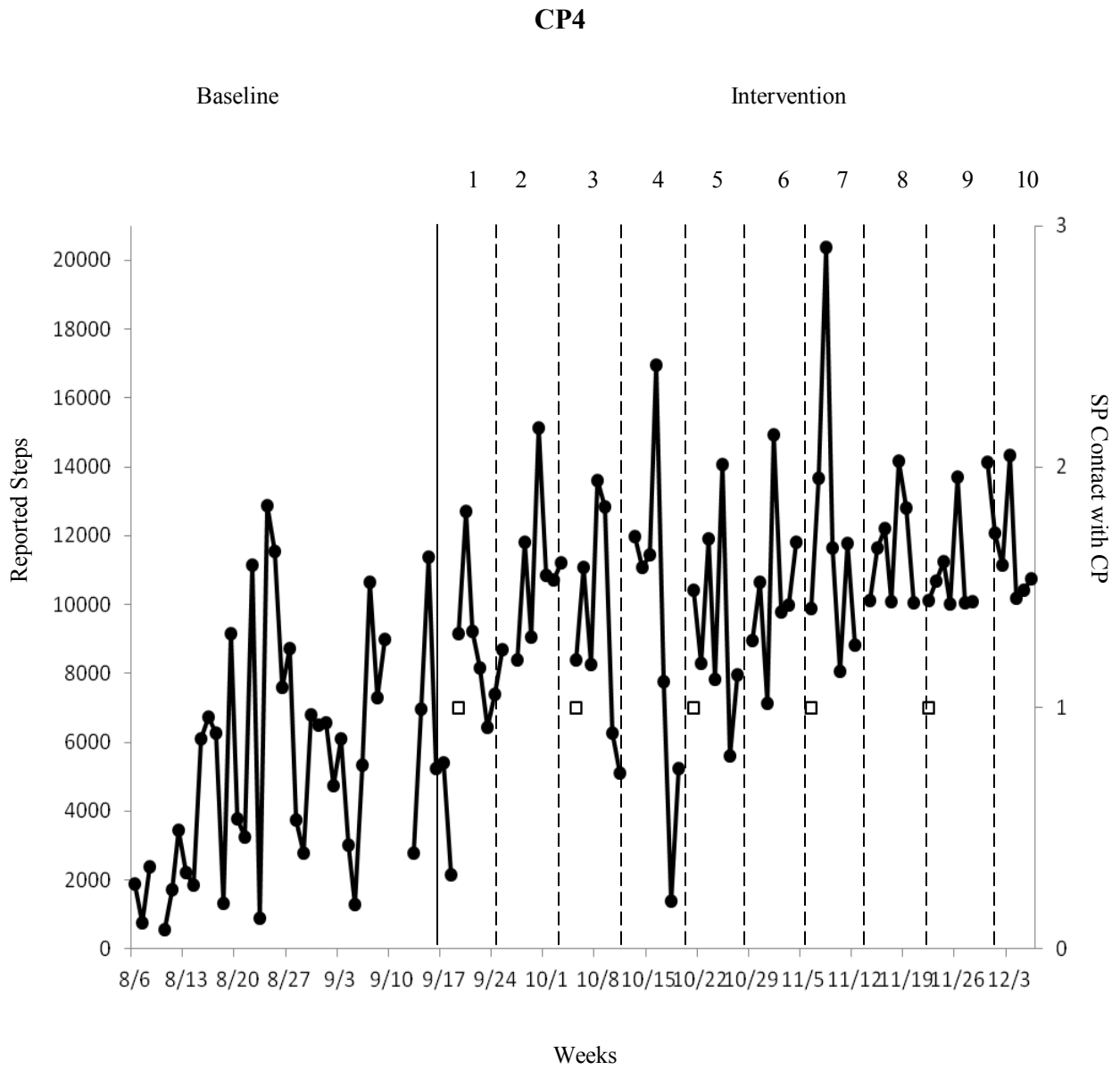


Figure 9. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

the post test. Customer-participant 4 had a decrease in support from family and friends. Most importantly is the change in perceived social support from the respective SPs.

Customer-participant 1 recorded a 34 point decrease in social support on the Social Support for Physical Activity Scale, moving from a 49 pre- to a 15 post-experiment score in the amount of social support for PA from her SP. The decrease may possibly be related to the number of times her SP recorded contact on the SP Activity Sheet. During the 10-Weeks, her SP recorded contact with her six times, as indicated by the hollow square in Figure 6. During the first week, CP1 visited the shop for her regularly scheduled hair care services and was provided with hair care support. She was not scheduled and did not have contact with her SP during the second week. She visited the shop outside of her normally scheduled visit during the third and fourth weeks. During the fifth week she talked with the SP over the phone and received hair care support. Her SP called her during the sixth week but did not reach her. There were no scheduled appointments and no contact during the seventh week. She visited outside of her regularly scheduled appointment during the eighth week and was excited about her weight loss. She talked by telephone with her SP during the ninth week. No report was filed during the 10<sup>th</sup> week.

Customer-participant 2 recorded a four point increase in social support on the Social Support for Physical Activity Scale, moving from a 41 pre- to a 45 post-experiment score in the amount of social support for PA from her SP. The increase may possibly be correlated with the number of times her SP recorded contact on the SP Activity Sheet. During the 10 Weeks her SP had contact with her eight times, as indicated by the hollow squares in Figure 7. During the first three weeks, she visited the salon for her regularly scheduled hair care services. During weeks



four and five she was not scheduled for hair care services and did not receive contact from her SP. She visited the salon once weekly for the remaining weeks.

Customer-participant 3 did not provide sufficient information for an analysis. Her pre-experiment score was zero; no post experiment score was received. During the 10 Weeks her SP had contact with her nine times, as indicated by the hollow squares in Figure 8. She visited the shop to receive her regularly scheduled hair services for weeks one through nine. No information was provided for week 10.

Customer-participant 4 recorded a 17 point increase in social support on the Social Support for Physical Activity Scale, moving from a 00 pre- to a 17 post-experiment score in the amount of social support for PA from her SP. The increase may possibly be correlated with the number of times her SP recorded contact on the SP Activity Sheet. During the 10 Weeks her SP had contact with her five times, as indicated by the hollow squares in Figure 9. During week one, she called the shop to schedule an appointment and she received support for remaining in the program from her SP. There were no scheduled visits during week two and no contact. During week three, she received a phone call from her SP to congratulate her on her progress. There were no scheduled appointments and no contact during week four. Her SP called her during week five. There was no contact during week six, but she called the shop and talked to her SP during week seven. There was no contact during week eight. She visited the shop during week nine. There was no contact during week 10.

**IPAQ-S.** As seen in Table 1, CP1 had a pre-intervention categorical responses designation of low-active for VPA, daily-walking, and other moderate PA, the three measured categories of PA recorded on the IPAQ-S. The low-active pre-intervention designation correlates with her low baseline average of 3480 steps per day, which falls within the sedentary range (e.g., < 5000), as

seen in Figure 2. Her post-intervention designation remained in the low-active category although she moved from engaging in daily walking zero days per week to three days for 10 to 15 minutes. Her post-intervention steps of 7297 correlates with her *IPAQ-S* designation and also places her in the low-active category (e.g., 5,000-7,499).

Customer-participant 2 had had a pre-intervention categorical response designation of low-active for VPA, daily-walking, and other moderate PA. The low-active pre-intervention designation correlates with her low baseline average of 3707 steps per day, which falls within the sedentary range (e.g., < 5000), as seen in Figure 2. Her post-intervention designation remained in the low-active category but she moved from engaging in brisk walking two days per week for 30 – 45 minutes to walking briskly two days per week for 10 – 15 minutes. Her post-intervention steps of 6357 correlates with her *IPAQ-S* designation and also places her in the low-active category (e.g., 5,000-7,499).

Customer-participant 3 had had a pre-intervention categorical analysis designation of low-active for VPA, daily-walking, and other moderate PA. The low-active pre-intervention designation correlates with her low baseline average of 3707 steps per day, which falls within the sedentary range (e.g., < 5000), as seen in Figure 2. She did not provide post-intervention information.

Customer-participant 4 had a pre-intervention categorical analysis designation of low active for VPA, daily walking, and other moderate PA. The low-active pre-intervention designation correlates with her baseline average of 6127 steps per day, which falls within the low-active category (e.g., 5,000 – 7,499). Her post-intervention designation for daily walking moved to the moderate category and may correlate with her post-intervention steps of 11,864, which fall within the active range (e.g., 10,000 – 12,499).

**Self Efficacy.** Results from the Self-Efficacy Scale can be seen in Table 3. As in Experiment 2, the final score represents an average of each of the 12 questions on the scale. There is no optimum score; higher scores indicate greater self-efficacy or confidence in the ability to perform PA under a variety of circumstances (e.g., inclement weather). The pre-survey was administered the second week of August for all consumer participants. The post survey was administered between November 2011 and January 2012. As seen in Table 3, CP1 had a pre-intervention self-efficacy score of 39, and a post intervention score of 46. The post-intervention score of 46, a seven point increase, may be correlated with the increase in steps by CP1.

Consumer-participant 2 had a pre-intervention score of 34, and a post intervention score of 53. The post-intervention score of 53, a nineteen point increase, may be correlated with completion of the 10-Week program although the trend line of her results is only slightly elevated.

Consumer-participant 3 did not provide sufficient information for analysis. Consumer-participant 4 had a pre-intervention of 49 and a post-intervention score of 42. The post intervention score of 42, a seven point decrease, is somewhat difficult to explain. One possible explanation may be that the goal of 10,000 steps was not challenging enough for her, or during the course of the intervention the challenges in her life changed in a way that altered her confidence.

In summary, any number of variables may have altered the self-efficacy of the consumer-participants. There does not appear to be a direct correlation with increases or decreases in self-efficacy and goal attainment. Without interviewing each person more closely it is difficult to determine why changes were noted between surveys.

Table 1

*IPAQ-S Pre/Post Categorical Responses*

PA Category	CP1	CP2	CP3	CP4
VPA	low/low	low/low	low/	low/low
Daily Walking	low/low	low/low	low/	low/moderate
Other Moderate PA	low/low	low/low	low/	low/low

*Note.* Categorical designation of pre/post responses to the IPAQ-S.

Table 3

*Self-Efficacy Pre/Post Scores*

---

Participants	<u>Pre</u>	<u>Post</u>
CP1	39	46
CP2	34	53
CP3	43	--
CP4	49	42

---

*Note.* Pre- and post-scores for self-efficacy.

**Decisional Balance Scale.** Results from the Decisional Balance Scale can be seen in Table 4. The final score represents an average of the 10 pro-PA items and the six con items. As in Experiment 2, the differences in the averages, or the pros minus the cons, is the decisional balance score. As seen in Table 4, customer-participant 1 had a pre-intervention decisional balance score of 66 and remained stable with a post-intervention score of 66. No change in the pre- and post-survey may be an indication that she did not change her perception of the pros versus the cons of PA participation although she did not achieve her overall step goal.

Consumer-participant 2 had a pre-intervention score of 57 and a post-intervention of 68, an 11 point increase. As with her self-efficacy score, her ability to remain in the program, regardless of goal attainment, may have changed her decisional balance going forward.

Consumer-participant 3 did not provide sufficient information to make an analysis. Consumer-participant 4 had a pre-intervention survey score of 42 and a post-intervention score of 47, a five point increase. Her increase in score could be due to her ability to remain with the program during the holiday season and after her work within the school system resumed beginning in late August.

In summary, the decisional balance either remained stable or slightly increased for the consumer-participants. There is no clear correlation with decisional balance stability and increases and goal attainment in the 10-Week program. As with self-efficacy, it is difficult to know for sure which variables may have influenced consumer-participants to either indicate stable scores or to increase their scores.

**Social validity.** As seen in Table 5, customer-participants most often indicated that they joined the research program because of health related benefits, their stylist invited them to join,

they wanted to be part of research to help other AA/B women, and to help solve the applied problem of hair care during PA. Additional reasons for joining the research are indicated with the numerical number assigned to each customer-participant.

As seen in Table 6, customer-participants most often indicated they liked the following about the procedures of the research program: (a) length of time, (b) support from their stylist (c) recognition stylists are important, (d) learned new things, and (g) health benefits. Other favorable aspects of the research program are also indicated with the numerical number assigned to each customer-participant. Customer-participants also indicated procedures they would change about the research program. Customer-participant 1 indicated she would have liked to have seen her graph week instead of at the end of the program. Customer-participant 2 was discouraged by the baseline procedures and considered leaving the program several times. A better explanation of how the baseline procedures work was preferred. Consumer-participant 4 indicated a dislike for the baseline procedures and wanted more clarification around daily averages versus daily goals. She also expressed a preference for texting instead of using the activity sheets, and she recommended a break in the program at the five-week mark.

As seen in Table 7, customer-participants were satisfied with the effectiveness of the research program. Consumer-participant 4 was the only person who achieved all of her goals. Consumer-participant 1 and consumer-participant 2 were satisfied with all of their results (e.g, health benefits) except they did not reach their step goals. Consumer-participant 3 did not participate in the post-survey on social validity of the procedures or the social validity of the effects.

In summary, all participants understood and agreed with the importance of PA, and of solving the barrier of hair care for many women. There were several aspects of the procedures

Table 4

*Pre/Post Scores for Decisional Balance*

---

Participant	<u>Pre</u>	<u>Post</u>
CP1	66	66
CP2	57	68
CP3	31	—
CP4	42	47

---

*Note:* 10 pro-PA questions averaged minus six con-PA questions to arrive at decisional balance score.



Table 5

*Social Validity: Applied*


---

Applied Problem	CP1	CP2	CP3	CP4
Health related benefits	X			X
My stylist invited me			X	X
My friend joined				
Doctor encouragement	X			
Help other AA/B women	X	X		
Lose Weight	X			X
Curiosity				
Free Gifts				X
Family encouragement				
Solve hair care/exercise problem	X	X	X	X
Other				

---

*Note.* Social Validity of the applied problem.

Table 6

*Social Validity: Procedures*

Procedures	CP1	CP2	CP3	CP4
Length of time	X	X		X
Lost weight				
Helping solve health problem	X			
Met new friends				X
Free gifts	X			X
Activity video				
Created new hairstyle	X			X
Support from stylist	X	X		X
Recognition stylists are important	X	X		X
Learned new things	X	X		X
Health benefits	X	X		X
Reached my goal	X			X
Other:	Focus on PA	Pedometer		Awareness
Change?				
Shorter Time (< 10 weeks)				
Longer Time (> 10 weeks)		X		X
More contact from stylist				
Less contact from stylist				
More contact from researcher				X
Less contact from researcher				
Activity Sheets	X			
Text instead of activity sheets				X
Email instead of activity sheets	X			X
Better explanation of the program	X	X		X
More information about the program	X	X		X
Other:		Send graphs		Baseline unpleasant

*Note:* Social validity of the procedures.

Table 7

*Social Validity: Effectiveness*

Effectiveness	CP1	CP2	CP3	CP4
Yes				X
No	X	X		
Did you change your hairstyle?				
Yes	X	X	--	X
No				

*Note:* Social validity of the effectiveness.

that were viewed positively, such as wearing a pedometer. There were also procedures that were not viewed favorably, such as the baseline procedure. Customer participants were satisfied with all of the results with the exception of not achieving their overall step goals.

## **Discussion**

### **Primary Results**

The results of Experiment 3 to increase PA using a 10-Week walking program by increasing the frequency of steps by 4000 over baseline were mixed. Changes to the procedures were also implemented, including changes in implementation of the incentives schedule and population of the Activity Sheets for CPs. Customer-participant 1 had an overall goal of 7408 steps per day; her steps ranged from 6676 to 8136 during the 10 weeks. Her final average during of 7297 steps represented an increase of 87% over baseline and placed her in the low active range of PA (5000-7499). Customer-participant 2 had an overall goal of 7707 steps per day; her steps ranged from 1126 to 11,469. Her final average of 6357 steps represented an increase of 71% over baseline and placed her in the low active range of PA (5000-7499). Customer-participant 3 had an overall goal of 6450 steps per day; her steps ranged from 654 to 6480. Her final average of 2608 steps represented an increase of 6% over baseline but she remained in the sedentary range of PA (<5000 steps). Only CP4 achieved her overall goal. She had an overall goal of 10,000 steps per day; her steps ranged between 1404 to 20,832. Her final average of 11,861 represented an increase of 93% over baseline and placed her in the active range of PA (10,000 -12,499).

### **Secondary Results**

**Social support.** The results from the Social Support for Physical Activity Scale indicate a range of levels of support from SPs. Customer-participant 1 reported a 34 point decrease in

social support, moving from a pre-experiment score of 49 to a post-experiment score of 15. Customer-participant 2 reported a four point increase, moving from a pre-experiment score of 41 to a post-experiment score of 45. Customer-participant 3 did not provide post-experiment information. Customer-participant 4 reported a 17 point increase, moving from a pre-experiment score of 0 to a post-experiment score of 17. According to the SP activity sheets, social support was provided to CP1 six times, to CP2 eight times, to CP3 nine times, and to CP4 five times.

**IPAQ-S.** Secondary results for daily walking on the IPAQ-S are inconsistent with step data, as follows. Customer-participant 1 had a pre-experiment designation of low active, which is somewhat consistent with her step average of 3408 which placed her in the sedentary range (<5000). She had a post-experiment designation of low-active, which is consistent with her low-active step average of 7297 (5000-7,499). Customer-participant 2 had a pre-experiment designation of low active, although her baseline step average of 3707 places her in the sedentary range (<5000). She had a post-experiment designation of low-active, which is consistent with her low-active step average of 6357 (5000-7,499). Customer-participant 3 had a pre-experiment designation of low active, although her baseline step average of 2450 placed her in the sedentary range (<5000). She did not provide post-experiment information. Customer-participant 4 had a pre-experiment designation of low-active, which is consistent with her baseline step average of 6122 (5000-7,499). She had a post-experiment designation of moderately-actively, which may be consistent with her active step average of 11,864 (10,000-12,499).

**Self-Efficacy.** Customer-participant 1 had a seven point increase from pre- to post intervention, CP2 had a 19 point increase, and CP4 had a seven point decrease. Customer-participant 3 did not provide post intervention data. There does not appear to be a relationship between pre/post scores and goal attainment.

**Decisional-Balance.** Decisional balance scores remained basically unchanged. Customer-participant 1 reported no change, CP2 reported an 11 point increase, and CP4 reported a five point increase, possibly indicating that no major changes in the pros and cons of PA were experienced, despite barriers experienced in pursuit of their weekly and 10-Week goals. There does not appear to be a relationship between pre/post scores and goal attainment.

**Social validity.** Social validity results suggested that CPs agreed with the importance of PA, with “solving hair care issues” as one of the goals to be accomplished. Customer-participants approved of the overall procedures and indicated that the areas for improvement included more contact with the researcher, a better explanation of the program, particularly the baseline procedures, and an extension in the number of weeks in the program. Customer-participant 4 reported overall satisfaction with the results, and indicated an achievement of her step goals. Customer-participant 1 and CP2 reported they were not satisfied with the results as they did not achieve their step goals. The issue of hair care competing with PA participation may have been resolved by each of them changing their respective hairstyles.

### **Strengths and Limitations**

#### **Strengths**

Several strengths can be noted from this experiment. First, there was no attrition from the research program. Second, although only one CP achieved her goal, a second CP came within a few hundred steps, a possible indication that the goal was within reach. Third, the results were socially valid, with all CPs reporting agreement with the problem under study, satisfaction with most of the procedures, as well as satisfaction with the results. And fourth, all CPs reporting post-experiment data moved from a pre-experiment designation of sedentary to either low- or moderately active designations.

## **Limitations**

The limitations are both methodological and procedural. First, the assigned goal of achieving 4000 steps above the baseline may have been too challenging, particularly for more frail, sedentary members in this group. A more gradual increase in steps over a longer period of time may have been more successful. Second, CPs did not consistently base their weekly goals on achievements made in the previous week. It is therefore difficult to say with certainty that the changing criterion was effective. Third, inter-observer agreement was not conducted, so all results were self-reported. Fourth, one CP did not provide post-intervention data or information so a full pre/post analysis could not be conducted. And fifth, step data, was not consistent with pre/post designations from the IPAQ-S. Consistency between primary and secondary measures would have assisted in validating the self-reported step data.

## **Future Directions**

Future research should include the following. First, an ongoing clarification of the baseline procedures in the 10-Week program is needed. All participants complained about the length of the baseline period with some being more vocal than others. Second, CPs should receive a copy of their weekly graph with easy to read, color-coded instructions to assist them with tracking their goals. Third, CPs should be provided with activity sheets that are pre-coded with dates as one way to ease the burden of filling them out. Fourth, a separate sheet with the incentives schedule should be included in the 10-Week startup package (e.g., activity sheets, envelopes, etc) to assist SPs and CPs with an understanding of the schedule. And fifth, CPs should no longer be asked to participate in a 10-minute video prior to taking the pre-intervention IPAQ-S, due to multiple complaints and refusals. Participants in Experiment 3, if compared to Experiment 2, were more frail and reported more health concerns. Unlike Experiment 2, CPs participated in the

program during the latter part of the year which is a time for vacations, back-to-school, cooler weather, and the Holiday Season. One exception is CP1, a relatively healthier participant who came within reach of her goal. It is possible that her goal attainment was not reached because she did not receive sufficient support from her SP. A more comprehensive discussion of future directions addresses additional limitations and recommendations.

### **Summary**

In summary, future research studies should continue to examine the effects of increasing PA with goal setting and social support from SPs. It is impossible to know which component of the package intervention is responsible for change without conducting an environmental scan and component analysis. Most of the participants, for example, did not achieve their goals regardless of the overall step goal, level of social support reported, changes in self-efficacy and/or decisional balance. The results are a demonstration that individual differences are important because diverse environmental factors (e.g., weather, neighborhood, work schedule, family configurations, etc) and levels of social support (e.g., zero to five times a week) can be successful in assisting an individual with achieving a PA goal.

### **EXPERIMENT 4**

The purpose of Experiment 3 was to assess the effects of a 10-Week program to increase the frequency of PA with AA/B women who were customers of hair stylists. Experiment 3 repeated many of the same procedures used in Experiment 2, but with a more challenging step goal to achieve. The effects of the 10-Week walking program were assessed using a pre/post, MBL design across six participants. The MBL included a changing criterion design. The independent variable was the 10-Week walking program that included self-selected weekly goals with an overall assigned goal to reach by the end of the 10-Weeks, as well as social and hair care



support from each respective SP. The primary dependent variable was to gradually increase PA by increasing the frequency of steps to at least 4000 steps above the baseline through goal setting and with social and hair care support. Only four CPs completed the program. The results were mixed. CPs were inconsistent with meeting their short-term weekly goals and only CP4 met her long-term goal and increased her steps by at least 4000 above baseline. CP1 came within only 111 steps of meeting her long-term goal. The impact of social support and goal setting was unclear because it is impossible to fully separate the two components of this package intervention.

The experiment had a number of methodological and procedural limitations. First, one SP in this study had completed Experiment 1, while the other two SPs had not participated in the program. There did not appear to be a relationship between SPs who had not participated and the SP who had participated in Experiment 1. Second, the feedback graphs depicting CP step information may have been too complicated to fully understand. The researcher included step data with different colored, short, horizontal lines to indicate the goal and step average each week.

These limitations were addressed in Experiment 4 in the following ways. First, an effort was made to recruit SPs that had or had not been exposed to Experiment 1. In Experiment 4, both SPs had participated in Experiment 1, although only one had completed the program. This status may or may not have influenced the outcomes of the program. Second, changes were made to the graphs to make them easier to read quickly. The short horizontal lines were removed. They were replaced with one long horizontal red line, representing the baseline average. CPs were asked to avoid daily averages below their baseline, or the red line. Steps that fell below that line were recorded in red, making it easier to immediately determine how many steps each day and week

were below the line. A long horizontal green line was added, which ran parallel to the red line, representing the 10-Week goal. Steps at or above the green line were colored in green, indicating steps were at or above the 10-Week goal. Steps that fell between these two lines were colored black. The researcher also added a message box to each graph indicating how each person was progressing.

Additional changes were made to Experiment 4 based on the researcher's observations. First, a high level of frustration from SPs was observed if they received a negative response from the researcher when asked if she had received a call from a referral they made. The researcher therefore made every effort to proactively alert the researcher each time she was contacted by one of their referrals. Second, the researcher provided direct feedback to the CPs by sharing the step data graphs weekly either by email or standard delivery mail. She hand-delivered a copy of the feedback graphs to each SP during her weekly visits. Third, the researcher was able to conduct IOA. During the sixth or seventh day of the fifth week for each CP, the researcher called and asked the CP if she could come and check the pedometer and the activity sheet. The researcher checked the seven-day log recorded in the pedometer with the activity sheet data to determine any discrepancies were observed. Fourth, the researcher pre-dated each CP activity sheet to eliminate problems of counting days. At the top of each activity sheet the researcher also indicated which of the 10-Weeks was represented (e.g., Week 1, Week 2, etc). Fifth, participants did not participate in the 10-minute Instant Recess video prior to answering questions from the IPAQ-S. Anecdotal information collected by the researcher indicated CPs were uncomfortable with the video and some refused to participate.

## **Method**

### **Recruitment**

The recruitment of SPs was conducted in Kansas City, Kansas metro area between January and February, 2012. Stylist-participant 2 and SP7 were recruited and participated in this study. Stylist-participants recruited four CPs from their respective customer bases using a flier developed by the researcher and a checklist of inclusion criteria (Appendix ). Stylist-participant 2 recruited two CPs as did SP7 for a total of four CPs. See Table 1 for a summary of CP demographics.

### **Participants**

**CP1.** Customer-participant 1, recruited by SP2, was a 35-year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to become active within the next 30 days, placing her in the Preparation or Stage 3 of change. She was single, had an income of between \$15,000 and \$20,000 a year, and she reported having completed high school as her highest level of education. Customer-participant 1 was diagnosed as overweight and obesity. Her general health was self-rated on the BWWS as very good, and also very good when asked how her health compared to other AA/B women her age.

**CP2.** Customer-participant 2, recruited by SP-2, was a 39 year old female. She wore a long, chemically straightened hairstyle. According to her IPAQ-S survey, she participated in VPA for one day a week for at least 10 minutes in a row, but did not participate in daily walking or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she had been physically active for less than six months, placing her in the Action or Stage 2 of change. She was married, had an income of between \$35,000 and \$50,000 a year, and reported having completed high school as her highest level of education. Customer-participant 2 was diagnosed

with overweight and obesity. Her general health was self-rated on the BWWS as very good, and also very good when asked how her health compared to other A/B women her age.

**CP3.** Customer-participant 3, recruited by SP7, was a 42 year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she participated in VPA one day a week for 10-15 minutes in a row per day, daily walking three days per week for 10-15 minutes in a row, but not briskly, and she did not participate in other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she had not been physically active but intended to become active within the next six months, placing her in the Preparation, or Stage 3 of change. She was married, had an income of between \$35,000 and \$50,000, and reported having completed high school as her highest level of education. She did not indicate any health concerns. Her general health was self-rated on the BWWS as fair, but very good when asked how her health compared to other AA/B women her age.

**CP4.** Customer-participant 4, recruited by SP7, was a 44 year old female. She wore a long, heat straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she had not been physically active but intended to become active within the next six months, placing her in the Contemplation or Stage 4 of change. She was married, had an income of \$75,000 a year, and reported having completed high school as her highest level of education. Customer-participant 4 was diagnosed with high blood pressure, overweight, and obesity. She also smoked cigarettes but did not indicate how many packs she smoked per day. Her general health was self-rated on the BWWS as poor, and also poor when asked how her health compared to other AA/B women her age.

### **Settings**

The settings for the baseline, intervention, and post sites are similar to those in Experiment 2. Walking during the baseline and intervention presumably took place in each CP's respective community.

### **Experimental Design**

The effects of the 10-Week walking program with an assigned goal to increase the frequency or the average number of steps per week by 4000 by the end of 10 weeks was evaluated using a pre/post, MBL design across participants. The specifics of the design are described under the general methods section. The changing criterion intervention phase is described under this section in Experiment 2.

As with Experiments 2 and 3, pre-analysis was conducted prior to the no-intervention baseline-phase for CPs. All pre-intervention tools used in Experiment 4 are identical to those used in Experiment 2 and Experiment 3.

### **Dependent Variable**

The primary DV was to achieve an increase in the frequency of steps by an average of at least 4000 by the end of the 10-Week program. Secondary dependent variables were (a) an increase in self-efficacy, (b) an increase in decisional balance, and (c) an increase in PA as indicated on the IPAQ-S.

### **Independent Variable**

The independent variable (IV) was a modification of the AARP 10-Week Walking Program, which included social support from SPs, and weekly goal setting procedures.

Table 1

*Demographic Profile of CPs*

Demographic	CP1	CP2	CP3	CP4
Age	35	39	42	44
Gender	F	F	F	F
Ethnicity	AA/B	AA/B	AA/B	AA/B
Education	HS	HS	HS	MA
Income	<\$20K	<\$50K	<\$50K	>\$75k

*Note.* Demographic profile of customer-participants (CPs). High-School is abbreviated using the letters HS. African American/Black is abbreviated using the letters AA/B.

Customer-participants were asked to increase the average number of steps taken weekly by 4000 as an assigned goal. Customer-participants self-selected their weekly goals during the 10-Weeks.

### **Procedures**

The procedures for Experiment 4 are similar to those of Experiment 2 and Experiment 3, with the following modifications: (1) The researcher queried the SPs regarding the flier and procedures but no changes were recommended. (2) The researcher eliminated the mystery about whether she had received a call from an SP recommended potential enrollee. Each time the researcher received a call, she notified the appropriate SP, even if the potential enrollee did not follow-up after being contacted. (3) The researcher modified the feedback graphs by eliminating the horizontal green and black lines that indicated the goal and actual average number of steps taken each week. She replaced them with one horizontal red line, representing the baseline average, and indicated to CPs that their steps should not fall below that line. Any steps that fell below that line were colored red on the weekly feedback graphs to CPs and respective SPs. A horizontal green line was also added, representing the 10-week goal. Steps at or above the green line were colored green, indicating steps that were at or above the 10-week goal. Steps that fell between these two lines were colored black. The researcher also added a message box to indicate how each person was progressing. Examples of the changes made to the feedback graphs can be seen in Figure 1 and Figure 2. (4) The researcher developed and shared the feedback graphs with the CPs weekly, either by email or standard delivery mail. She hand delivered a copy of the feedback graphs to each SP during her weekly visits. (5) The researcher was able to conduct IOA. During the sixth or seventh day of the fifth week for each CP, the researcher called and asked the CP if she could come and check the pedometer and the activity sheet. The researcher checked the seven-day log recorded in the pedometer with the activity sheet data to determine if

there were any discrepancies. (6) The researcher pre-dated each activity sheet to eliminate problems of counting days some previous CPs experienced. At the top of each activity sheet the researcher also indicated which week of the 10-Week program the data represented (e.g. Week 1, Week 2, etc). (7) Participants did not participate in the 10-minute video prior to answering questions from the IPAQ-S. Anecdotal information collected by the researcher indicated CPs were uncomfortable with the video, but more to the point the researcher in advertently eliminated the video during the first enrollment and decided to be consistent with subsequent enrollments. (8) The researcher made a separate print-out of the incentives schedule and gave it to CPs and SPs. In previous studies, she referred to the incentives schedule that was included in the informed consent package. And (9) Customer-participants were given the option of how they wanted to receive the cash-related incentives. They could receive the incentives as noted on the incentives schedule, or they could receive the “lump sum”, still paid directly to their respective SPs, at the end of the 10-Weeks.

## **Results**

### **Primary Results**

The total number of steps taken by each CP in Experiment 4 can be seen in Figure 3. Only CP1 and CP4 met their goals. The other two CPs did not finish the program. Both CP1 and CP4 were eligible to receive the incentive as outlined but elected to receive the lump sum incentive, paid directly to their respective stylists.

Customer-participant 1 had an average of 6272 steps during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 10,000 steps per week by the end of the 10-Week program. As explained earlier, the maximum number of steps the



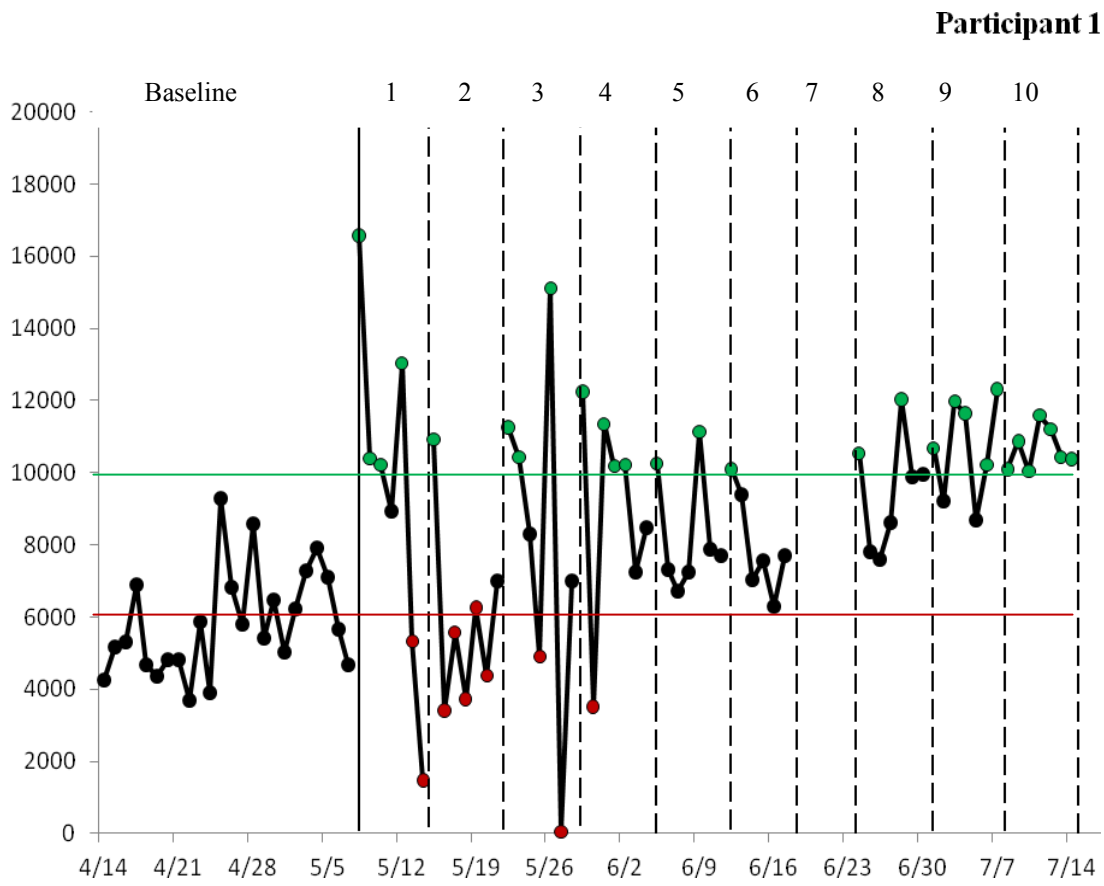


Figure 1. Example of a feedback graph

CP4

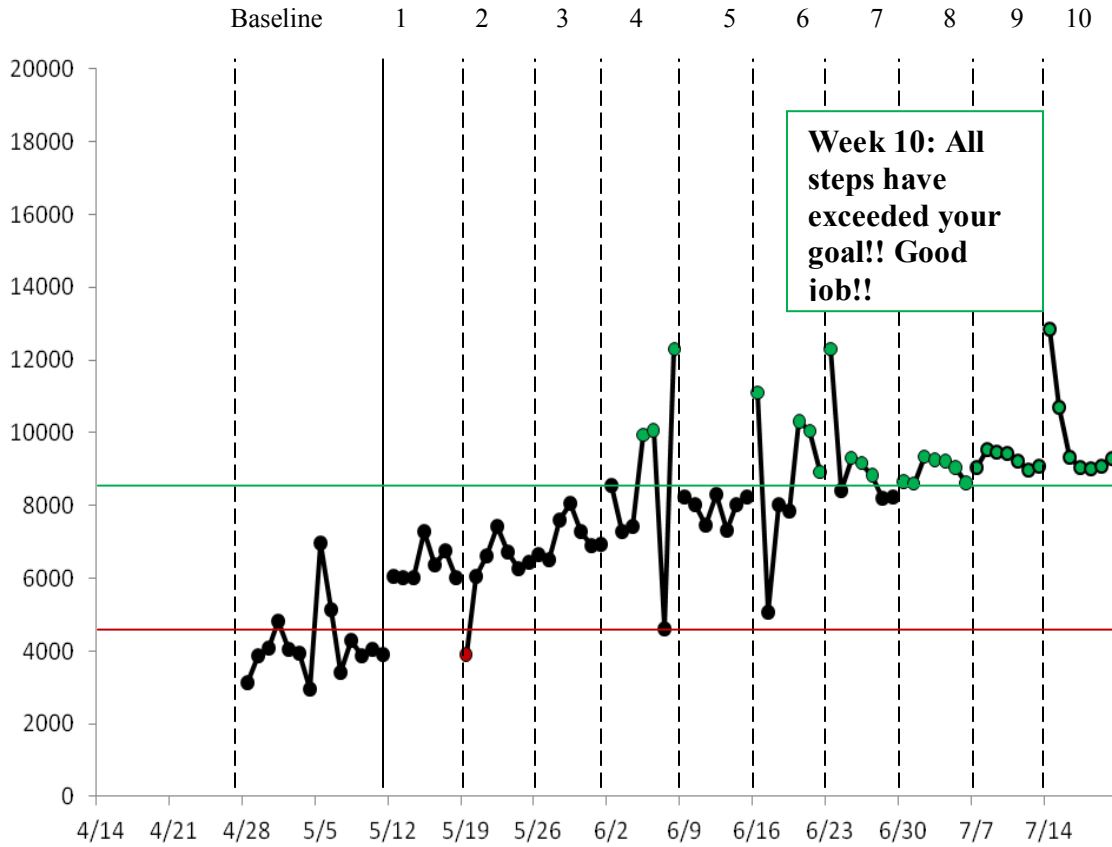


Figure 2. Example of a feedback graph.

researcher could request was 10,000 steps. Her steps during baseline ranged from 3698 to 9285 as seen in Figure 3. During the intervention, she self-selected a goal each week, ranging from 7500 to 10,000. The goals are depicted by the solid horizontal black lines in Figure 4, beginning with a goal of 10,000 for Week 1. No goal was indicated for Week 2 or Week 3. Her goal for Week 4 was 8500, with a goal of 8000 for Week 5, 7500 for Week 6, no goal for Week 7, 9000 for Week 8, 9500 for Week 9 and 10,000 for Week 10. Customer-participant 1 did not meet her goal for Week 1 but exceeded her weekly goal for all subsequent weeks. The average number of steps she took each week can be seen on Figure 4 as depicted by the dotted horizontal green lines, which shows the average number of steps taken that week beginning with an average of 9422 steps during Week 1, followed by 5893, 8151, 9038, 9490, 10,675, and 10,662 step average for Week 10. No data were reported for Week 7. Her steps during the intervention ranged from 53 to 16,571. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain Figure 3 shows a slight upward trend line. Her final average of 10,662 represents a 4390 or 70% increase over baseline steps.

Customer participant 2 did not complete the program. She already had a 10,000 step average during baseline due in part to her work as a hospital attendant responsible for pushing people in wheelchairs throughout the hospital. The researcher asked her to withdraw.

Customer-participant 3 did not complete the program. She communicated to the researcher that she did not want to report her steps daily and submit an activity sheet each week for what appeared to be an ongoing baseline period.

Customer-participant 4 had an average of 4605 steps during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 8605 steps per week

by the end of the 10-Week program. Her steps per day during baseline ranged from 3118 to 6978 as seen in Figure 3. During the intervention, she self-selected a goal each week, ranging from 5590 to 8950. The goals are depicted by the solid horizontal black lines in Figure 5, beginning with a goal of an average of 5590 steps per day for Week 1, followed by goals of 6010, 6430, 6850, 7270, 7690, 8110, 8590, 8950, and 8950 for Week 10. Customer-participant 4 consistently exceeded her weekly goal. The average number of steps she took each week can be seen on Figure 5 as depicted by the dotted horizontal green lines, which shows the average number of steps taken that week beginning with an average of 6361 steps during Week 1, followed by 6200, 7135, 8600, 7938, 8759, 9211, 8970, 9252, and 9898 step average for Week 10. Her steps during the intervention ranged from 3904 to 12,309 and never dipped below her baseline. The solid horizontal line indicates that she met the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain Figure 5 shows a slight upward trend line. Her final average of 9898 represents a 5293 step or 87% increase over baseline steps.

### **Secondary Results**

Secondary results for Experiment 4 include the (a) IPAQ-S, (b) Self-Efficacy Scale, (c) Decisional Balance Scales, and (c) Social Validity Questionnaires. Results can be found in the text below, along with corresponding tables.

**Social Support.** Results from the Social Support for Physical Activity pre- and post-scale can be seen in Table 2. As stated earlier, there is no optimum score but according to Sallis et al. (1987) higher scores are associated with greater success in changing PA behavior.

Pre- and post-intervention data for comparison were only provided for CP4. She had a three point increase in family support and a three point decrease in support from friends. Most

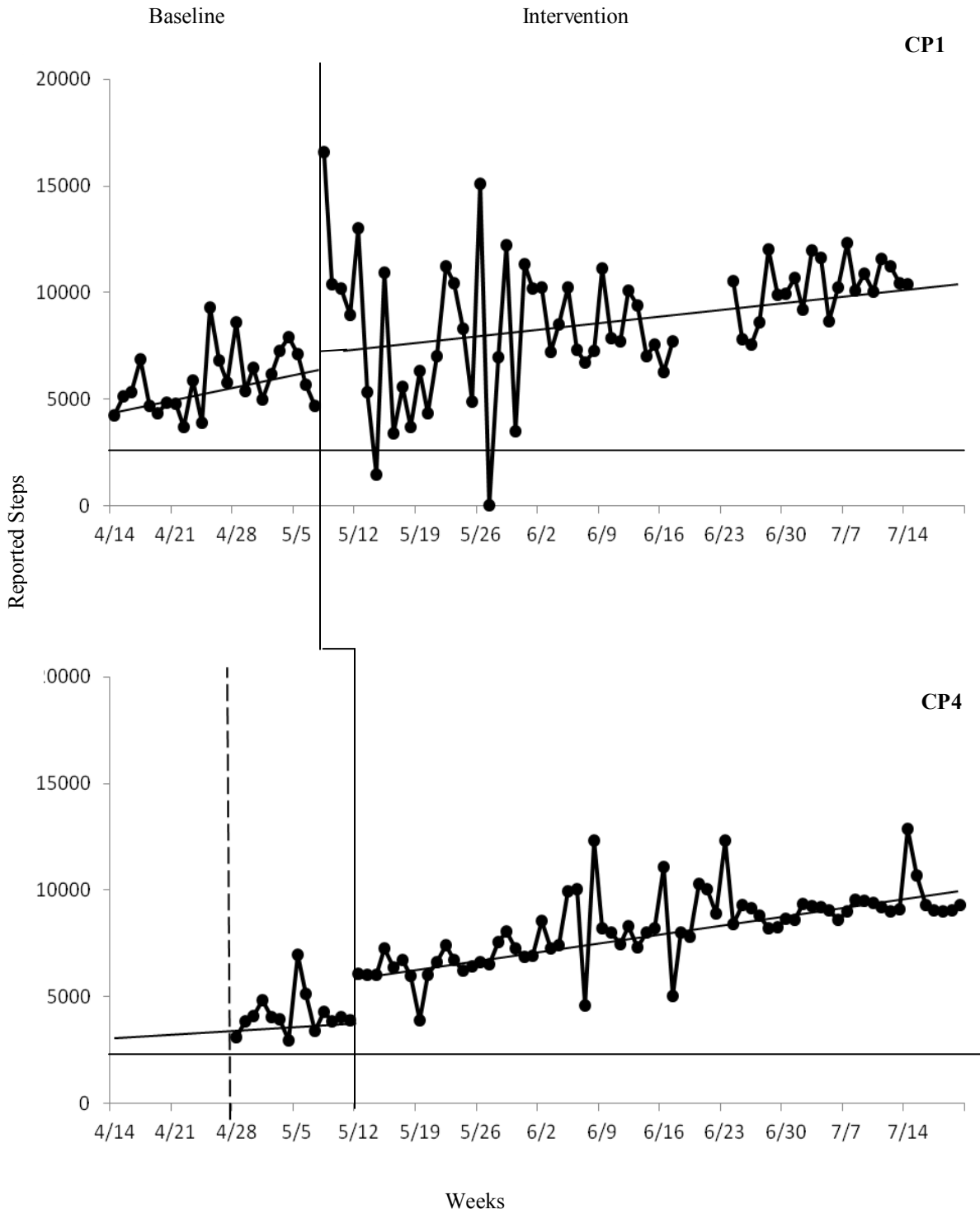
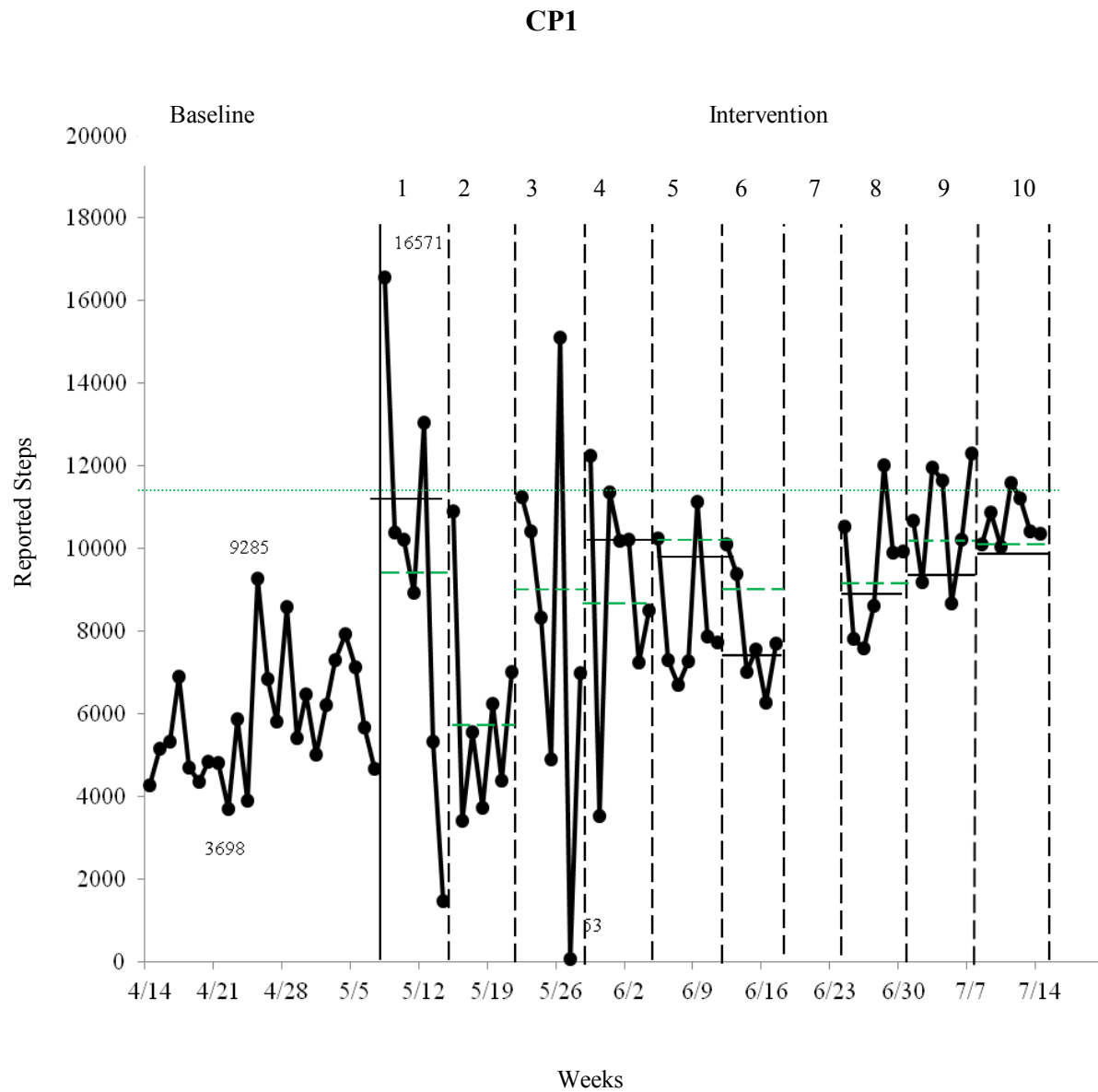


Figure 3. Customer-participant’s steps during the baseline and intervention. The solid horizontal line indicates minimum of an additional 2000 steps needed per day to prevent weight gain.



*Figure 4.* Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent weekly goal average, and dotted horizontal green lines represent actual step average per week.

CP4

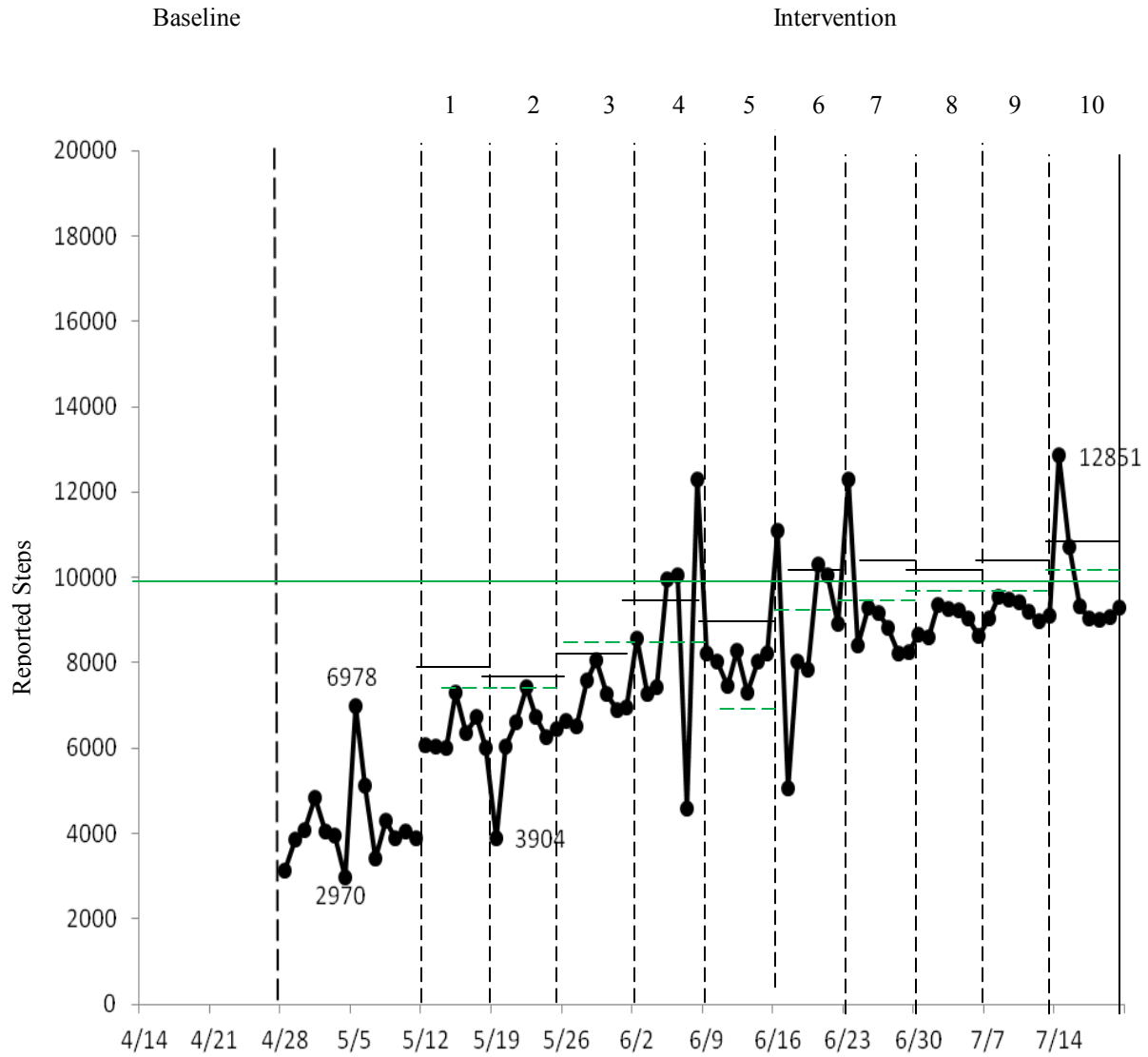


Figure 5. Reported steps per day during baseline and experimental phases. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent weekly goal average, and dotted horizontal green lines represent actual step average per week.

importantly were results from the pre- and post-intervention regarding the social support she received from her SP.

Customer-participant 4 recorded two point increase in social support on the Social Support for Physical Activity Scale, moving from an 08 pre- to a 10 post-intervention score in the amount of social support for PA from her SP. SP7 did not complete her activity sheets or send them to the researcher as requested. The researcher made several attempts to reach SP7 by phone, text, email, and impromptu visits with no success. The researcher saw her at the end of the 10 weeks to pay the incentive for CP4. The SP7 was in the midst of planning her wedding and appeared to be available for only a minimum number of customers. The lower beginning number of 10, and the two point decrease to 08, may be an indication of the level of support she provided to CP4

**IPAQ-S.** Results from the IPAQ-S can be found in Table 1. Results from the IPAQ-S were assessed using the categorical analysis of dividing PA into three levels, as outlined in previous experiments. As seen in Table 1, CP1 had a pre-intervention categorical analysis designation of low-active for VPA, daily-walking, and other moderate PA, the three measured categories of PA recorded on the IPAQ-S. The low-active pre-intervention designation does correlate with her baseline average of 6272 steps per day, which falls within the low-active range (e.g., 5000 – 7.499), as seen in Figure 2. Her post-intervention data was not available.

As seen in Table 1, CP4 had a pre-intervention categorical analysis designation of low active for VPA, daily walking, and other moderate PA. The low-active pre-intervention designation is slightly higher than her baseline steps of 4605, which placed her in the sedentary range of activity (e.g., <5000). Her post intervention analysis moved to the vigorous category



for daily walking and may correlate with her post-intervention steps of 9898, which falls just under the active range (e.g., 10,000 – 12,499).

**Self-Efficacy.** Results from the Self-Efficacy scale can be seen in Table 3. As in previous experiments, the final score represents an average of the 12 questions on the scale, and there is no optimum score. The pre-survey was administered in April and the post-survey was administered in August, 2012. As seen in Table 3, CP1 had a pre-intervention self-efficacy score of 44. No data were available for comparison.

Consumer-participant 4 had a pre-intervention score of 54 and a post-intervention score of 51. The post-intervention score of 51, and three point decrease, may be correlated with the small change in social support from the SP. In other words, the confidence level of the CP did not change very much, possibly due to the limited social support she received from her SP.

In summary, there does not appear to be a direct correlation with increases or decreases in self-efficacy and goal attainment. Without interviewing each person more closely it is difficult to determine why changes were or were not noted between pre- and post-intervention surveys.

**Decisional Balance.** Results from the Decisional Balance Scale can be seen in Table 4. The final score, as explained earlier, represents an average of the 10 pro-PA and six con items. As in previous experiments, the differences in the averages, or the pros minus the cons, is the decisional balance score. As seen in Table 4, CP1 had a pre-intervention decisional balance score of 58; no data were available for a comparison.

Customer-participant 4 had a pre-intervention score of 60 and a post-intervention score of 51, a nine point decrease. The decrease may or may not be indicative of additional barriers experienced by CP4, particularly if there was insufficient support from her SP during the program.

In summary, the decisional balance slightly increased for CP4. There is no clear correlation with decisional balance stability and increases and goal attainment in the 10-Week program. As with self-efficacy, it is difficult to know for sure which variables may have influenced CPs to either indicate stable scores or to increase their scores.

**Social validity.** As seen in Table 6, the applied social validity table, CPs 1 and 4 both indicated that they joined the research program because of health related concerns, family encouragement, to lose weight, and to help solve hair care concerns. Additional reasons for joining can be seen in Table 6.

As seen in Table 7, the procedures social validity table, CP4 indicated she enjoyed all of the procedures in the experiment, including use of the Cool Cloth, pedometer, and support from the stylist. Upon further probing, she indicated she would change the 10-Week program and make it shorter, preferred more contact from her SP, would shorten the baseline procedures, and add better incentives.

As seen in Table 8, CP4 was satisfied with the effectiveness of the intervention program. CP4 achieved her step goals, which may be one reason she was satisfied with the effectiveness.

Table 2

*Pre/post Social Support Responses*

Participants	<u>Pre</u>			<u>Post</u>		
	Family	Friends	Stylist	Family	Friends	Stylist
CP1	29	30	33			
CP4	55	18	08	58	15	10

*Note:* Pre/post responses to questions regarding social support for PA from family, friends, and SPs.

Table 3

*IPAQ-S Pre/Post Categorical Responses*

PA Category	CP1	CP2	CP3	CP4
VPA	low	low/	low/	low /moderate
Daily Walking		low		low/vigorous
Other Moderate PA	low			low/low

*Note.* Categorical analysis of CP pre/post responses to the IPAQ-S.

Table 4

*Self-Efficacy Pre/Post Scores*

---

Participants	<u>Pre</u>	<u>Post</u>
CP1	44	
CP2	43	
CP3	36	
CP4	54	51

---

*Note.* Pre- and post-scores for self-efficacy.

Table 5

*Pre/Post Scores for Decisional Balance*

---

Participant	<u>Pre</u>	<u>Post</u>
CP1	58	
CP2	32	
CP3	51	
CP 4	60	51

---

*Note:* 10 pro-PA questions averaged minus six con-PA questions to arrive at decisional balance score.

Table 6

*Social Validity: Applied*

Problem	CP1	CP2	CP3	CP4
Health related benefits	X	X		X
My stylist invited me	X			
My friend joined				
Doctor encouragement				X
Help other AA/B women		X		X
Lose Weight	X	X		X
Curiosity				
Free Gifts				
Family encouragement	X			X
Solve hair care/exercise problem	X	X	X	X
Other				

*Note.* Social Validity of the applied problem.

Table 7

## Social Validity

Procedures	CP1	CP2	CP3	CP4
Length of time				
Lost weight				
<u>Cool Cloth</u>				X
<u>Baseline</u>				X
Helping solve health problem				X
Met new friends				X
Free gifts				X
Activity video				X
Created new hairstyle				X
Support from stylist				X
Support from researcher				X
Recognition stylists are important				X
Learned new things				X
Health benefits				X
Reached my goal				X
Other:				Accountability
Change?				
Shorter Time (< 10 weeks)				X
Longer Time (> 10 weeks)				
More contact from stylist				X
Less contact from stylist				
Baseline				X
Better Incentives				
More contact from researcher				
Less contact from researcher				
Activity Sheets				
Could have done a barrier exam: link to self-efficacy				
Text instead of activity sheets				
Email instead of activity sheets				
Better explanation of the program				
More information about the program				
Wearing a pedometer				
Other:				Baseline too long

*Note:* Social Validity of the procedures.



Table 8

*Social Validity: Effectiveness*

Effectiveness	CP1	CP2	CP3	CP4
Yes				X
No				
Did you change your hairstyle?				
Yes				X
No				

*Note:* Social validity of the effectiveness.

importantly were results from the pre- and post-intervention regarding the social support she received from her SP.

In summary, all participants understood and agreed with the importance of PA, and of solving the barrier of hair care for many women. There were several aspects of the procedures that were viewed positively, such as the Cool Cloths and wearing a pedometer. There were also procedures that were not viewed favorably, such as the length of the baseline. Customer participants were also satisfied with the results.

## **Discussion**

### **Primary Results**

The results of Experiment 4 to increase PA using a 10-Week walking program by increasing the frequency of steps to 4000 over baseline were mixed. Changes to the procedures were also implemented, including modifications to the referral process for SPs and feedback graphs for CPs. Only CP1 and CP4 achieved their respective goals. Customer-participant 2 and CP3 dropped out of the program. Customer-participant 1 had an overall goal of 10,000 steps per day; her steps ranged between 53 and 16,571. Her final average of 10,662 represented an increase of 70% and placed her in the active range of PA (>10,000 steps). Customer-participant 4 had an overall goal of 8605; her steps ranged between 3904 and 12,309. Her final average of 9898 represented an increase of 87% over baseline and placed her in the somewhat active range (7,500-9,999).

### **Secondary Results**

**Social Support.** The pre/post results from the Social Support for Physical Activity Scale are only available for CP4. Customer-participant 4 had a two point increase, moving from a pre-

experiment score of 08 to a post-experiment score of 10. No information was reported from her SP regarding the number of social support contacts.

**IPAQ-S.** Secondary results for daily walking on the IPAQ-S are only available for CP4. She had a pre-intervention categorical designation of low active, which may be consistent with her baseline step average of 4605, which falls within the sedentary range (<5000). Her post intervention designation for walking moved to vigorously active, which may be related to her final step average of 9898, which placed her in the active range (10,000-12,499).

**Self-Efficacy.** Pre/post scores are only available for CP4 and be seen in Table . She had a three point decrease, which represented a relatively stable pre/post score. There does not appear to be a relationship between pre/post scores and goal attainment.

**Decisional-Balance.** Pre/post scores are only available for CP4. She had a nine point decrease, possibly indicating that no major changes in the pros and cons of PA were experienced, despite barriers experienced in pursuit of their weekly and 10-Week goals. There does not appear to be a relationship between pre/post scores and goal attainment.

**Social validity.** Social validity results suggested that CPs agreed with the importance of PA, with “solving hair care issues” as one of the goals to be accomplished. Customer-participant 4 approved of the overall procedures and indicated that the areas for improvement could include a shorter intervention (<10 weeks), more contact from the SP, more explanation of the baseline, and better incentives. Customer-participant 4 reported overall satisfaction with the results, indicating an achievement of her step goals. The issue of hair care competing with PA participation may have been resolved by changing her hairstyle.

## **Strengths and Limitations**

### **Strengths**

Several strengths can be noted from this experiment. First, CPs who remained in the study achieved and exceeded their goals. Second, CPs who achieved their goals did not achieve weekly averages below their respective baselines. Third, the results were socially valid, with all CPs reporting agreement with the problem under study, and CP4 reporting satisfaction with most of the procedures, as well as satisfaction with the results. And fourth, in addition to achieving her goal, CP4 moved from an IPAQ-S designation of low active to vigorously active.

### **Limitations**

The limitations are both methodological and procedural. First, complete pre/post information was not available for one of the CPs who completed the program. Her SP did not complete the weekly reports and the other post-intervention information was reportedly lost in transit. Second, there was a 50% attrition rate, which means the findings would have been stronger had there been at least three CPs participating in the MBL. Third, CPs did not consistently base their weekly goals on achievements made in the previous week. Fourth, inter-observer agreement was not conducted, so all results were self-reported. And fifth, step data for CP4 may not have been consistent with pre/post designations from the IPAQ-S. Consistency would have assisted in validating the self-reported step data.

### **Future Directions**

Future research should include an ongoing clarification of the baseline procedures in the 10-Week program is needed. All participants complained about the length of the baseline period with some being more vocal than others. It appears the clarification tactics to date have not been effective, particularly for CPs 2, 3 or 4 of any experiment. A more comprehensive discussion of future directions addresses additional limitations and recommendations.

### **Summary**

In summary, future research studies should continue to examine the effects of increasing PA with goal setting and social support from SPs. An intervention to increase the frequency of steps by 4000 over baseline can be successful using a 10-Week program that included weekly and long-term goal setting and social support from hair-stylists. Although only two CPs remained in the program, they both reached their respective goals. It is impossible to know which component of the package intervention is responsible for change without conducting an environmental scan and component analysis. Half of the participants remained in the program, for example, achieved their goals regardless of the overall step goal, level of social support reported, changes in self-efficacy and/or decisional balance.

The results are a demonstration that individual differences are important because diverse environmental factors (e.g., weather, neighborhood, work schedule, family configurations, etc) and levels of social support (e.g., zero to five times a week) can be successful in assisting an individual with achieving a PA goal.

## **EXPERIMENT 5**

Three people joined Study 5 but all left the program prior to completing their respective baselines. Demographic information about them is provided below.

### **Participants**

**CPI.** Customer-participant 1, recruited by SP8, was a 37 year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to be within the next six months, placing her in the Contemplation or Stage 4 of change. She was living with a significant other, had an income of between \$25,000 and \$35,000, and reported having a high school diploma as her highest level of

education. Customer-participant 1 was diagnosed with obesity, arthritis, and respiratory problems. Her general health was self-rated on the BWWS as good and also good when compared to other AA/B women her age.

**CP2.** Customer-participant 2, recruited by SP8, was a 45 year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S, she participated in VPA and walking for two days per week for at least 15-30 minutes, and did not participate in other moderate activity. Her TTM indicated that she was not active but intended to become active within the next six months, placing her in the Contemplation or Stage 4 of change. She was single/never married, had an income of between \$25,000 and \$35,000, and reported having a high school diploma as her highest level of education. Customer-participant 2 was diagnosed with overweight/obesity. Her general health was self-rated on the BWWS as very good and also very good when compared to other AA/B women her age.

**CP3.** Customer-participant 3, recruited by SP8, was a 58 year old female. She wore a short, chemically straightened hairstyle. She did not complete the IPAQ-S form. Her TTM survey indicated she was physically active for more than six months, placing her in the Maintenance or Stage 1 of change. She was divorced, had an income of between \$25,000 to \$35,000, and reported having a high school diploma as her highest level of education.

## **EXPERIMENT 6**

The purpose of Experiment 5 was to assess the effects of a 10-Week program to increase the frequency of PA with AA/B women who were customers of hair stylists. Experiment 5 would have repeated many of the same procedures used in previous experiments, but with a healthier participant pool. The results of Experiment 4 are therefore used for follow-up in Experiment 6. The effects of the 10-Week walking program were assessed using a pre/post, MBL design across

five participants. The MBL included a changing criterion design. The independent variable was the 10-Week walking program. It included self-selected weekly goals with an overall assigned goal to reach by the end of the 10-Weeks, as well as social and hair care support from each respective SP. The primary dependent variable was to gradually increase PA by increasing the frequency of steps to at least 4000 steps above the baseline through goal setting and with social and hair care support. Only two CPs completed the program. The results were mixed. CPs were inconsistent with meeting their short-term weekly goals, but both CPs met and exceeded their long-term goals and increased their step average by at least 4000 steps above baseline. The impact of social support and goal setting was unclear because it is impossible to fully separate the two components of this package intervention.

The experiment had a number of methodological and procedural limitations. First, although both SPs in this experiment had participated in Experiment 1, only one had completed the program. This status may or may not have influenced the outcomes of the program. Second, none of the SPs provided information regarding the number or type of social support contacts they had with their CPs. One SP was planning a wedding and honeymoon and the other SP was just returning from maternity leave. Both SPs indicated they were in contact with CPs at some point during the 10-Weeks, but they did not provide the researcher with activity sheets.

These limitations were addressed in Experiment 5 in the following ways. First, all CPs were recruited by SP2, with the exception of one who was recruited by SP8. Stylist-participant 2 completed Experiment 1 and achieved her goal, while SP8 had had no exposure to the program. Although there may or may not be a relationship between SP completion of the 10-Week program, Experiment 6 offers the researcher an opportunity to make observations between experiments to determine if patterns emerge in the results of CPs with SPs who completed

Experiment 1, were participants in Experiment 1 but did not complete the program, and those who did not participate in Experiment 1 at all. Second, information regarding the number and type of social support contacts made by the SP were made available and included in the analysis for Experiment 6.

## **Method**

### **Recruitment**

The recruitment of SPs was conducted in Kansas City, Kansas metro area between October and November, 2012. Stylist-participant 2 and SP8 were recruited and participated in this experiment. Stylist-participants recruited five CPs from their respective customer bases using a flier developed by the researcher and a checklist of inclusion criteria (Appendix ). Stylist-participant 2 recruited four people; SP8 recruited one person. See Table 1 for a summary of CP demographics.

### **Participants**

**CP1.** Customer-participant 1, recruited by SP2, was the mother of SP2, and a 61-year old female. She wore a short, heat straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she was not physically active but intended to become active within the next 30 days, placing her in the Preparation or Stage 3 of change. She was married, had an income of between \$20,000 to \$25,000 a year, and she reported having completed graduate school as the highest level of education. She did not identify any health concerns. Her general health was self-rated on the BWWS as good, but very good when asked how her health compared to other AA/B women her age.



**CP2.** Customer-participant 2, recruited by SP2, was a 40 year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she participated in VPA for six days a week for at least 30 to 45 minutes in a row, and participated in daily walking or other moderate PA seven days a week for at least 10 minutes in a row but not at a brisk pace. Her TTM survey indicated she had been physically active for six months, placing her in the Maintenance or Stage 1 of change. She was married, had an income greater than \$75,000, and she reported having an associate's degree as her highest level of education. Customer-participant 2 was diagnosed with overweight, obesity, and depression. Her general health was self-rated on the BWWS as good but very good when asked how her health compared to other AA/B women her age.

**CP3.** Customer-participant 3, recruited by SP2, was a 38 year older female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she had not been physically active but intended to become active within the next six months, placing her in the Contemplation or Stage 4 of change. She was widowed, had an income of between \$50,000 and \$75,000, and she reported completion of vocational school as her highest level of education. Customer-participant 3 was diagnosed with high blood cholesterol, overweight, and obesity. Her general health on the BWWS was self-rated as good but very good when asked how her health compared to other AA/B women her age.

**CP4.** Customer-participant 4, recruited by SP2, was a 40 year old female. She wore a short, heat straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she had not been physically active but intended to become active within the next six

months, placing her in the Contemplation or Stage 4 of change. She was single, did not provide salary information, and she reported having completed graduate school as her highest level of education. Customer-participant 4 was diagnosed with arthritis, and also smoked less than a half pack of cigarettes per day, and consumed alcohol on weekends. Her general health was self-rated on the BWWS as good but excellent when asked how her health compared to other AA/B women her age.

**CP5.** Customer-participant 5, recruited by SP8, was a 55 year old female. She wore a short, chemically straightened hairstyle. According to her IPAQ-S survey, she did not participate in VPA, daily walking, or other moderate PA for at least 10 minutes in a row. Her TTM survey indicated she had been physically active for less than six months, placing her in the Action or Stage 2 of change. She was married, had an income of \$50,000 to \$75,000, and reported completion of graduate school as her highest level of education. Customer-participant 4 was diagnosed with HBP, high cholesterol, arthritis, depression, respiratory problems, overweight, and obesity. Her general health was self-rated on the BWWS as fair and also fair when asked how her health compared to other AA/B women her age.

### **Settings**

The settings for the baseline, intervention, and post sites are similar to those in Experiment 2, Experiment 3, and Experiment 4. Walking during the baseline and intervention presumably took place in each CP's respective community.

### **Experimental Design**

The effects of the 10-Week walking program with an assigned goal to increase the frequency or the average number of steps per week by 4000 by the end of 10 weeks was evaluated using a pre/post, MBL design across participants. The specifics of the design are

Table 1

*Demographic Profile of CPs*

Demographic	CP1	CP2	CP3	CP4	CP5
Age	61	40	38	40	55
Gender	F	F	F	F	F
Ethnicity	AA/B	AA/B	AA/B	AA/B	AA/B
Education	graduate	AA	HS	graduate	graduate
Income	<\$25,000	>\$75,000	<\$75,000	--	<\$75,000

*Note.* Demographic profile of customer-participants (CPs). High-School is abbreviated using the letters HS. Associates degree is abbreviated using the letters AA. African American/Black is abbreviated using the letters AA/B. A dash indicates the information was not provided.

described under the general methods section. The changing criterion intervention phase is described under this section in Experiment 2.

As with Experiment 2, Experiment 3, and Experiment 4, a pre-analysis was conducted prior to the no-intervention baseline-phase for CPs. All pre-intervention tools used in Experiment 4 are identical to those used in Experiments 2 and Experiment 3.

### **Dependent Variable**

The primary DV was to achieve an increase in the frequency of steps by an average of at least 4000 by the end of the 10-Week program. Secondary dependent variables were (a) an increase in self-efficacy, (b) an increase in decisional balance, and (c) an increase in PA as indicated on the IPAQ-S.

### **Independent Variable**

The IV was a modification of the AARP 10-Week Walking Program, which included social support from SPs, and weekly goal setting procedures. Customer-participants were asked to increase the average number of steps taken weekly by 4000 as an assigned goal. Customer-participants self-selected their weekly goals during the 10-Weeks.

### **Procedures**

The procedures for Experiment 5 are similar to those of Experiment 4, with the following modification. The researcher asked SPs to use the tool box to assist CPs in removing barriers and reaching their goals. The tool box brochures were distributed to CP3 and CP5, with follow up from the researcher.

## **Results**

### **Primary Results**

The total number of steps taken by each CP in Experiment 6 can be seen in Figure 1 for Wave 1, and Figure 2 for Wave 2. Only CP1 and CP2 achieved their goals and received the reduction in hair care services as incentives according to the pre-determined schedule. Customer-participant 4 and CP5 received the first two incentives but not the final payment for a reduction in hair care services.

Customer-participant 1 had an average of 3703 during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 7703 steps per week by the end of the 10-Week program. Her steps per day during baseline ranged from 1140 to 6044 as seen in Figure 1. During the intervention, she self-selected a goal each week but did not report the goal to the researcher despite prompts. Her average number of steps during Week 1 was 3617, followed by averages of 3440, 4775, 5815, 6409, 6764, 7412, 7605, 7044, and 8132 during Week 10 as depicted by the dotted horizontal green lines as seen in Figure 3. Her average number of steps during Week 1 was 3617, with steps ranging between 1998 and 7102 during the first six weeks. For Week 7 and Week 8 her steps ranged between 6398 and 9002. During Week 9 her steps ranged between 6998 and 7204, with very little variability. The researcher did not receive an activity sheet from CP1 for Week 10 despite assurances from her and her SP that it

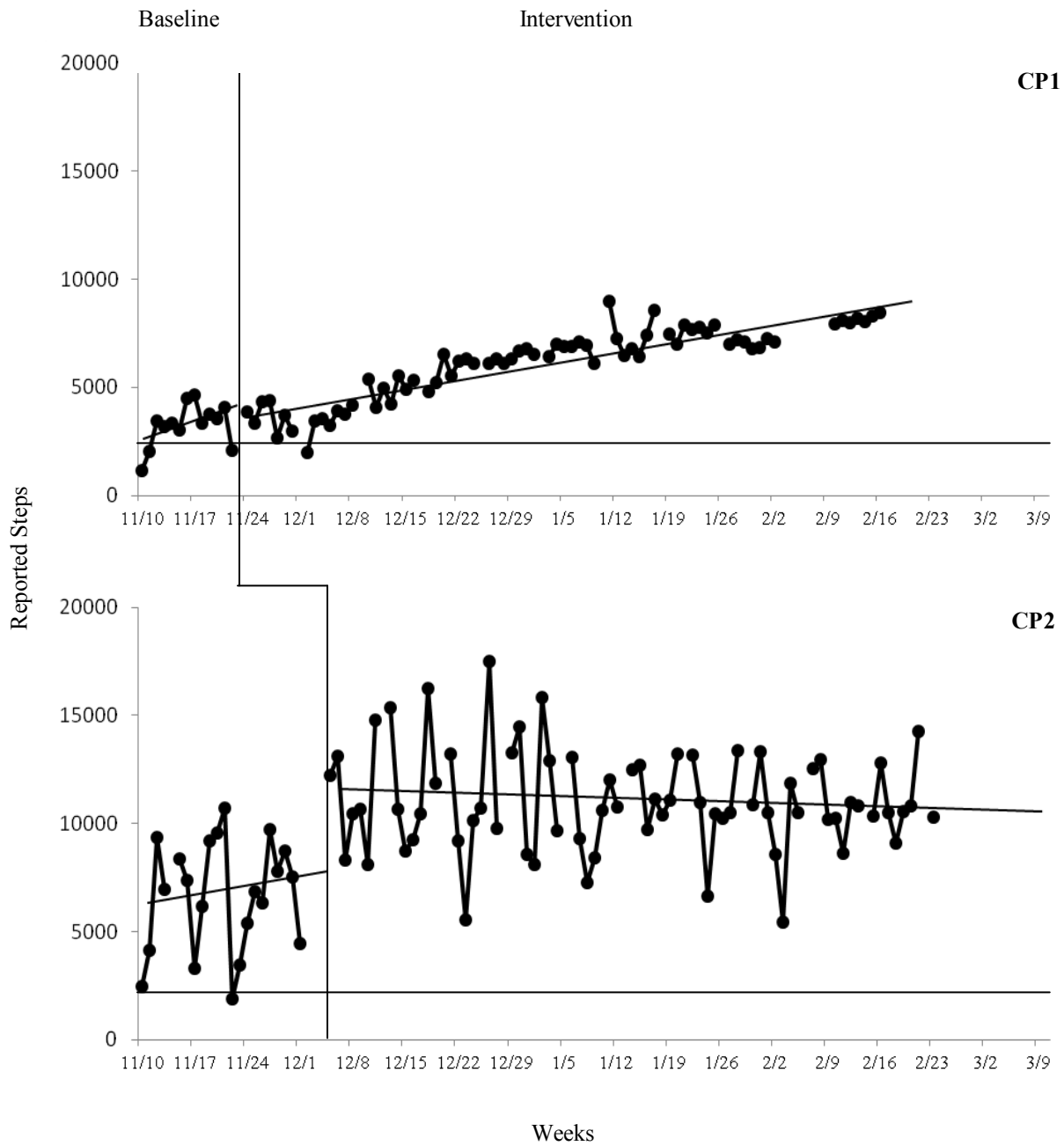


Figure 1. Customer-participant’s steps during the baseline and intervention. The solid horizontal line indicates the recommendation of walking a minimum of an additional 2000 steps per day needed to prevent weight gain.

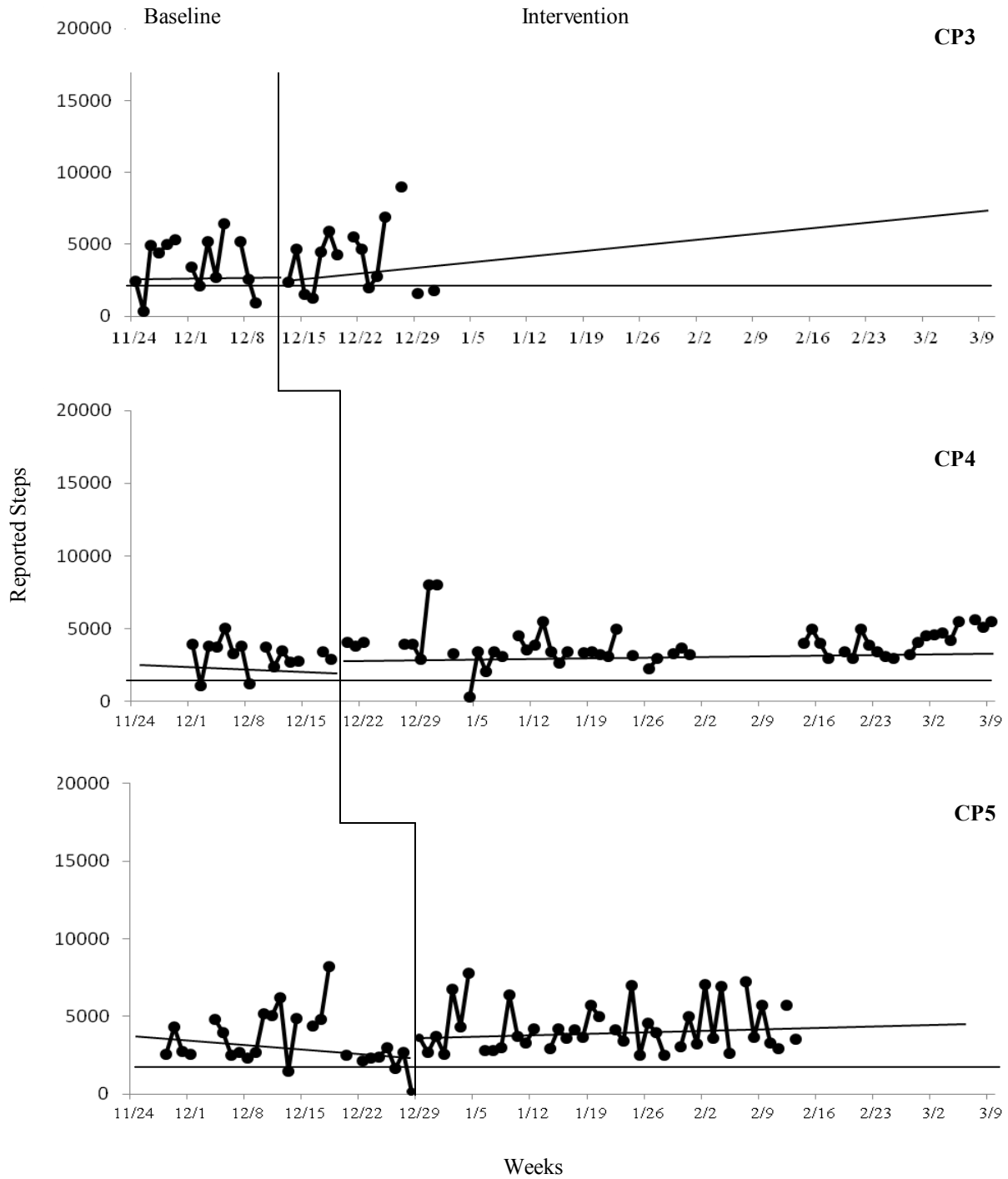


Figure 2. Customer-participant’s steps during the baseline and intervention. The solid horizontal line indicates the recommendation of walking a minimum of an additional 2000 steps per day to prevent weight gain.

had been mailed. The researcher asked her to add an additional week to the program as her tenth week. During Week 10, she reached her goal with steps ranging between 7195 and 8440 and very little variability. Figure 3 indicates an upward trend for CP1, with steps per day ranging from 1998 to 9002 during the 10 weeks. Step averages for CP1 demonstrated a small degree of variability, particularly during weeks five through 10, with the exception of Week 7. On most days her steps remained above her baseline average. Her final average during Week 10 of 8132 steps represents a 4429 or 84% increase over baseline steps.

Customer-participant 2 had an average of 7345 steps during the last seven days of baseline. Her long-term goal was to achieve 10,000 steps per day, the maximum amount indicated on the informed consent form. Her steps during baseline ranged from 1875 to 10,710 as seen in Figure 1. Each week, she self-selected a goal, depicted by the horizontal black lines in Figure 4. Her goal was an average of 7700 steps per day for Week 1, followed by a goal of 7900 for Week 2. No goal was reported for Week 3. For Week 4 her goal was an average of 8000 steps per day, followed by 8200, 8300, 8400, 8450, 8500, 10,000 steps per day for Week 10. Customer-participant 2 exceeded her weekly goals as depicted by the dotted horizontal green lines. They show the number of steps taken each day beginning with an average of 11,098 steps during Week 1, followed by 11,794, 10,876, 11,836, 10,213, 11,528, 10,758, 10,164, 10,908. And 11,193 steps during Week 10. Figure 1 indicates a downward trend, with steps averaging from 5542 to 17,524 during the 10-Week program. Steps per day for CP2 demonstrated a wide degree of variability, particularly during Week 3, although her step averages per week were somewhat stable. On most days, her steps remained above her baseline average. There was not much



CPI

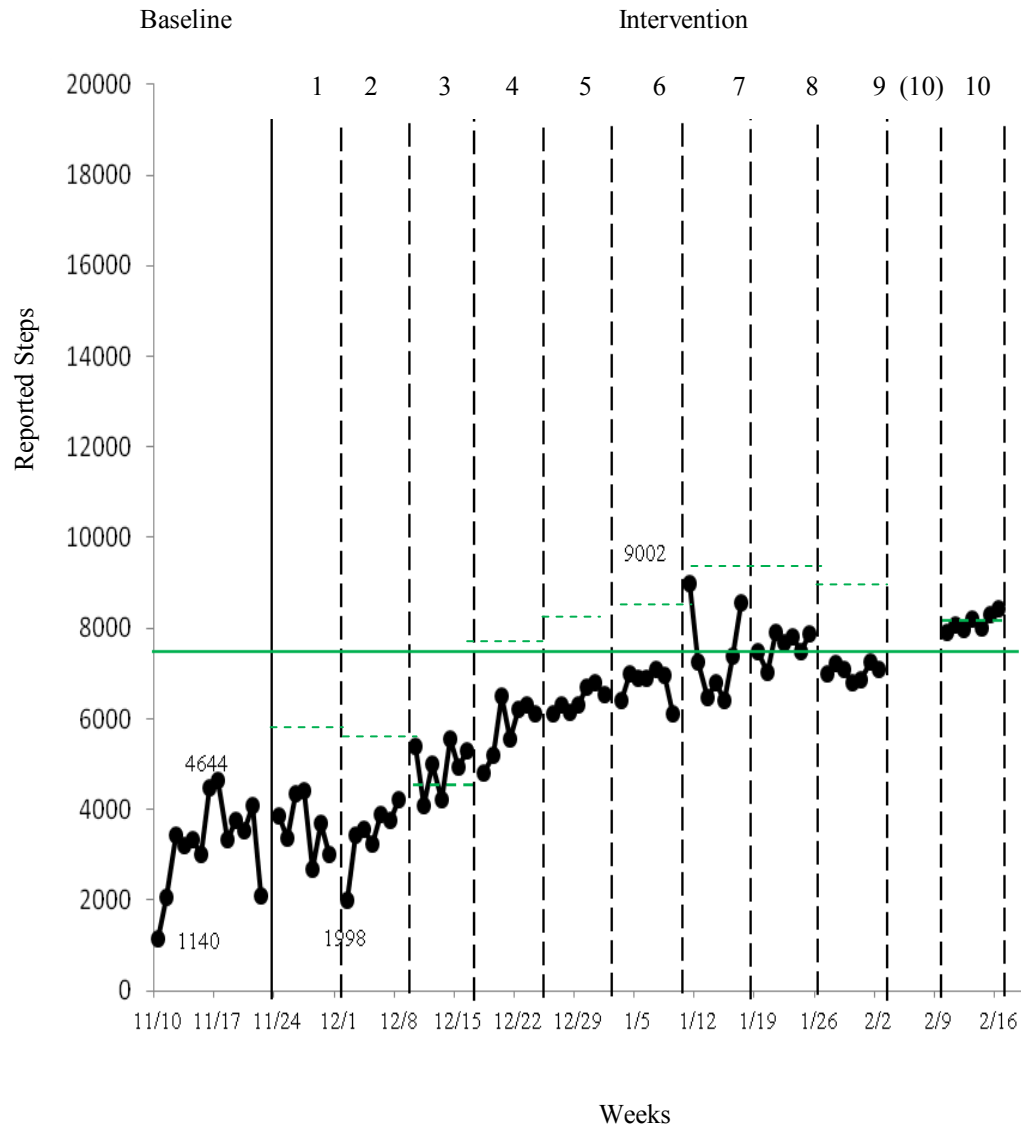
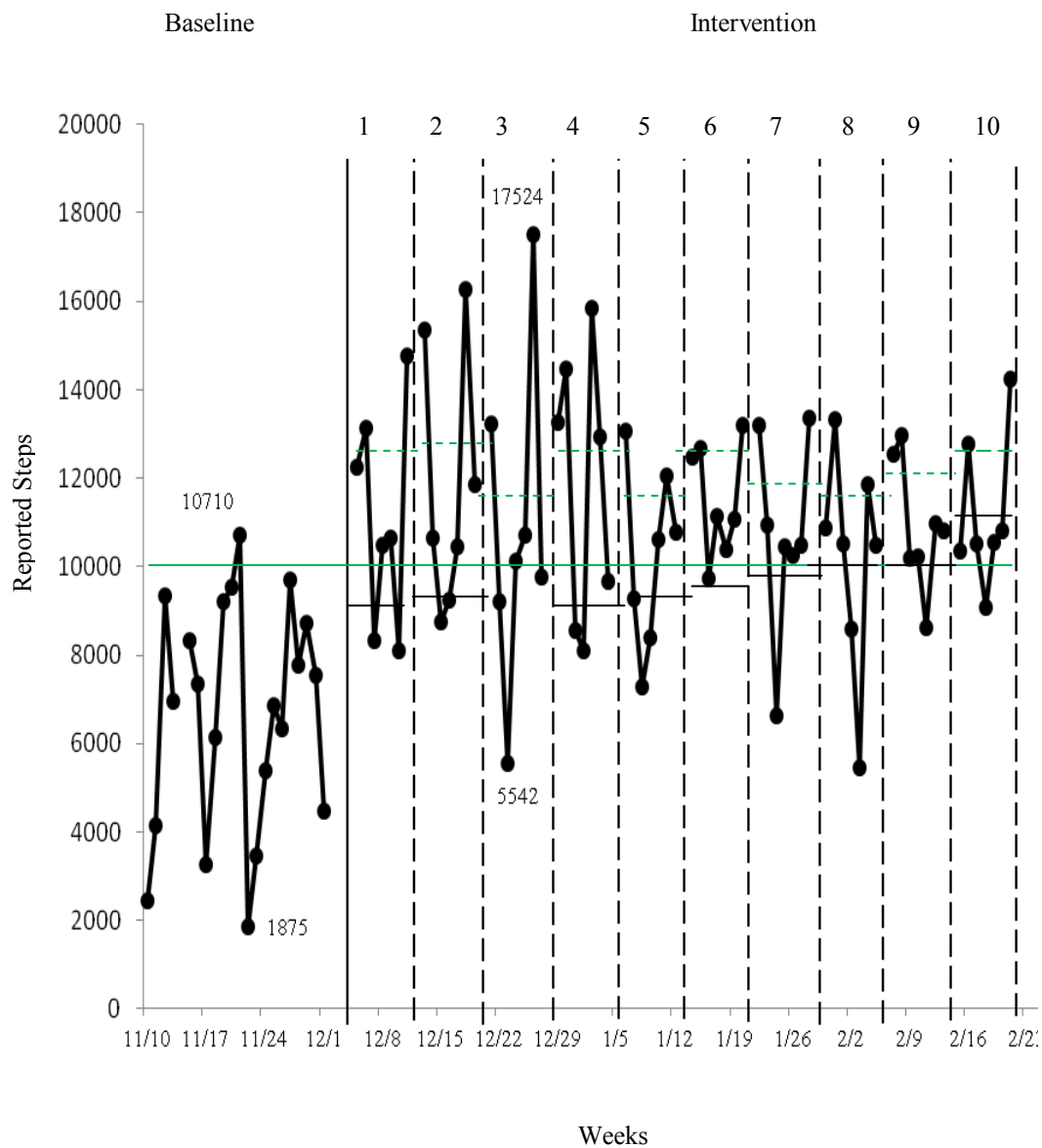


Figure 3. Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Dotted horizontal green lines represent actual step average per week.

variability in her self-selected goals with the largest difference noted between Week 9 and Week 10. Her final average during Week 10 of 11,193 steps represents an increase of 3848 steps or 52% over baseline steps. Figure X indicates a somewhat stable but downward trend. Customer-participant 3 had an average of 3606 during the last seven days of baseline. Her long-term goal, after adding 4000 steps, was to achieve an average of 7606 steps per week by the end of the 10-Week program. Her steps per day during baseline ranged from 369 to 6454 as seen in Figure 5. During the intervention, she self-selected a goal each week but did not report the goal to the researcher despite prompts. The researcher also asked her SP to provide pamphlets from the Toolbox to assist with moving around any barriers. The researcher also made attempts to follow up with her. Her average number of steps during Week 1 were 3617, and 5143 during Week 2. Figure 2 indicates an upward trend in steps although she did not remain in the program.

Customer-4 had an average of 3604 during the last seven days of baseline. Her long term goal was to achieve an average of 5606 steps or an increase of 2000 steps per week by the end of the 10 Weeks. She indicated that 4000 steps above baseline was not an achievable goal for her. Her steps per day during baseline ranged from 1081 to 5027 as seen in Figure 2. During the intervention she self-selected a goal each week but did not report the goal to the researcher despite prompts. She submitted her activity sheets in batches during the last weeks of the intervention instead of submitting them weekly. Customer-participant 4 walked an average of 3995 steps during Week 1, followed by 5007, 2449, 3844, 3606, 3264, 3997, 3543, 4408, and 5400 during Week 10. Figure 2 indicates almost a flat line trend and her steps ranged from 286 to 8043. She lost her activity sheets and pedometer during weeks 7 and 8 while on travel but insisted she wanted to finish the program when she returned; a friend mailed her pedometer to

## CP2



*Figure 4.* Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent customer-participant's self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.

her. Figure 6 therefore shows two additional weeks added to the 10-Week program. She did not reach her overall goal of 5606 steps by the end of the 10-Weeks. Her final average during Week 10 of 5400 represents a 49% increase over baseline.

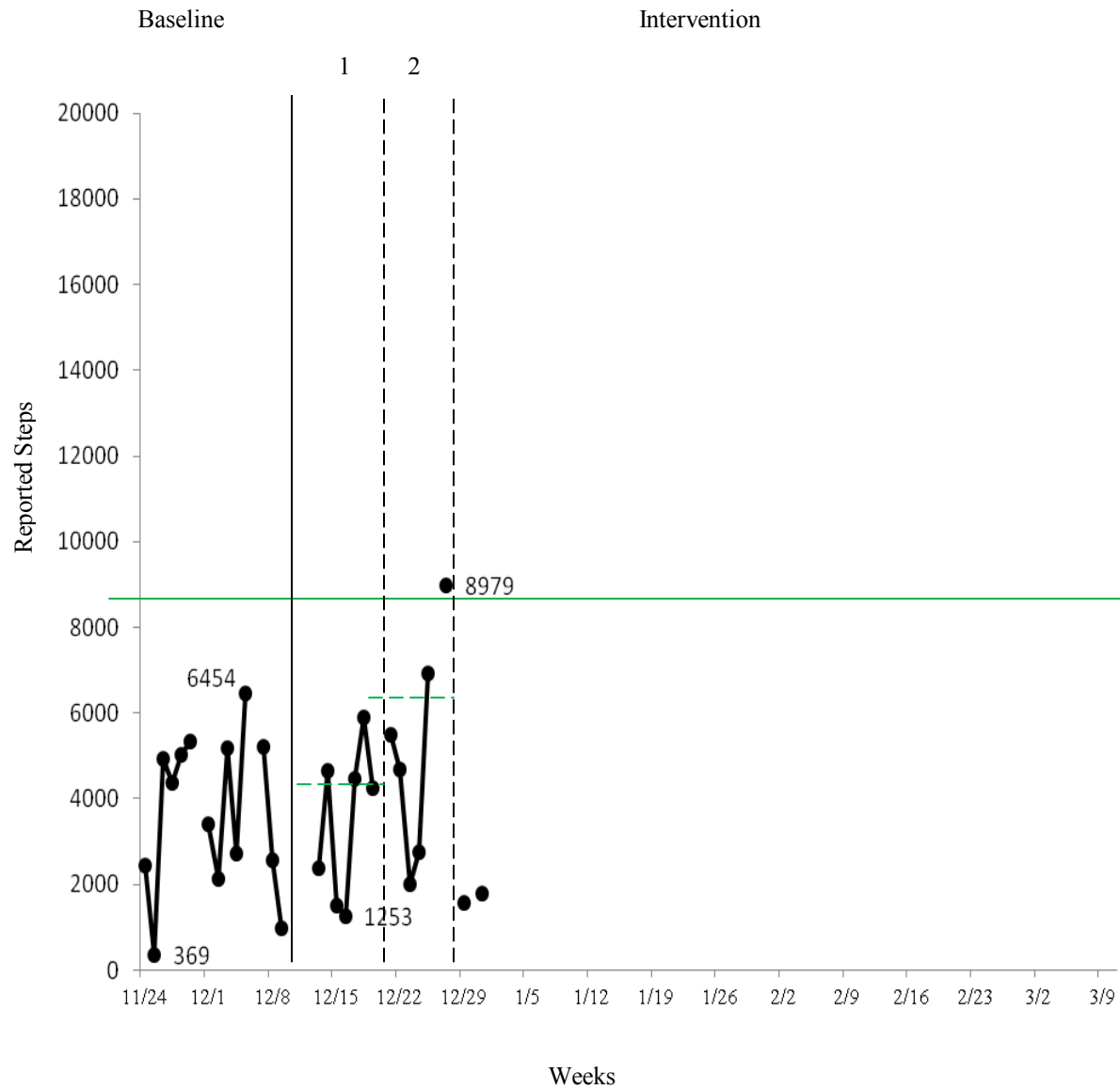
Customer-participant 5 had an average of 2051 during the last seven days of baseline. Her long term goal, after adding 4000 steps, was to achieve an average of 6051 steps by the end of 10-Weeks. Her baseline steps ranged from 167 to 8231, as seen in Figure 2. Each week, she self-selected a goal, depicted by the horizontal black lines in Figure 7. Her goal was an average of 3000 steps for Week 1 and Week 2, followed by a goal of 3800 for Week 3. No goal was selected for Week 4. A goal of 4000 was selected for Week 5, followed by 4400 for Week 6. Customer-participant 5 exceeded her weekly goals as depicted by the dotted horizontal green lines. They show the number of steps taken each day beginning with an average of 4490 during Week 1, followed by 3740, 4194, 4012, 4507 and 4588 during Week 6. Figure X shows a slightly upward trend although she did not finish the program. She did not reach her overall goal of 6051 steps by the end of the 10-Weeks. Her final average during Week 6 of 4588 represents an 80% increase over baseline.

### **Secondary Results.**

Secondary results for Experiment 6 include the (a) Social Support, (b) IPAQ-S, (c) Self-Efficacy Scale, (d) Decisional Balance Scales, and (e) Social Validity Questionnaires. Results can be found in the text below, along with corresponding tables.

**Social support.** Results from the Social Support for Physical Activity pre- and post-scale can be seen in Table 2. Pre and post-intervention data for comparison were only provided for CP1, CP2, and CP4.

## CP3



*Figure 5.* Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Dotted horizontal green lines represent actual step average per week.

CP4

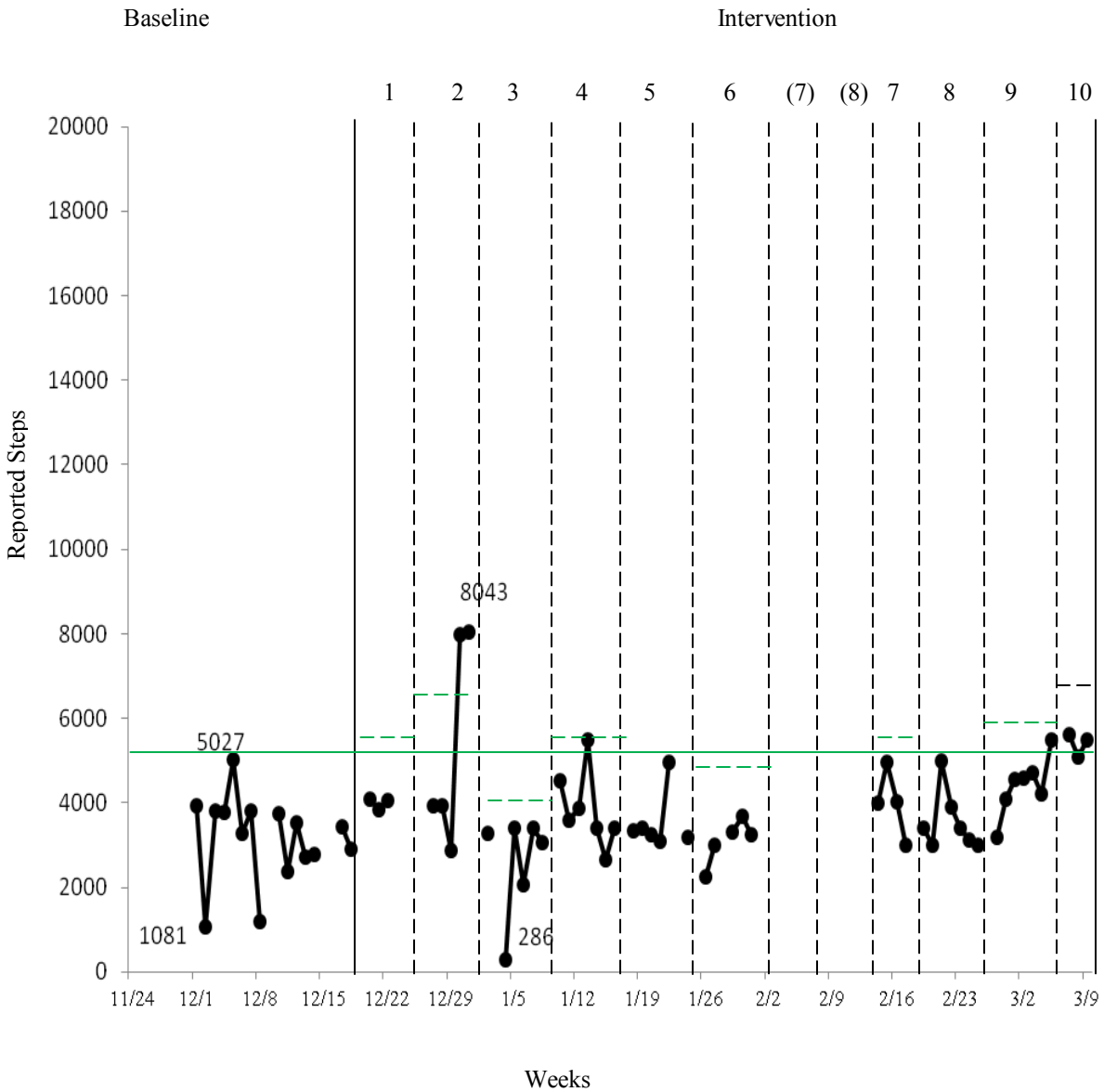
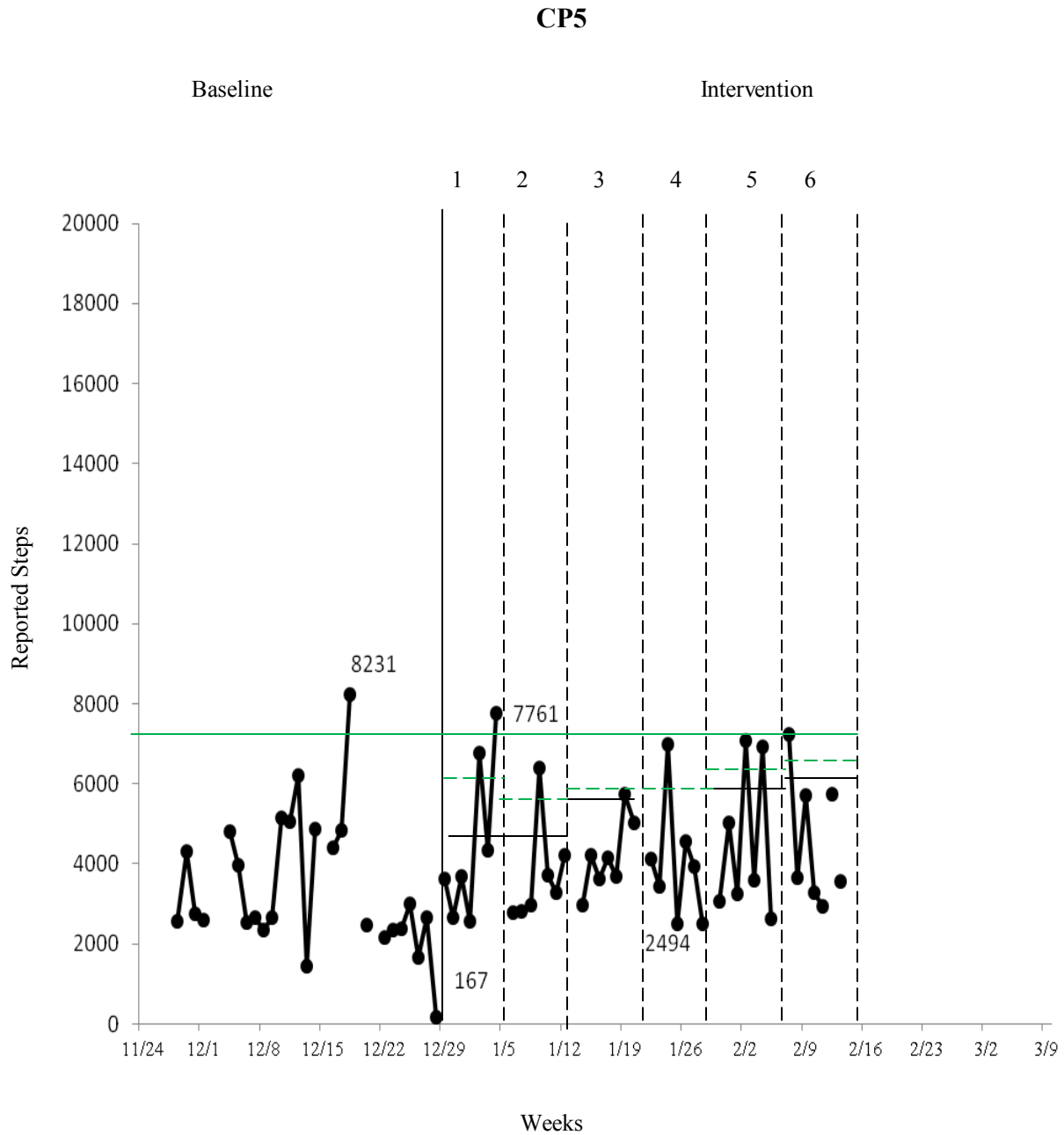


Figure 6. Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Dotted horizontal green lines represent actual step average per week.



*Figure 7.* Reported steps per day during baseline and intervention. Dotted vertical lines represent weeks. Solid horizontal green line represents 10-week goal line. Solid horizontal black lines represent customer-participant’s self-selected weekly goal average, and dotted horizontal green lines represent actual step average per week.

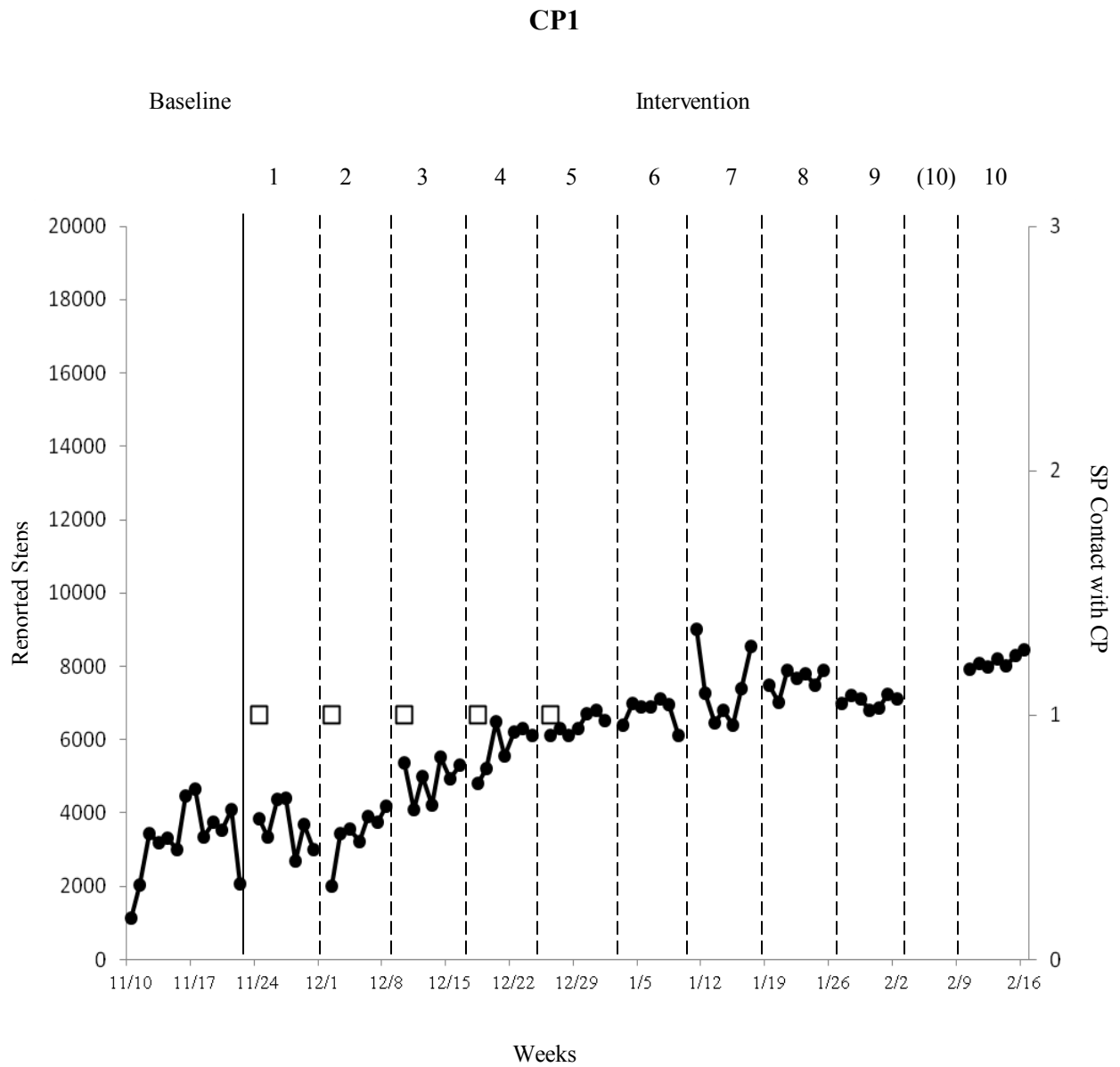


Figure 8. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.



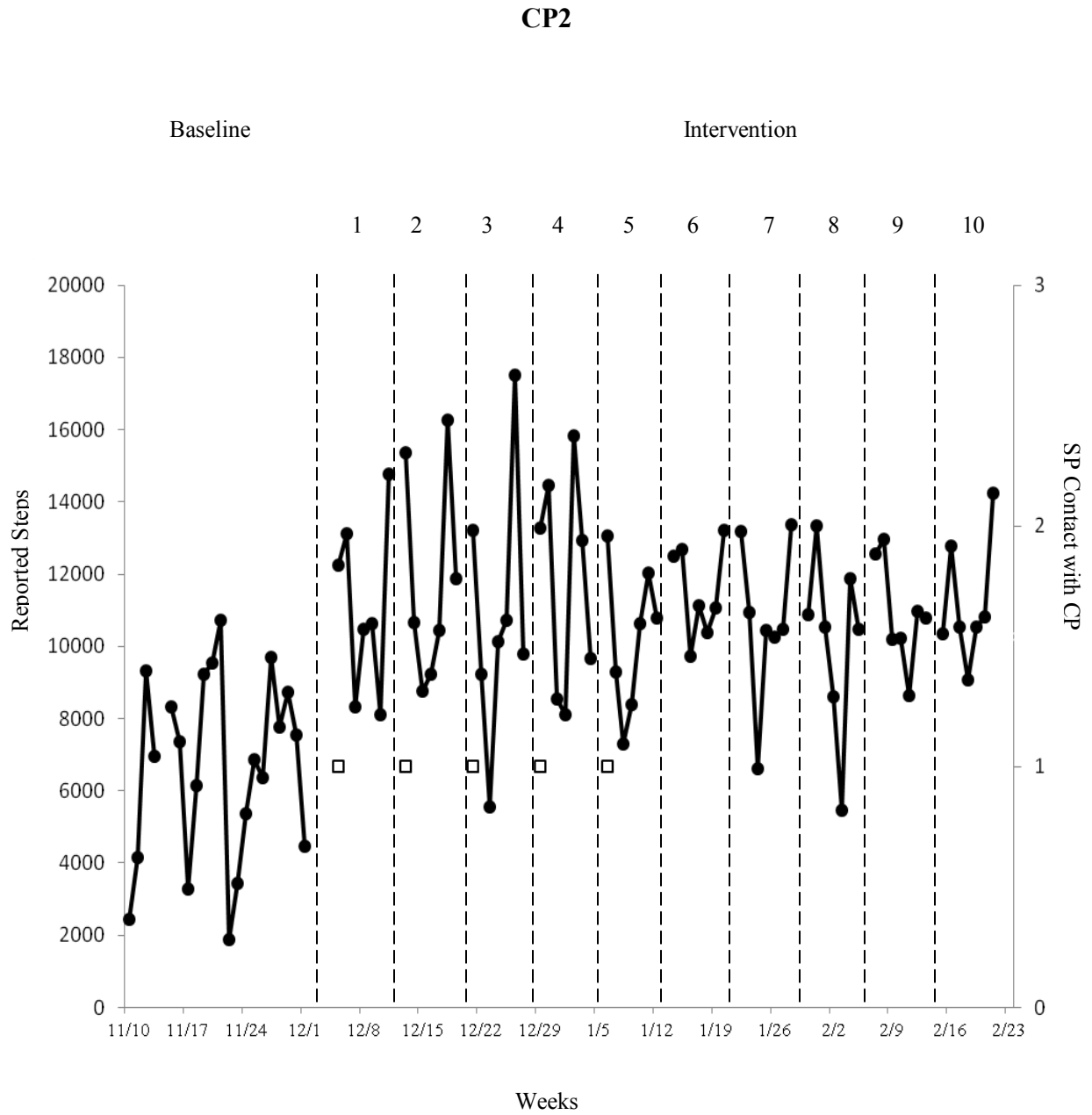


Figure 9. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

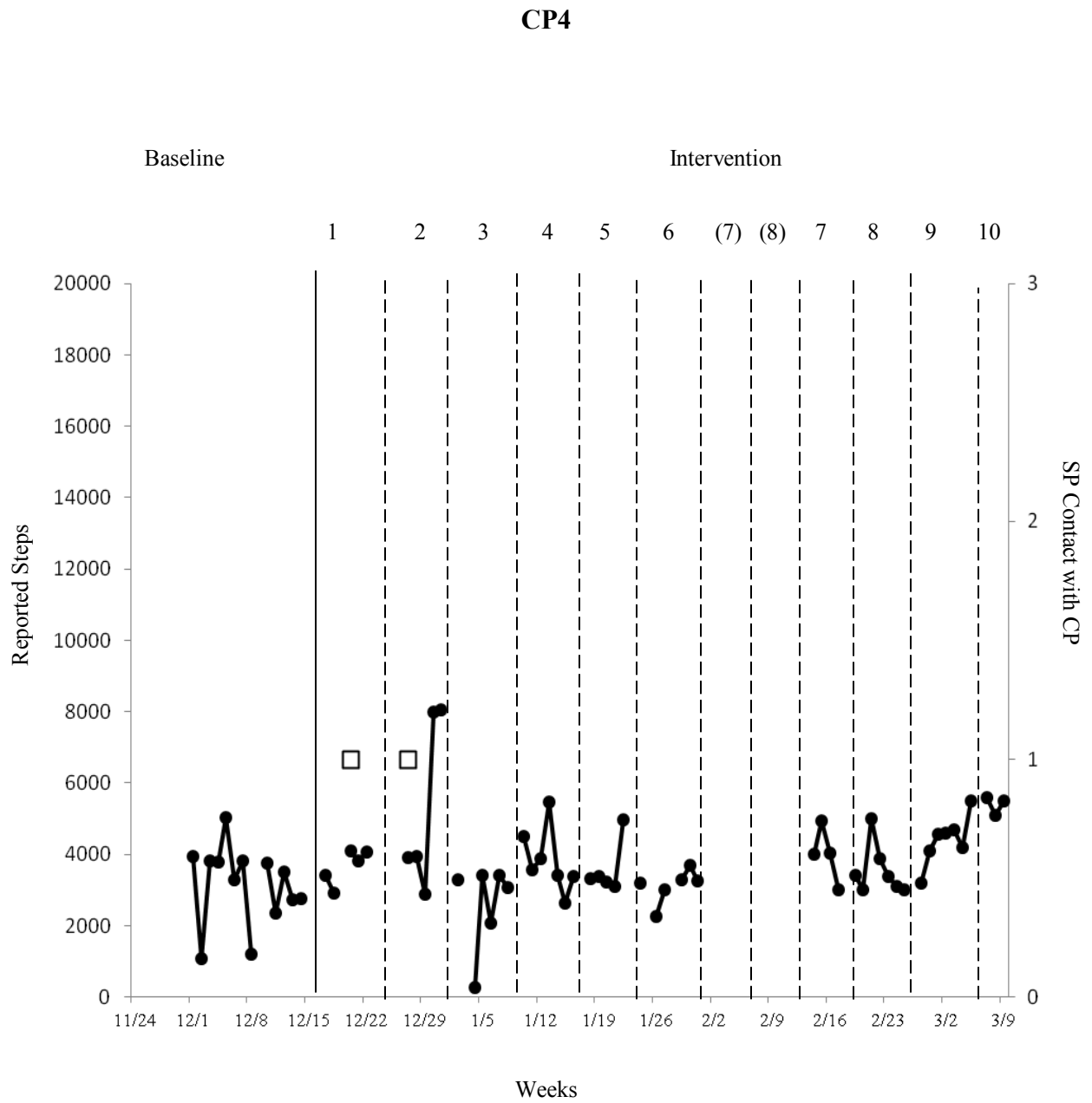


Figure 10. Details of social support from SPs to CPs. Hollow squares indicate contact between the SP and CP.

Table 1

*IPAQ-S Pre/Post Categorical Responses*

PA Category	CP1	CP2	CP3	CP4	CP5
VPA	low/low	mod/mod	low/	low/ low	low/
Daily Walking	low/moderate	low/mod	low/	low/ low	low/
Other Moderate PA	low/moderate	mod/vig	low/	low/ low	low/

*Note.* Categorical designation of pre/post responses to the IPAQ-S.

Customer-participant 1 recorded a three point decrease in support from family and a two point decrease in support from friends. Customer-participant 2 recorded a 21 point decrease in support from family and a 20 point decrease in support from friends. Customer-participant 4 recorded a 21 point increase in support from family and a 20 point increase in support from friends. Most importantly were results from the pre- and post-intervention regarding the social support she received from the SPs.

Customer-participant 1 recorded a six point decrease in social support on the Social Support for Physical Activity Scale, moving from a 41 pre- to a 35 post-experiment score in the amount of social support for PA from her SP. The decrease may possibly be related to the number of times her SP recorded contact on the SP Activity Sheet. During the 10-Weeks, her SP had contact with her five times, as indicated by the hollow squares in Figure 8. During the first five weeks, her SP had regular contact with her for her scheduled appointments. There was no contact during the last five weeks, possibly due to the Christmas and New Year's holidays.

Customer-participant 2 recorded an 11 point decrease in social support on the Social Support for Physical Activity Scale, moving from a 35 pre- to a 24 post-experiment score in the amount of social support for PA from her SP. The decrease may possibly be related to the number of times her SP recorded contact on the SP Activity Sheet. During the 10-Weeks, her SP had contact with her five times, as indicated by the hollow squares in Figure 9. During the first five weeks, her SP had regular contact with her for her scheduled appointments. There was no contact during the remaining five weeks, possible due to the Christmas and New Year's holidays.

Customer-participant 4 recorded an 11 point increase in social support on the Social Support for Physical Activity scale, moving from a 26 pre- to a 37 post-experiment score in the amount of social support for PA from her SP. The increase may possibly be related with the

number of times her SP recorded contact on the SP Activity Sheet. During the 10-Weeks her SP had contact with her two times, as indicated by the hollow squares in Figure 19. During Week 1, and Week 2, she visited the shop for her regularly scheduled appointment. There was no contact during the remaining 10-Weeks due to the travel schedule of CP4.

**IPAQ-S.** Results from the IPAQ-S can be found in Table 1. CP1 had a pre-intervention categorical designation of low-active for daily walking. The low active pre-intervention designation may be related to her baseline step average of 3703, which falls in the sedentary range of steps (e.g., <5000). Her post-intervention designation moved to the moderate category for daily walking and may be related to her final steps of 8132, which placed her in the somewhat active range (e.g., 7500 to 9999).

Customer-participant 2 had a pre-intervention categorical designation of low-active, which may be related to her baseline step average of 7354 which falls within the low active range (5000 to 7499). Her post-intervention designation moved to the moderate category for walking and may be related to her final steps of 11, 193, which placed her in the active range (10,000 to 12,499).

Customer-participant 4 had a pre-intervention categorical designation of low active, which may be related to her baseline step average of 3604 steps, the sedentary range of activity (<5000). Her post-intervention designation remained in the low active range, which may be related to her final step count of 5400, which placed in the low activity range (5000 to 7499).

**Self Efficacy.** Results from the Self-Efficacy scale can be seen in Table 3. Customer-participant 1 had a pre-intervention self-efficacy score of 46. The post-intervention score of 55, a nine point increase, may be related to her successful step goal attainment.

Customer-participant 2 had a pre-intervention self-efficacy score of 48. The post intervention score of 53, a five point increase, may be related to her successful step goal

attainment, despite concerns with the cold weather. Customer-participant 3 had a pre-intervention self efficacy score of 24; she did not think she could achieve the 4000 step increase from baseline and requested a 2000 step increase instead. Her post intervention score of 46, a 24 point increase, may be related to her satisfaction with increasing her step count although she did not reach her overall goal.

In summary, there does not appear to be a direct relationship with the increases in self-efficacy and goal attainment. Without interviewing each person more closely, it is difficult to determine why changes were noted between pre- and post intervention surveys.

**Decisional Balance.** Results from the Decisional Balance Scale can be seen in Table 4. Customer-participant 1 had a pre-intervention score of 52 and a post-intervention score of 58, a six point increase. The increase may be an indication that her perception of the pros and cons of PA did not change much.

Customer-participant 2 had a pre-intervention score of 75 and a post intervention score of 62, a 13 point decrease. As noted under self-efficacy, she had some concerns regarding the cold weather which may have influenced her perception in the direction of cons versus the benefits of PA.

Customer-participant 4 had a pre-intervention score of 40 and a post intervention score of 41, a one point increase. The somewhat stable score from pre to post may be an indication that her perception of the pros and cons of PA did not change.

In summary, there is no clear relationship with decisional balance increases, decreases, and stability with goal attainment. As with self-efficacy, it is difficult to know for sure which variable have influenced the decisional balance of the CPs.

**Social validity.** As seen in Table 5, CPs most often indicate that they joined the research program because of a interest to help other Aa/B women, their stylist invited them, family encouragement, and they wanted to help solve the applied problem of hair care during PA. Additional reasons for joining the program can be seen in Table 5.

As seen in Table 6, CPs were satisfied with most of the procedures but two CPs indicated the 10-Week program was too short and one indicated it was too long. Other concerns noted were with the baseline procedures, preference for more contact from the researcher, and fewer questionnaires.

As seen in Table 7, the two CPs who were satisfied with the effectiveness of the experiment were also the two who achieved their step goals. One CP was not satisfied as she did not achieve her goal.

In summary, all participants understood and agreed with the importance of PA, and of solving the barrier of hair care for many women. There were several aspects of the procedures that were viewed favorably such learning new things. There were also procedures that were not viewed favorably, such as the number of questionnaires. Customer-participants who achieved their goals were satisfied with the results.

## **Discussion**

### **Primary Results**

The results of Experiment 6 to increase PA using a 10-Week walking program by increasing the frequency of steps to 4000 over baseline were mixed. Changes to the procedures were also implemented, including placing more focus on receiving feedback on social support from SPs. Customer-participant 1 and CP2 completed the program and achieved their respective goals; CP4 completed the program but did not achieve her goal; CP3 and CP5 dropped out.

Table 2

*Pre/post Social Support Responses*


---

Social Support for Physical Activity

Participants	<u>Pre</u>			<u>Post</u>		
	Family	Friends	Stylist	Family	Friends	Stylist
CP1	33	17	41	30	15	35
CP2	46	35	35	25	15	24
CP3	24	26	23			
CP4	21	23	26	42	43	37
CP5	33	29	21			

---

*Note.* Pre/post responses to questions regarding social support for PA from family, friends, and stylists.



Table 3

*Self-Efficacy Pre/Post Scores*

Participants	<u>Pre</u>	<u>Post</u>
CP1	46	55
CP2	48	53
CP3	50	
CP4	24	46
CP5	33	

*Note.* Pre- and post-scores for self-efficacy.

Table 4

*Pre/Post Scores for Decisional Balance*

Participant	<u>Pre</u>	<u>Post</u>
CP1	52	58
CP2	75	62
CP3	59	
CP 4	40	41
CP5	49	

*Note:* 10 pro-PA questions averaged minus six con-PA questions to arrive at decisional balance score.

Table 6

*Social Validity: Applied*


---

Applied Problem	CP1	CP2	CP3	CP4	CP5
Health related benefits		x	x	x	
My stylist invited me	x			x	x
My friend joined					
Doctor encouragement					
Help other AA/B women	x	x	x	x	
Lose Weight	x				x
Curiosity		x		x	
Free Gifts	x			x	
Family encouragement	x			x	x
Solve hair care/exercise problem	x	x	x	x	x
Other					

---

*Note.* Social Validity of the applied problem.

Table 7

*Social Validity: Procedures*


---

Procedures	CP1	CP2	CP3	CP4
Length	x	x		
Lost weight	x			x
Cool Cloth				
Baseline	x			x
Helping solve health problem		x		
Met new friends	x	x	x	
Free gifts	x			x
Activity video	x			
Created new hairstyle		x		
Support from stylist	x	x		x
Support from researcher	x	x		x
Recognition stylists are important	x	x		x
Learned new things		x		x
Health benefits	x	x		x
Reached my goal	x	x		x
Other:				
Change?				
Shorter Time (< 10 weeks)				x
Longer Time (> 10 weeks)	x	x		
More contact from stylist				
Less contact from stylist				
<u>Baseline</u>		x		
Better Incentives				
More contact from researcher	x			
Less contact from researcher				
Activity Sheets				
Text instead of activity sheets				
Email instead of activity sheets				
Better explanation of the program				
More information about the program				
Wearing a pedometer				
Fewer questionnaires	x			x
Other:				

---

*Note:* Social Validity of the procedures.

Table 8

## Social Validity: Effectiveness

Effectiveness	CP1	CP2	CP3	CP4
Yes	x	x		
No				x
Did you change your hairstyle?				
Yes	x	x		x
No				

*Note:* Social validity of the effectiveness was queried.

Customer-participant 1 had an overall goal of 7703 steps per day; her steps ranged between 1998 and 9002. Her final average of 8132 represented an increase of 84% over baseline and placed her in the somewhat active range (7,500-9,999). Customer-participant 2 had an overall goal of 10,000 steps per day; her steps ranged between 5542 and 17,524. Her final average of 11,193 represented an increase of 65% over baseline and placed her in the active range (>10,000). Customer-participant 4 had an overall goal of 5898, which represented a 2000 step increase over baseline. Her steps ranged between 286 and 8043. Her final average during Week 10 of 5400 represents an increase of 49% over baseline and placed her in the low active range (5,000 – 7,499).

### **Secondary Results**

**Social Support.** The results from the Social Support for Physical Activity Scale indicated a range of levels of support from SPs. Customer-participant 1 had a six point decrease, moving from a 41 pre-experiment score to a 35 post-experiment score. Customer-participant 2 had an 11 point decrease, moving from a 35 pre-experiment score to a 24 post-experiment score. Customer-participant 4 had an 11 point increase, moving from a pre-experiment score of 26 to a post experiment score of 37. According to the SP activity sheets, social support was provided to CP1 six times, to CP2 five times, and to CP4 two times.

**IPAQ-S.** Secondary results for daily walking on the IPAQ-S are inconsistent with step data, as follows. Customer-participant 1 had a pre-experiment designation of low-active, which may be consistent with her baseline step average of 3703, which placed her in the sedentary range (<5000). She had a post-experiment designation of moderately active, which may be consistent with her active (10,000-12,499) step average of 11,193. Customer-participant 2 had a

pre-experiment designation of low active, which may be consistent with her baseline low-active step average of 6357 (5000-7,499). She had a post-experiment designation of moderately-actively, which may be consistent with her active (10,000-12,499) step average of 11,193. Customer-participant 4 had a pre-experiment designation of low average, which may be consistent with her baseline score of 3898, which placed her in the sedentary range (<5000).

**Self-Efficacy.** Customer-participant 1 had a nine point increase from pre- to post intervention, CP2 had a five point increase, and CP4 had a 22 point increase from pre- to post-intervention. There does not appear to be a relationship between pre/post scores and goal attainment.

**Decisional Balance.** Customer-participant 1 reported a six point increase, CP2 reported a 13 point decrease, and CP4 reported a one point increase. There does not appear to be a relationship with pre/post data and goal attainment.

**Social validity.** Social validity results indicated that CPs agreed with the importance of PA, with “solving hair care issues” as one of the goals to be accomplished. Customer-participants approved of the overall procedures and indicated that the areas for improvement could include an increase (>10 Weeks) as well as a decrease (<10 Weeks) in the number of weeks for the program, a better explanation of the baseline, more contact from the researcher, and fewer questionnaires.

## **Strengths and Limitations**

### **Strengths**

Several strengths can be noted from this experiment. First, two CPs achieved and exceeded their overall goals. Second, more than half of the CPs (three out of five) completed the program, demonstrating less attrition than earlier experiments. Third, there was less variability in the steps

of all three CPs who completed the program at week 10. Fourth, Inter-observer agreement was conducted and step frequency was verified with all CPs who completed the program. And fifth, the results were socially valid, with all CPs reporting agreement with the problem under study, satisfaction with most of the procedures, as well as satisfaction with the results.

### **Limitations**

The limitations are both methodological and procedural. First, only two CPs met their goals, although three CPs completed the program. The results would have been stronger had three CPs met the goal. Second, in the case of two CPs, activity sheets for at least one of the later weeks did not reach the researcher, resulting in a gap of one week between the ninth and 10<sup>th</sup> weeks of the program. Third, the number of contacts made by the SPs with CPs was limited in part due to the cold weather and possibly the Holiday season. And fourth, step data may not have been consistent with pre/post designations from the IPAQ-S.

### **Future Directions**

Future research should include the following. First, an ongoing clarification of the baseline procedures in the 10-Week program is needed. All participants complained about the length of the baseline period, with some being more vocal than others. Second, PA programs may best be initiated outside of the winter, Holiday Season, particularly but not exclusively for sedentary adults. Although PA is important throughout the year, the cold weather may be a barrier for sedentary individuals who do not have access to facilities, tapes, or other equipment to engage in PA indoors. The Holiday season, which is filled with obligations and parties may also present a barrier for some. A more comprehensive discussion of future directions addresses additional limitations and recommendations.

### **Summary**



In summary, an experiment to increase the frequency of steps by 2000 to 4000 steps over baseline can be successful using a 10-Week program that included weekly and long-term goal setting, and social support from hair-stylists. Two CPs increased and exceeded their goals and reported satisfaction with the results despite the cold weather and Holiday season.

## **GENERAL DISCUSSION**

The overall results demonstrate the efficacy of a 10-Week walking program to increase PA with AA/B women. The 10-Week program included social support and goal setting. The majority (70%) of CPs who remained in the program met or exceeded their walking goals.

### **Methods**

Prior to conducting the dissertation research, the researcher and Dr. Melicia Whitt-Glover, collaborated with AARP to conduct qualitative research with two separate groups of primarily female AA/B stylists and two separate groups of female AA/B consumers in Kansas and Georgia. Recommendations from the focus groups were used to inform the research methods and procedures.

Experiment 1 focused on increasing the intensity and frequency of steps for AA/B stylist participants, with social support provided by the researcher, and an assigned goal to gradually increase the intensity of PA to achieve a minimum of 150 minutes by the end of 10 weeks. Experiment 2 focused on increasing the frequency of steps by 2000 above baseline for CPs recruited by their respective SP. A minimum increase of 2000 to 2500 steps per day has been identified as one strategy to increase PA and prevent obesity (Hill et al., 2003). Experiment 3 focused on increasing the frequency of steps by 4000 steps above baseline, as did Experiment 4, Experiment 5, and Experiment 6 with modifications made to each experiment.

### **Results**

## Primary Results

The effects of using a 10-Week program to increase PA are promising, with almost half of the participants enrolled in the program achieving their long-term goals.

**Experiment 1.** The effects of using the 10-Week walking program to increase walking intensity was effective with three of the seven participants; one participant achieved the goal three weeks prior to Week 10 but did not maintain it, as explained. SP1 met and exceeded her goal of 150 minutes of brisk walking during weeks seven, eight, and nine and increased her walking speed from 16 to 38 steps per minute, with a range of three to 88 steps. She did not meet the long-term goal during Week 10, with bouts totaling only 90 minutes. Her average RPE during the last five weeks was seven, which placed her in the “very hard” range of moderate activity. SP2 met and exceeded her goal of brisk walking for at least 150 minutes per week, with an average speed during the last five weeks of 73 steps per minute, and a range of 67 to 86 steps per minute. Her average RPE during the last five weeks was six, which placed her in the “hard” range of moderate activity. SP4 met her goal during Week 9. Insufficient information was provided to determine her walking speed and she did not provide RPE ratings for her bouts. The four remaining SPs did not complete the program.

The walking speed of SP1 and SP2 may be similar to results from previous experiments to increase walking intensity with AA/B women. Brandon and Elliot-Lloyd (2006), for example, conducted a 16 week intervention to examine the effects of walking speed on weight loss, using an accelerometer to measure intensity. African American/Black women reported walking speed outcomes of 3.54mph, an indication the walking pace was brisk. Walking speed was not assessed during a baseline period, similar to the procedures in the current research. Staffileno et al. (2007) conducted an intervention to examine the effects of increasing brisk walking on blood pressure

with AA/B women, using a heart rate monitor to measure intensity. Participants were instructed to engage in PA at the heart rate intensity of 50% to 60%. African American/Black women in the PA group had outcomes of an average heart rate intensity of 65%, an indication that walking and climbing stairs fell within the brisk range. It should be noted that heart rate was not assessed during a baseline period. Comparisons between the results of the current and previous research may be difficult given the current results were not validated by health outcomes (e.g., weight loss, blood pressure). Overall, results from the current experiment indicate that a 10-Week program can be effective with sedentary, overweight and obese AA/B women. An additional outcome should also be noted. Only two of the SPs from Experiment 1 participated in the subsequent experiments; SP2 had successfully completed the 10-Weeks and the other SP7 dropped out during baseline. This finding may indicate that AA/B stylists may agree to support CPs, as indicated from the pre-research focus group data, but have no interest in actually participating in a personal PA program.

**Experiment 2.** All three participants met and exceeded their walking goal to increase their steps by at least 2000 over baseline. Customer participant 1 had a final average of 11,058 steps during Week 10. She increased her steps by 5378 or 95% over baseline. She did not participate in the two month maintenance part of the intervention. Customer-participant 2 had a final average of 12,362 steps during Week 10. She increased her steps by 6061 or 96% over baseline. During the two month maintenance program, she reported an average of 9735 steps, a 343 or 54% increase over baseline but a 2627 or 21% decrease post intervention. Customer-participant 3 had a final average of 10,444 steps during Week 10. She increased her steps by 6859 or 91% over baseline. During the two month maintenance, she reported an average of 9217 steps, a 5632 or 63% increase over baseline but a 1227 step or 11% decrease post intervention.

**Experiment 3.** Only one CP met and exceeded her goal to increase her steps by at least 4000 over baseline. Customer-participant 1 had a final average of 7297 steps during Week 10. She increased her steps by 3889 or 87% increase over baseline. Customer-participant 2 had a final average of 6357 during Week 10. She increased her steps by 2650 or 71% over baseline. Customer-participant 3 had a final average of 2608 steps during Week 10. She increased her steps by 158 or 6% over baseline. Customer-participant 4 met and exceeded her goal. She had a final average of 11,864 steps during Week 10. She increased her steps by 5737 or 93% over baseline.

**Experiment 4.** Only two CPs met and exceeded their goals to increase their steps by at least 4000 over baseline. Customer-participant 1 met and exceeded her goal. She had a final average of 10,662 steps during Week 10. She increased her steps by 4390 or 70% over baseline. Customer-participant 2 and Customer-participant 3 did not complete the program. Customer-participant 4 met and exceeded her goal. She had a final average of 9898 during Week 10. She increased her steps by 5293 or 87% over baseline.

**Experiment 5.** Three CPs were recruited for Experiment 5. Two CPs left during the baseline phase. The third CP left after providing consent but before beginning the baseline procedures.

**Experiment 6.** Only two CPs met and exceeded their goals to increase their steps by at least 4000 over baseline. Customer-participant 1 met and exceeded her goal. She had a final average of 8132 steps during Week 10. She increased her steps by 4429 or 84% over baseline. Customer-participant 2 also met and exceeded her goal. She had a final average of 11,193 during Week 10. She increased her steps by 3848 or 52% over baseline. Customer-participant 3 did not complete the experiment—she left a Week 3. Customer-participant 4 had a goal to increase her

steps by at least 2000 over baseline, per her request. She had a final average of 5400 steps during Week 10. She increased her steps by 1796 or 50% increase over baseline. Customer-participant 5 did not complete the experiment—she left at Week 6.

### **Summary**

Overall, the mean step at baseline for CPs who met their goal was 5968; the mean step at Week 10 was 10,762; and the mean step increase was 5249. Hill et al. (2003) has identified walking an additional mile each day, an increase of 2000 to 2500 steps per day for most people, is needed to prevent obesity. These results are similar to previously conducted experiments to increase the frequency of steps with A/B women. For example, Banks-Wallace and Conn (2005) conducted a 12 month, three-hour monthly group intervention to increase steps and reported a mean step average of 3857 at baseline and an intervention step average of 4060 for 21 sedentary women. A subset of 10 women who participated in the baseline, six, 12, and 18 month data collection had a mean step average of 4659 steps at baseline and an intervention step average of 4060. Duru et al. (2010) conducted a six month faith-based group intervention to increase steps and reported intervention participants averaged 12,727 steps per week at baseline, and an intervention step average of 9883 for 34 sedentary women. Whitt-Glover et al. (2008) conducted a 12 week, pre/post faith-based group intervention with eight weekly group sessions to increase MPA and reported a group mean average of 4822 +/- 2351 steps at baseline and an intervention step average of 6148 +/- 2534 for 87 sedentary women. And Williams et al. (2006) conducted a seven-week walking group intervention to increase steps and reported a group mean average of 6245 steps at baseline and an intervention step average of 8100 for 35 postmenopausal women. It is difficult to compare the results of the current research to results from other studies, given the shorter duration of the intervention, and the focus on individuals rather than groups. The overall

mean of the current research is, in some cases, is both higher and lower at baseline and at the end of the intervention.

Four CPs completed the experiment but did not achieve their goal. The mean step at baseline was 3262; the overall mean step at Week 10 was 5415; the overall mean step increase was 2273. Although they did not achieve their goals, the increase of at least 2000 steps above baseline may provide them with some important health related benefits. For example, Hill et al. (2003) recommends that increases of at least 2000 to 2500 steps per day represents the minimum amount of activity needed to help prevent weight gain. Although they did not achieve their individual goals, two CPs increased their steps by more than 2000 (e.g., 3889, 2650); one CP increased her average by 1796, which is somewhat close to 2000, and one CP increased by 158 steps. Although all four remained in the sedentary to low active range of PA, the overall average of more than 2000 steps and the individual averages of more than 2000 steps are encouraging. In summary, there does not appear to be a clear relationship between Self-Efficacy, Decisional Balance, TTM stage and successful goal setting. AS a recommendation, a deeper probe is needed to determine how AA/B women make decisions about their readiness for PA, their confidence to participate regardless of distractions, and the benefits and barriers of PA throughout the year..

### **Secondary Results**

This section includes a general summary of the (a) goal setting, (b) social support, (c) self-efficacy, and (d) decisional balance. In addition, this section includes a deeper discussion and some comparisons regarding SP and CP common characteristics and the possible role of social support, TTM, self-efficacy, and decisional balance for CPs who met their goal versus those who did not.

**Goal setting.** A changing criterion design was used for all of the studies. In a changing criterion design, the target behavior is progressively increased or decreased based on whether improvement is noted in performance. While it is not possible to know for sure how goals were set by each participant, feedback on progress and subsequent reinforcement in the form of praise and social support were provided to SPs in Experiment 1 from the researcher, and from the SPs and researcher to CPs in subsequent experiments. Some assumptions can be made based on several observations. For example, the changing criterion did not consistently appear to assist the SPs or CPs in developing their weekly goals. For example, in Experiment 1, SP1 and SP2 did not provide the researcher with any goal setting information despite prompts and practice sessions. It is assumed each established a goal in order to complete the program. Stylist-participant 3 communicated weekly goals, but targeted 250 minutes for the first five weeks, despite failure to ever reach that goal. She modified the goal to 150 minutes for the last five weeks but did not reach that goal for the majority of the time. In Experiment 2 there may be evidence the CP2 developed goals based on her achievement from the previous week. She began the Week 1 with a goal of 7250 steps and achieved an average of 12,488 steps. For Week 2, she increased the goal to 9000 steps and achieved an average of 9765 steps. For Week 3 she again increased her goal, targeting 10,000 steps but she only averaged 7560. For Week 4, she adjusted the goal and decreased it from 10,000 to 8500 and achieved an average of 9498. Overall, experimental control may possibly be assessed based on the gradual change in behavior of SPs and CPs, regardless of whether the goals were made known to the researcher.

**Social support.** A summary of social support from SPs to CPs is included in the primary results section, integrated into the SP characteristics section. In general, the level of social support varied and the effects are not clear.

Social support was provided to SPs in Experiment 1 by the researcher. The effects were not formally evaluated. However, a question on the social validity survey of procedures inquired if the participant wanted more contact or support from the researcher. Additionally, upon completion of the 10 Week program, the researcher received feedback about her interaction with each of the participants. In Experiment 1, only SP2 completed the 10-Week program and all of the pre/posttests. She indicated, anecdotally, that she found the support encouraging. Stylist-participants were also asked to fill out the pre/post Survey of Social Support for Physical Activity. The survey measures support from family and friends. Stylist-participant 2 indicated a six point decrease in support from family but a 13 point increase in support from friends. A possible explanation for the change in support from friends may be because she was recruited into the 10-Week program with two of her SP friends. Anecdotal evidence suggests they provided each other support through phone calls and periodic, impromptu meetings. Stylist-participant 2, for example, reported that she made several calls to SP3 to encourage her to remain in the program, but competing circumstances for SP3 took priority (e.g., opening her own salon).

In summary, social support provided by the researcher as part of a package intervention can be successful. More research is needed to assess the type and frequency of social support needed for future experiments.

**Self Efficacy.** Overall, pre-intervention Self-Efficacy scores for CPs who met or exceed their goals was 50 compared to 37 for CPs who did not meet their goals for an overall average of 44. For CPs who met their goals and completed the pre- and post- intervention surveys, five CPs reported higher numbers at post, and four reported lower numbers. In general, there were not huge differences for most CPs with the exception of CP1 in Experiment 1 who had 60 pre-intervention and 37 post-intervention score, a 23 point difference. It is difficult to know for sure



what caused this difference. Customer-participant 1 was a graduate student who also suffered an injury that required surgery near the end of the 10 weeks; she did not participate in the maintenance portion of the study because of the injury. It is possible that juggling a full time job, caring for her family, and suffering an injury to her arm may have changed her self-efficacy score.

In summary, there was no clear relationship between self-efficacy and goal attainment. In general, CPs who met their goal averaged six points higher than CPs who did not (50 versus 44), which does not appear to be a big enough difference to make inferences about a relationship. As a recommendation, more information is needed to understand how AA/B women assess their ability to participate in a PA program and be successful.

**Decisional Balance.** Overall, pre-intervention Decisional Balance scores for CPs who met or exceeded their goals was 58 compared to 37 for CPs who did not meet their goals; the overall average was 48. For CPs who met their goals and completed the pre- and post- intervention surveys, there was little change between pre and post. Most changes were under five points, indicating the intervention did not change how these CPs balanced the benefits versus the barriers to PA. Two CPs had larger pre- post-intervention scores; CP4 in Experiment 4 had a nine point difference from 60 to 51 and CP2 in Experiment 6 had a 13 point difference from 75 to 62. Regarding CP4, anecdotal information based on conversations with her and her husband suggest that she had hoped to lose weight; the change in her weight was negligible. Interestingly, she reported satisfaction with the results or effectiveness of the intervention. However, the weight change may have influenced her perception of the barriers versus benefits of PA. Regarding CP2 in Experiment 6, anecdotal information from conversations with her suggest the cold weather was a barrier although she reported she most often went to the gym to walk. It is

possible the barrier of the weather, particularly during the Holidays was more formidable than she anticipated and influenced her perception of the benefits versus the barriers to PA.

In summary, most of the CPs did not report huge differences in their assessment of the benefits versus the barriers to PA. AS a recommendation, it would be interesting and useful to collect more data on how AA/B women assess the benefits and barriers of PA when they don't reach their goals.

### **Common CP Characteristics.**

Characteristics and demographics of the CPs who remained in the program were no different than those who left. A summary of the demographics of CPs who participated can be found under the general methods section. This section includes information about trends in success rates.

Overall, CPs who met or exceeded their goals rated their health as being good, very good, or excellent; one person rated her health as poor. While there is no optimum number for Self-Efficacy or Decisional Balance, pre-intervention scores for Self-Efficacy ranged from 39 to 60, and scores for Decisional Balance ranged from 28 to 75. Regarding the Trans Theoretical Theory (TTM) of behavior change, of the CPs who met or exceeded their goals, one (13%) CP was at Stage 1 or Pre-contemplation; one (13%) was at Stage 2 or Contemplation; five (63%) were at Stage 3 or Preparation; one (13%) was at Stage 4 or Action. None were at Stage 5 or Maintenance. These results suggest that the majority of CPs who achieved their goals were at the Preparation stage, which is not surprising since this stage is characterized as having plans to become active within the next six months. It would be interesting to probe the CP who was at Stage 1 or Pre-contemplation since that stage is characterized as having no plans to become physically active in the near future.

Regarding trends for CPs who did not reach their goals, a range of health status information was provided, with CPs rating their health poor, good, fair, and very good; none rated their health as excellent. Pre-intervention Self-Efficacy scores ranged from 24 to 59, and scores for Decisional Balance ranged from 31 to 66. Regarding TTM, of the 12 who left or otherwise did not achieve their goals, one (8%) CP was at Stage 1 or Pre-contemplation; two (17%) were at Stage 2 or Contemplation; four (33%) were at Stage 3 or Preparation; five (42%) were at Stage 4 or Action. None were at Stage 5 or Maintenance. These results are interesting; more than half of the CPs were either in preparation or action mode, yet they dropped out or for some reason they did not meet their goals. This finding could suggest they had an intense or acute level of events or hassles that kept them from succeeding.

In summary, common characteristics for CPs who were successful include higher self-ratings of their health status higher self-efficacy and decisional balance scores than CPs who were not successful. Also, CPs who were successful tended to be in Stage 3 or Preparation of the TTM, while those who were not successful were primarily in Stage 4 or Action.

### **Common SP Characteristics.**

Characteristics of the SPs may have contributed to the results of the experiment. Demographics of the nine SPs can be seen in the general methods section. This section includes information about SP participation rate, recruitment trends, and tactics used to support CPs for each SP.

Regarding participation rate, SPs who participated in the recruitment and support of CPs were all owners of their respective salons; none of the SPs who rented chairs or were employees of an enterprise participated. It is possible that constraints (e.g., scheduling, client volume) from being an employee and/or renting a chair would make it difficult to recruit and provide support.

For example, SPs who owned their salons had the opportunity to schedule time to meet with the researcher whereas SPs who worked in salons did not appear to have control of their schedules. They had to take walk-in appointments in addition to their regular customers.

Four SPs participated in recruitment and support of CPs. Stylist-participant 2 recruited the highest number of CPs and is listed first. She was married and reported an income of more than \$75,000, recruited eight CPs and participated in three of the experiments (e.g., 3, 4, 6). All CPs recruited by her were also married. They were between the ages of 29 years and 66 years of age. Four (50%) of the eight CPs had incomes above \$50,000. Four (50%) finished the program; three (38%) achieved or exceeded their goals. Tactics used to support CPs included contact with them right away, during the first week of the program, with an average of six contacts with each CP during the 10 Weeks. Stylist-participant 2 was the only SP to have successfully completed the 10-Week walking program, which may have had an effect. The researcher overheard her telling potential enrollees that she had finished the program, it was easy, and she would help them. Stylist-participant 2 also appeared to have the largest and most diverse clientele, had been in business longer than the other SPs, and she had the largest and most open floor plan, which may have contributed to more conversation and social support. It should be noted that although the researcher had previously been a client of SP8 and SP9, her personal stylist was SP2 throughout the research intervention.

Stylist-participant 8, who was single and reported an income of \$35,000 to \$50,000, recruited six CPs and participated in four experiments (e.g., 2, 3, 5, 6). The CPs she recruited were between the ages of 37 years and 55 years of age. Four (66%) were also single and two (33%) were married. Four (66%) had incomes below \$50,000. Of the six she recruited, two

(33%) met or exceeded her goals. Tactics used to support CPs included contact with them during the first week of the program, with an average of six contacts with each CP during the 10 Weeks.

Stylist-participant 9, who was married and reported an income of between \$35,000 and \$50,000, recruited three CPs and participated in two experiments (e.g., 2, 3). The CPs she recruited were between the ages of 42 years and 53 years of age. Two (66%) were also married and one (33%) was single. Of the three she recruited, two (66%) had incomes below \$50,000. Of the three CPs she recruited, two (66%) met or exceeded her goals. Tactics used to support CPs included contact with two of them during the first week of the program and with one during the second week, with an average of three contacts with each CP during the 10 Weeks.

Stylist-participant 7, was single/engaged; she did not report her income. She recruited two CPs and participated in one experiment (e.g., 4). The CPs she recruited were 42 years and 44 years of age. Both were married; one (50%) had an income above \$50,000. Of the two CPs she recruited, one (50%) met or exceeded her goals. Of interest is that SP7 participated in Experiment 1 but did not finish the program, citing time conflicts as a single mother.

In summary, it appears that SPs in general tended to recruit CPs who shared characteristics in common with them such as marital status, income level, and possibly age range. It is unknown what effect these personal characteristics had on the results, or if the CPs chosen were representative of the clientele of each SP. It is unknown if SPs recruited from the general population of their clientele, or if they used some other screening mechanism to select possible participants. As a recommendation, a deeper probe into how SPs recruit CPs would be useful.

### **Limitations**

The experiments had several limitations, both methodological and procedural. They are listed as follows. First, attrition was a problem in four of the six experiments, a common concern

in PA activities in general, especially for AA/B women (e.g., Carroll et al., 2011; Wilbur et al., 2002). Reasons for attrition from health promotion activities and interventions vary and include financial (conflicts with time away from work), health (illness), and time constraints (family responsibilities) hassles (DeLongis, Folkman, & Lazrus, 1988; Holm & Holroyd, 1992; Jacob et al., 2014). Attrition rates for adults range from seven percent to 58% (e.g., Linke, Gallo, & Norman, 2011). The overall rate of attrition in the current research was 48% (11); 13% (3) left during the intervention and 28% (8) left during the baseline period. The attrition rate for the four experiments was as follows: Experiment 1 had an overall attrition rate of 57%; Experiment 4 had an attrition rate of 50%; Experiment 5 had an attrition rate of 100%; and Experiment 6 had an attrition rate of 40%. The overall rate of attrition is similar to findings from PA literature reviews of interventions used with AA/B women. For example, Carroll et al. (2011) reported attrition rates from zero to 56% while Banks & Wallace (2002) reported attrition rates from three to 41%. Reports with attrition rates as high as 87% have also been reported (Murphy & Williams, 2013). An explanation for why participants left during the current research programs may be useful in designing programs in the future; reasons provided in this paper may be based in part on researcher speculation and anecdotal information.

There are several reasons adults including AA/B women choose to leave a research program, and the reasons may or may not differ during recruitment, after consent but before baseline data are collected, during baseline, or after the intervention begins but before all outcome data have been collected (Wilbur et al., 2006). Reasons for leaving the current research may include: (a) time constraints. Time constraints due to caregiving, work, volunteer, and other responsibilities is a primary reason people do not participate or leave an intervention after consent has been given (CDC, 2014). For example, participants in all studies had concerns about

the baseline phase of the intervention. Frustrations and confusion were voiced despite efforts to explain that the baseline, of which the length of time could not be predicted, was in addition to the actual 10-Week intervention. Anecdotal evidence provided by participants suggests that they believed that they were performing their routine duties and therefore the baseline period should not have extended beyond a week at most. In Experiment 5, for example, all three CPs expressed that procedures for the 10-Week program should include time spent recording steps during the baseline phase. After refusing to start the 10-Weeks with a specific long-term goal, they all subsequently left the program. Interpersonal strategies (e.g., expressing respect for their time) by the researcher were successful in retaining the vast majority of the participants but each one who left expressed frustration with the length of time involved in doing “nothing” when they had in fact joined to jump start either weight loss or some other healthy behavior that were being delayed on baseline. This frustration was common regardless of the TTM assessed readiness level to participate in the PA program, self-efficacy and decisional balance scores, and subsequent goal achievement. (b) participant burden. Participant burden can include procedures that make it inconvenient or difficult for participants to participate (Paskett et al., 2008). For example, SPs in Experiment 1 were asked to record the total number of steps, RPE, steps per bout, goal for each week, record data, and mail in their activity sheets in addition to keeping up with the pedometer each day. One SP, after losing multiple pedometers, explained that as a single mother she was challenged with just getting herself and her son ready each morning and out of the door in time for work and school. Having to keep up with the requirements of the intervention were too labor intensive and “just one more thing that has to be done.” She also talked about the problems associated with wearing a pedometer on Saturday and Sunday—a time when she primarily wore dresses and found it difficult to attach the pedometer to her

undergarments without having the it show through her clothing. (c) illness. Illness, acute or chronic, can negatively impact attrition rates (e.g., Jacob et al., 2014). In Experiment 6, for example, one CP completed seven of the 10 weeks before stopping to address an acute health care issue for a relative and then she fell ill. When the person she cared for subsequently died, she left the program to assist with arrangements, and to grieve his loss. Another example can be found in Experiment 4, where a CP left the program due to health problems that made it difficult for her to walk. And (d) medical releases. A common reason for attrition after consent is given is the time and possibly the expenses required to get a medical release. Six people needed medical releases to participate in the current research. The vast majority were able to get the medical release form signed quickly, within an average of <10 days. In one case, seen in Experiment 5, the CP had trouble getting in to see her doctor within the timeframe she wanted clearance to begin the research program. After several weeks, and after hearing the concerns of other CPs regarding the baseline, she decided not to go any further with the research program. Two additional CPs signed the consent form but did not return with medical release forms. A deeper probe into the reasons AA/B women leave after consent but before baseline, during baseline but before the intervention, or during the first part of the intervention versus the last part of the intervention would be useful to our understanding of how to recruit and retain AA/B women in PA studies.

Second, one of the experiments (Experiment 1) did not measure the same behaviors during baseline and the intervention. Experimental control was therefore compromised. Third, the researcher contributed more to the implementation of the IV than expected. The original plan was to train SPs to provide oversight and implementation of the goal setting, social support, and activity tracking. Unfortunately, most SPs from Experiment 1 did not participate in the program;



two SPs participated later. Replication and maintenance of the experiments is therefore limited without the presence of a researcher, which is not practical. Fourth, there are several pieces of missing data. The researcher did not consistently receive BMI information, in some instances the SPs did not fill out or submit their activity sheets, some of the CPs did not provide information about their goal setting, and privacy concerns led some to be reluctant to provide demographic information (e.g, age, level of education achieved). Demographic information is an important factor in drawing conclusions about the efficacy of an intervention. Experimental control is compromised if participants are not able to communicate their goal setting strategies. Fifth, IOA was not calculated, a common but not impossible procedure to implement for PA interventions. Step numbers were to some degree validated by IPAQ pre and post intervention designations. And sixth, the goal of 4000 steps above baseline may have been too challenging, while a goal of just 2000 steps may have not been challenging enough. As such, the 4000 step goal may have contributed to the attrition rate of sedentary AA/B women.

### **Implications for Practice**

There are several implications for practice gathered from the current research. First, time is always an issue and should be taken into consideration when working with stylists whether they are owners, employees, or a combination of both. On numerous occasions, stylists were unable to keep appointments due to heavy appointment schedules. Some stylists book three or four consumers for appointments within the space of 30 minutes. One SP explained to me that “no-shows” can be a problem and so it is important to increase the odds of earning a living by what is essentially an overbooking. Other stylists did not control much of their time because they had to respond to heavy foot traffic comprised of “walk-ins” during certain days and times of the year. Other times, stylists are in the middle of some “business” and they don’t want to stop providing

help or end a conversation with someone who needs a little more than hair care attention. It is important to be extremely flexible when working with AA/B stylists.

Second, an intervention with stylists as partners can be cost effective. The current research was self-funded and involved the cost of providing research grade pedometers (e.g., \$55.00) with safety straps (e.g., \$9.00), self-addressed stamped envelopes (e.g., \$0.45), paper, ink cartridges, and gas to travel back and forth. With additional funding, accelerometers, which measure MPA in addition to steps, could be provided for each participant.

Third, there are several policy implications that the current research with stylists may influence. For example, (a) employers can make provisions for flexible work hours so that AA/B women may exercise and have sufficient time to fix their hair. (b) Employers can provide more incentives for AA/B women and others in the workplace to become more active. Examples may include providing reductions in insurance premiums. And (c) Time constraints are a number one reason adults do not exercise. For women, caregiving responsibilities are a barrier. State governments, churches, and community groups could provide opportunities for AA/B women to exercise by providing accessible and affordable child care and walking trails wide enough for women to push strollers and/or wheelchairs while walking.

Fourth, the current research can be implemented across ecological settings. For example, one SP removed all candy machines in her salon in follow-up to the walking program. Other ecological settings can include the workplace, home, church, and a variety of recreational settings.

Fifth, clinical outcomes are possible even if participants are not successful in meeting their goals. In the current research, the majority of participants walked the additional 15 to 20 minutes or the additional 2000 to 2500 steps needed to prevent weight gain. Anecdotal evidence suggests

that the women experienced some weight loss, improved sleep, and experienced less stress after following a regular routine of PA walking.

Overall, it is the experience of the researcher that AA/B stylists are interested in learning how to help the women that visit them for services, and they would be willing to discuss ways they can assist in solving problems faced by society. Future research should continue to work collaboratively with AA/B stylists.

### **Conclusions**

A 10-Week walking program with goal setting and social support shows promise. Although it is not possible to clearly determine which component of this package intervention was most effective, the role of AA/B stylists as lay community leaders cannot be diminished as demonstrated by earlier experiments where stylists were influential. Strengths of the experiments included culturally appropriate procedures with input from AA/B stylists in the community. A community-based participatory model was also used. For example, focus group data were collected first, followed by approval of the research protocol by SPs, and an evaluation of the procedures and outcomes by CPs.

### **Future Directions**

Recommendations for future directions were included under each experiment. Some recommendations were included in subsequent experiments of the current research and others were not. Additional recommendations include the following considerations.

First, the DHHS has several health recommendations to improve the health of US residents. Healthy People 2020, organized by the DHHS, for example, have recommendations in the areas of lifestyle behaviors, access to services, chronic disease, mental health, oral health, environmental health, immunization and infectious disease, social determinants of health,

violence prevention, injury prevention, maternal health, and disability and health are areas. In a similar vein, Healthy Kansans 2020 builds on the recommendations on behalf of all Kansans. Implementation of these recommendations, while needed for the health of the general population, may help to end the disparities in health and healthcare experienced by AA/B women.

Second, additional group experiments are needed to better understand the PA behavior of AA/B women. Group studies provide for opportunities to study trends on a larger scale, which is a necessary component for developing policies and programs that impact public health. Experiments should include community-based participatory principles (CBPR), such as collaboration and partnerships with a local community in all phases of the research. Measurement should go beyond only PA and include social validity as well. There should also be an examination of recruitment policies and procedures to ensure there are no systemic barriers to participation.

Third, additional single-subject research experiments with AA/B women are needed. Group studies, although appropriate in some settings, depend on statistical averages to determine the effects of the IV, masking the effects on individuals. However, single-subject research, as mentioned earlier, has several advantages including the opportunity to view the variability in individual behavior. Walking interventions in particular may provide more of an opportunity to see clearly how environmental factors (e.g., weather, illness, schedule) can impact the variability in steps from day to day. The current single-subject research provides a better understanding of the walking patterns, toleration levels for monitoring frames or baselines, and the role of goal setting and social support from AA/B stylists for AA/B women. Single-subject research also provides a tremendous contribution to our understanding of how and why AA/B women make

decisions to participate in a PA research intervention and the challenges in working toward setting and meeting PA goals.

In conducting single-subject research, consideration should be given to establishing a fixed monitoring frame during the baseline period, not to exceed three weeks. In the current research, participants complained about the length and uncertainty of the baseline phase, often leading to attrition. Another consideration for the baseline period is to limit the amount of contact the researcher has with the participants so that the transition to the intervention, where contact transitions from daily contact to weekly contact, is less stark. Changes in the monitoring frame and level of contact will make replication much easier for future studies.

Fourth, whether conducting group or single-subject research, more attention should be given to considering a mixed methods approach, using qualitative research, such as focus groups, to inform the research protocol. In the current research, the four focus groups provided input and direction for conducting either a group or single-subject design. For example, focus groups informed the researcher of the importance of training a trainer to provide the intervention, which would have been the most ideal situation and a goal for future research.

## References

- Acevedo-Garcia, D., & Osypuk, T. L. (2008). Invited commentary: residential segregation and health—the complexity of modeling separate social contexts. *American Journal of Epidemiology*, *168*(11), 1255-1258.
- Andrade, L. F., Barry, D., Litt, M. D., & Petry, N. M. (2014). Maintaining high activity levels in sedentary adults with a reinforcement-thinning schedule. *Journal of Applied Behavior Analysis*, *47*(3), 523-536.
- Agyemang, P., & Powell-Wiley, T. M. (2013). Obesity and Black women: special considerations related to genesis and therapeutic approaches. *Current Cardiovascular Risk Reports*, *7*(5), 378-386.
- Arya, M., Kuman, D., Patal, S., Street, R. L., Giordano, T. P., ... Viswanath, K. (2014). Mitigating HIV health disparities: the promise of mobile health for a patient-initiated solution. *American Journal of Public Health*, *104*(12), 2251-2255.
- Aud, S., Fox, M. A., Ramani, A. K. (2010). Status and trends in the education of racial and ethnic groups. *Education Statistics Services Institute-American Institutes for Research*. Retrieved from: <http://nces.ed.gov/pubs2010/2010015.pdf>
- Ayabe, M., Kumahara, H., Morimura, K., & Tanaka, H. (2014). Interruption in physical activity bout analysis: an accelerometry research issue. *BMC Research Notes*, *7*(1), 284-
- Barnes, A. S., Goodrick, G. K., Pavlik, V., Markesino, B. S., Laws, D. Y., ... Taylor, W. C. (2007). Weight loss maintenance in African-American women: Focus group results and questionnaire development. *Journal of General Internal Medicine*, *22*, 915-922.
- Bellinger, W. (2007). Why African American women try to obtain “good hair”. *Sociological Viewpoints*, *23*, 63-72.

- Bethancourt, H. J., Rosenberg, D. E., Beatty, T., & Arrterburn, D. E. (2014). Barriers to and facilitators of physical activity program use among older adults. *Clinical Medicine & Research, 12* (1-2), 10-20.
- Blaney, C. L., Robbins, M. L., Paiva, A. L., Redding, C. A., Rossi, J. S., ... Oatley, K. (2012). Validation of the measures of the Transtheoretical Model for exercise in an adult African-American sample. *American Journal of Health Promotion, 26*(5), 317-326.
- Boyington, J. E., Carter-Edwards, L., Piehl, M., Hutson, J., Langdon, D., & McManus, S. (2008). Cultural attitudes toward weight, diet, and physical activity among overweight African American girls. *Preventing Chronic Disease, 5*(2), 36.
- Brandon, J. L., & Elliott-Lloyd, M. B. (2006). Walking, body composition, and blood pressure dose-response in African American and White women. *Ethnicity & Disease, 16*, 675-681.
- Brewer, E. A., Kolotkin, R. L., & Baird, D. D. (2003). The relationship between eating behaviors and obesity in African American and Caucasian women. *Eating Behaviors, 4*, 159-171.
- Brown, H. (2009). African American women's hair issues and engagement in physical activity focus groups. *AARP White Paper*. Retrieved from:  
<http://assets.aarp.org/rgcenter/health/aahair.pdf>
- Browne, R., Vaughn, N. A., Siddiqui, N., Brown, N., Delmoor, E., ... Banks, S. (2009). Community-academic partnerships: lessons learned from replicating a salon-based health education and promotion program. *Progress in Community Health Partnerships: Research, Education, and Action, 3*(3), 241-248.
- Bull, E. R., Dombrowski, S. U., McCleary, N., & Johnston, M. (2014). Are interventions for low income groups effective in changing healthy eating, physical activity and smoking behaviours? A systematic review and meta-analysis. *BMJ Open, 4*(11).

doi:10.1136/bmjopen-2014-006046

- Burgio, L. D., Burgio, K. L., Engel, B. T., & Tice, L. M. (1986). Increasing distance and independence of ambulation in elderly nursing home residents. *Journal of Applied Behavior Analysis, 19*(4), 357-366.
- Burke, L. E., Conroy, M. B., Sereika S. M., Elci, O. U., Styn, M. A., ...Glanz, K. (2011). The effect of electronic self-monitoring on weight loss and dietary intake: a randomized controlled weight loss trial. *Obesity, 19*(2), 338-344.
- Calvert, W. J., & Isaac-Savage, E. P. (2013). Behaviors in Black men: motivators and barriers to participating in health promotion. *Western Journal of Nursing Research, 35*(7), 829-848.
- Capodilupo, C. M., & Kim, S. (2014). Gender and race matter: the importance of considering intersections in Black women's body image. *Journal of Counseling Psychology, 61*(1), 37-49.
- Carroll, J. K., Yancey, A. K., Spring, B., Figueroa-Moseley, C., Mohr, D. C., ..Fiscella, K. (2011). What are successful recruitment and retention strategies for underserved populations? Examining physical activity interventions in primary care and community settings. *Translational Behavioral Medicine, 1*(2), 234-251.
- Centers for Disease Control and Prevention (2012). Vital signs: walking among adults—United States, 2005 and 2010. *Morbidity and Mortality Weekly Report, 61*(31), 595-601.
- Centers for Disease Control and Prevention (2014). Physical Activity. Retrieved from: <http://www.cdc.gov/physicalactivity/everyone/glossary/index.html>
- Chase, J. M., Lockhart, C. K., Ashe, M. C., & Madden, K. M. (2014). Accelerometer-based measures of sedentary behavior and cardio-metabolic risk in active older adults. *Clinical and Investigative Medicine, 37*(2), 108-116.



- Cohen, S., Park, Yikyung, P., Signorello, L. B., Patel, A. V., Boggs, D. A. ...Palmer, J. G. (2014). Pooled Analysis of Body Mass Index and Mortality among African Americans. *PloS One*, 9(11) doi: 10.1371/journal
- Cohen, S. S., Matthews, C. E., Signorello, L. B., Schlundt, D. G., Blot, W. J., & Buchowski, M. S. (2013). Sedentary and physically active behavior patterns among low income African-American and White adults living in the Southeastern United States. *PloS One*, 8(4),
- Davis, E. M., Clark, J. M., Carrese, J. A., Gary, T. L., & Cooper, L. A. (2005). Racial and socioeconomic differences in the weight-loss experiences of obese women. *American Journal of Public Health*, 95(9), 1539-1543.
- DeLany, J. P., Jakicic, J. M., Lowery, J. B., Hames, K. C., Kelley, D. E., & Goodpaster, B. H. (2013). African American women exhibit similar adherence to intervention but lose less weight due to lower energy requirements. *International Journal of Obesity*, 38(9), 1147-1152.
- DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and mood: psychological and social resources as mediators. *Journal of Personality and Social Psychology*, 54(3), 486-495.
- Den Hoed, M., Brage, S., Zhao, J. H., Westgate, K., Nessa, A., ...Loos, R. J. (2013). Heritability of objectively assessed daily physical activity and sedentary behavior. *American Journal of Clinical Nutrition*, 98(5) 1317-1325.
- Department of Health and Human Services, Physical activity guidelines for Americans. Retrieved from: <http://www.fitness.gov/be-active/physical-activity-guidelines-for-Americans/>
- Dinger, M. K., Heesch, K. C., Cipriani, G., & Qualls, M. (2007). Comparison of two email-

- delivered pedometer-based interventions to promote walking among insufficiently active women. *Journal of Science and Medicine in Sport*, *10*, 297-302.
- Dione-Rosado, S. (2004). "No Nubian knots or nappy locks: discussing the politics of hair among women of African descent in the Diaspora. A report on research in progress". *Transforming Anthropology*, *11*(2), 60-63.
- Donaldson, J. M., & Normand, M. P. (2009). Using goal setting, self-monitoring, and feedback to increase calorie expenditure in obese adults. *Behavioral Interventions*, *24*, 73-83.
- Egan, B. M., Li, J., Hutchison, F. N., Ferdinand, K. C. (2014). Hypertension in the United States, 1999 to 2012: Progress toward Healthy People 2020. *Circulation*, *130*(19), 1692- 1699.
- Emerson, S., Ibe-Lamberts, K., Bobitt, J., Schwingel, A., & Chodzko-Zajko, W. (2014). Employing a participatory research approach to explore physical activity among Older African American women. *Journal of Aging Research*,
- Es, G., Kolt, G. S., Rosenkranz, R. R., & Guagliano, J. M. (2014). Physical activity and sedentary time: male perceptions in a university work environment. *American Journal of Mens Health*, *8*(2), 148-58.
- Farhney, S., Kelley, C., Dattilo, J., & Rusch, F. (2010). Effects of goal setting on activity level of senior exercisers with osteoarthritis residing in the community. *Therapeutic Recreation Journal*, *44*(2), 87-102.
- Fawcett, S., Schultz, J., Watson-Thompson, J., Fox, M., & Bremby, R. (2010). Building multisectoral partnerships for population health and health equity. *Preventing Chronic Disease*, *7*(6), 1145-1151.
- Ferdinand, K. C. (1997). Lessons learned from the healthy heart community prevention project in reaching the African American population. *Journal of Health Care for the Poor and*

*Underserved*, 8(3), 366-372.

- Fitzgibbon, M. L., Tussing-Humphreys, L. M., Porter, J. S., Martin, I. K., Odoms-Young, A., & Sharp, L. K. (2012). Weight loss and African-American women: a systematic review of the behavioural weight loss intervention literature. *Obesity Review*, 13(3), 193-213.
- Foster, C. E., Brennan, G., Matthews, A., McAdam, C., Fitzsimons, C., & Mutrie, N. (2011). Recruiting participants to walking intervention studies: a systematic review. *International Journal of Behavior, Nutrition, and Physical Activity*, 15(8), 2-28.
- Forte, D. A. (1995). Community-based breast cancer intervention program for older African American women in beauty salons. *Public Health Reports*, 110(2), 179-183.
- Frieden, T. R. (2010). Framework for public health action: the health impact pyramid. *American Journal of Public Health*, 100(4), 590-595.
- Friedkin, N. E. (2004). Social cohesion. *Annual Review of Sociology*, 30, 409-425.
- Gathers, R. C., & Mahan, M. G. (2014). African American women, hair care, and health barriers. *Journal of Aesthetic Dermatology*, 7(9), 26-29.
- Ghosh-Dastidar, B., Cohen, D., Hunter, G., Zenk, S. N., Huang, C. ... Dobowitz, T. (2014). Distance to store, food prices, and obesity in urban food deserts. *American Journal of Preventive Medicine*, 47(5) 587-595.
- Gibbons, F., Kingsbury, J. H., Yeng, C.Y., Gerrard, M., Cutrona, C., ... Stock, M. (2014). Effects of perceived racial discrimination on health status and health behavior: a differential mediation hypothesis. *Health Psychology*, 33(1), 11-19.
- Glickman, D., Parker, L., Sim, L. J., Cook, H. D.V., & Miller, E. A. (2012). Accelerating progress in obesity prevention: solving the weight of the nation. *Institute on Medicine*. Retrieved from: [http://books.nap.edu/openbook.php?record\\_id=13275](http://books.nap.edu/openbook.php?record_id=13275)

- Hall, R. R., Francis, S., Whitt-Glover, M., Loftin-Bell, K., Swett, L., ...McMichael, A. J. (2013). Hair care practices as a barrier to physical activity in African American women. *JAMA Dermatology, 149*(3), 310-314.
- Harley, A. E., Rice, J., Walker, R., Strath, S. J., Quintiliani, L. M., Bennett, G. G. (2014). Physically active, low-income African American women: An exploration of activity maintenance in the context of sociodemographic factors associated with inactivity. *Women & Health, 54*, 354-372.
- Haskell, W. I., Lee, I., Pate, R. R., Powell, K. E., Blair, S. N., ...Bauman, A. (2007). Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine and Science in Sports and Exercise, 39*(8), 1423-1434.
- Health Enhancement Systems (2011). Walking: the health and economic impact. Retrieved from: <http://www.hesonline.com/pdf/whitepapers/WalkingWhitePaper.pdf>
- Healthy People 2020. *Topics and objectives*. Retrieved from: <http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/addressing-determinants>
- Hill, Wyatt, Reed, & Peters. (2003). Obesity and the environment: where do we go from here? *Science, 299*(5608), 853-855.
- Holm, J. E., & Holroyd, K. A. (1992). The daily hassles scale (revised): Does it measure stress or symptoms? *Behavioral Assessment, 14*, 465-482.
- Holm, K., Wyatt, H., Murphy, J., Hill, J., & Ogden, L. (2012). Parental influence on child change in physical activity during a family-based intervention for child weight gain prevention. *Journal of Physical Activity and Health, 9*, 661-669.

- Holtgreffe, K., McCloy, C., & Rome, L. (2007). Changes associated with a quota-based approach on a walking program for individuals with fibromyalgia. *Journal of Orthopedic Sports Physical Therapy*, 717-724.
- Huffington Post (2013). American bra size average increases from 34B to 34DD in just 20 years, survey says. Retrieved from: <http://www.huffingtonpost.com>
- International Physical Activity Questionnaire Group (2005). Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ). Retrieved from: <https://www.sites.google.com/site/theipaq>
- Jacob, R., Arnold, L. D., Hunleth, J., Greiner, K. A., James, A. S. (2014). Daily hassles' role in health seeking behavior among low-income populations. *American Journal of Health Behavior*, 38(2), 297-306.
- James, D. C., Harville, C., Efunbumi, O., Martin, M. Y. (2014). Health literacy issues surrounding weight management among African American women: a mixed methods study. *Journal of Human Nutrition and Dietetics*,
- Jeffries, B. J., Iliffe, S., Kendrick, D., Kerse, N., Trost, S., ... Wincup, P. H. (2014). How are falls and fear of falling associated with objectively measured physical activity in a cohort of community-dwelling older men? *BioMedCentral Geriatrics*, 14(1), 114 –
- Kim, Y., Wilkens, L. R., Park, S. Y., Goodman, M. T., Monroe, K. R., & Kolonel, L. N. (2013). Association between various sedentary behaviors and all-cause, cardiovascular disease and cancer mortality: the Multiethnic Cohort Study. *International Journal of Epidemiology*. 42(4), 1040-1056.
- Kominiarek, M. A. (2014). A survey of health behaviors in minority women in pregnancy: the influence of body mass index. *Women's Health Issues*, 24(3), 291-295.

- Kong, A., Tussing-Humphreys, M., Odoms-Young, A. M., Stolley, M. R., Fitzgibbon, M. . (2014). Systematic review of behavioural interventions with culturally adapted strategies to improve diet and weight outcomes in African American women. *Obesity Reviews*, 4, 62-92.
- Kurti, A. N., & Dallery, J. (2013). Internet-based contingency management increases walking in sedentary adults. *Journal of Applied Behavior Analysis*, 46(3), 568-581.
- Lancaster, K. J., Carter-Edwards, L., Grilos, S., Shens, C., & Schoenthalers, A. M. (2014). Obesity interventions in African American faith-based organizations: a systematic review. *Obesity Reviews*, 15(4), 159-176.
- Lemacks, J., Wells, B. A., Ilich, J. Z., Ralston, P. A. (2013). Interventions for improving nutrition and physical activity behaviors in adult African American populations: a systematic review, January 2000 through December 2011. *Preventing Chronic Disease*, 10, 1-16.
- Linke, S. E., Galla, L. C., Norman, G. J. (2011). Attrition and adherence rates of sustained vs. intermittent exercise interventions. *Annals of Behavioral Medicine*, 42(2), 197-209.
- Linnan, L. A., D'Angelo, H., & Harrington, C. B. (2014). A literature synthesis of health promotion research in salons and barbershops. *American Journal of Preventive Medicine*, 47(1), 77-85.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation. A 35 year odyssey. *The American Psychologist*, 57(9), 705-717.
- Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Directions in Psychological Science*, 15(5), 265-268.
- Ludwig, J., Sanbonmatsu, L., Gennetian, L., Adam, E., Duncan, G. J., ... McDade. T. W. (2011).

- Neighborhoods, obesity, and diabetes—a randomized social experiment. *New England Journal of Medicine*, 365(16), 1509-1519.
- Marcus, B. H., & Forsyth, L. H. (2009). Motivating people to be physically active. Pp. 80-82
- Marcus, B. H., Rakowski, W., & Rossi, J. S. (1992). Assessing motivational readiness and decision-making for exercise. *Health Psychology*, 11, 257-261.
- Meigs, J. B., Grant, R. W., Piccolo, R., Florez, J. C., Porneala, B. ...McKinlay, J. B. (2014). Association of African genetic ancestry with fasting glucose and HbA1c levels in non-diabetic individuals: the Boston Area Community Health (BACH) prediabetes study. *Diabetologia*, 57(9), 1850-1858.
- Normand, M. P. (2013). Increasing physical activity through self- monitoring, goal setting, and feedback. *Behavioral Interventions*, 23, 227-236.
- Onunbogu, U., Graham, M. E., & Robinson, T. O. (2014). Pilot study of an action plan intervention for self-management in overweight/obese adults in a medically underserved minority population: phase I. *Association of Back Nursing Faculty*, 25(3), 64-71.
- Pappas-Rogich, M. & King, M. (2014). Faith community nursing: supporting Healthy People 2020 initiatives. *Journal of Christian Nursing*, 31(4), 228-234.
- Paskett, E. D., Reeves, K. W., McLaughlin, J. M., Katz, M. L., McAlearney, A. S., ...Gehlert, S. (2008). Recruitment of minority and underserved populations in the United States: The centers of population health and health disparities experience. *Contemporary Clinical Trials*, 29, 847-861.
- Patterson, R. E, Emond, J. A., Natarajan, L., Wesseling-Perry, K., Kolonel, L. N., ...Arabs, L. (2014). Short sleep duration is associated with higher energy intake and expenditure among African American and non-Hispanic White adults. *Journal of Nutrition and Disease*,

144(4), 461-466.

Pekmezi, D., Marcus, B., Meneses, K., Baskin, M. L., Ard, J. D., & Martin, M. Y. (2013).

Developing an intervention to address physical activity barriers for African-American women in the deep south (USA). *Women's Health*, 9, 301- 312.

Petty, C. M., McSweeney, J. C., Stewart, K. E., Price, E. T., Cleves, M. A., ... Souder, E.

(2014). Perceptions of family history and genetic testing and feasibility of pedigree development among African Americans with hypertension. *European Cardiovascular Journal of Medicine*. Retrieved online from:

<http://cnu.sagepub.com/content/early/2014/10/16/1474515114556198>

Perry, G. S., Byers, T. E., Mokdad, A. H., Serdula, M. K., & Williamson, D. F. (1995). The

validity of self-reports of past body weights by U.S. adults. *Epidemiology*, 6(1), 61-66.

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking:

Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, 51, 390-395.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change:

Applications to addictive behavior. *American Psychologist*, 47, 1102-1114.

Prochaska, J. O., & Velicer, W.F. (1997). The Transtheoretical Model of health behavior change.

*American Journal of Health Promotion*, 12, 38-48.

Rathore, S. S., Ketchum, J. D., Alexander, G. C., & Epstein, A.J. (2009). Influence of patient

race on physician prescribing decisions: a randomized on-line experiment. *Journal of Internal Medicine*, 24(11), 1183-1191.

Ries, A. V., Blackman, L. T., Page, R. A., Gizlice, Z., Benedict, S., ... Carter-Edwards, L.

(2014). Goal setting for health behavior change; evidence from an obesity intervention for rural-low-income women. *Rural Remote Health*, 14. Retrieved from:



<http://www.rrh.org.au/articles/subviewnew.asp?ArticleID=2682>

Science Daily (2014). Does a work-out give you a bad hair day? Overcoming barriers to physical activity for African-American women. Retrieved from:

<http://www.sciencedaily.com/releases/2014/07/140721132014.htm>

Seguin, R., Buchner, D. M., Liu, J., Allison, M., Manini, T...LaCroix, A. Z. (2014). Sedentary behavior and mortality in older women: The Women's Health Initiative. *American Journal of Preventive Medicine*, 46(2), 122-135.

Serwe, K. M. (2011). Effectiveness of long and short bout walking on increasing physical activity in women. *Journal of Women's Health*, 2. Retrieved from:

<http://www.ncbi.nlm.nih.gov/pubmed/>

Shonkoff, J. & Phillips, D. (2000). From neurons to neighborhoods: The science of early childhood development. *National Research Council and Institute of Medicine; Board on Children, Youth, and Families Commission on Behavioral and Social Sciences and Education*. Retrieved from: <http://www.nap.edu/openbook.php?>

Staffileno, B. A., Minnick, A., Coke, L. A., & Hollenberg, S. M. (2007). Blood pressure responses to lifestyle physical activity among young, hypertension-prone African American women. *The Journal of Cardiovascular Nursing*, 22(2), 107-117.

Steinberg, D. M., Levine, E. L., Lane, I., Askew, S., Foley, P. B., ... Bennett, G. G. (2014). Adherence to self-monitoring via interactive voice response technology in an e-Health intervention targeting weight gain among Black women: a randomized controlled trial. *Journal of Medical Internet Research*, 16(4). Retrieved from:

<http://www.jmir.org/2014/4/e114/>

- Van Camp, C. M., & Hayes, L. B. (2012). Assessing and increasing physical activity. *Journal of Applied Behavior Analysis, 45*, 871-875.
- VanWormer, J. J. (2004). Pedometers and brief e-counseling: increasing physical activity for overweight adults. *Journal of Applied Behavior Analysis, 37*, 421-425.
- Varma, V. R., Tan, E. J., Wang, T., Xue, Q. L., Fried, L. P. ...Carlson, M. C. (2014). Low intensity walking activity is associated with better help. *Journal of Applied Gerontology, 33*(7), 870-887.
- Versey, H. S. (2014). Centering perspectives on Black women, hair politics, and physical activity. *American Journal of Public Health, 104*(5), 810-816.
- Venditti, E. M., Wylie-Rosett, J., Delahanty, L. M., Mele, L. Hoskin, M. A., ...Edelstein, S. L. (2014). Short and long-term lifestyle coaching approaches used to address diverse participant barriers to weight loss and physical activity adherence. *The International Journal of Behavioral Nutrition and Physical Activity, 11*(1), 1-12.
- Wallace, K. J., Barker, G., Eads, M. & Levto, R. (2014). Global pathways to men's caregiving: mixed methods findings from the International Men and Gender Equality Survey and the Men Who Care study. *Global Public Health, 9*(6), 706-722.
- White, S. B. (2005). "Releasing the pursuit of having hair: Natural hair as an Afrocentric feminist aesthetic for beauty." *International Journal of Media and Cultural Politics, 1*(3), 296-308.
- Whitt-Glover, M. C., Keith, N. R., Ceaser, T. G., Virgils, K., Ledford, L., ... Hasson, R. E. (2014). A systematic review of physical activity interventions among African American adults: evidence from 2009 to 2013. *Obesity Reviews, 15*(4), 125-145.
- Wilbur, J., Buchholz, S. W., Ingram, D. M., Braun, L. T., Johnson, T. J., ...McDevitt, J. (2013).

- Effectiveness, efficiency, duration, and costs of recruiting for an African American women's lifestyle physical activity program. *Research in Nursing & Health*, 36, 487-499.
- Wilbur, J., McDevitt, J., Wang, E., Dancy, B., Briller, J. ...Zenk, S. (2006). Recruitment of African American women to a walking program: eligibility, ineligibility, and attrition during screening. *Research in Nursing & Health*, 29, 176-189.
- Wilcox, S., Richter, D.L., Henderson, K. A., Greaney, M. L., Ainsworth, B.E. (2002). Perceptions of physical activity and personal barriers and enablers in African-American women. *Ethnic Discourse*, 12(3), 353-362.
- Willig, A. L., Richardson, B. S., Agne, A., Cherrington, A., (2014). Intuitive eating practices among African American women living with Type 2 diabetes: a qualitative study. *Journal of the Academy of Nutrition and Dietetics*, 114(6), 889-896.

## Appendices

## Appendix A

## Recruitment Checklist for Stylists



- **Has received hair care services from me for at least 3 months**
- **Visits the salon at least 2x each month for hair care services**
- **Identifies herself as African American or Black**
- **Is at least 18 years old**
- **Identifies herself as not being physically active – does not exercise at least 30 minutes per day (*regardless of her weight*)**
- **Answers yes when asked if maintaining her hairstyle is *the* reason or at least *one* reason she is not physically active**
- **Does not have naturally straight or curly hair and does not wear a wig**

Appendix B  
Recruitment Flier



**Would you like to join a 10-Week Walking program?**

**The University of Kansas (KU) is conducting a research study to find ways to help African American and Black women become more physically active. The researcher is working with female stylists to provide social and hair care support to women who join a 10-Week Walking program.**

**Please contact me if you are interested in joining and you are:**

**18 years or older**

**African American or Black Female**

**Not involved in physical activity at least 30 minutes, 5-7 days per week– regardless of your weight**

**A regular customer of professional hair care salon services**

**For more information on the program and incentives, please call/text Maren Turner at 785/331-9310 or send an email to [mturner@ku.edu](mailto:mturner@ku.edu).**

## Appendix C

### BWWS Compilation Survey

#### CURRENT HEALTH STATUS

*Has a doctor or nurse ever said that you have:*

Participant Name/Date: \_\_\_\_\_

	Yes	No	Not Sure	
1.	___	___	___	High blood pressure or hypertension
1a.	___	___	___	<u>If you have high blood pressure</u> , do you take medication?
2.	___	___	___	High blood cholesterol
3.	___	___	___	Diabetes (high sugar)
3a.	___	___	___	<u>If you have diabetes</u> , are you on insulin?
4.	___	___	___	Heart trouble
5.	___	___	___	Stroke
6.	___	___	___	Cancer
7.	___	___	___	Osteoporosis
8.	___	___	___	Arthritis, joint swelling
9.	___	___	___	Depression
10.	___	___	___	Anxiety
11.	___	___	___	Overweight/Obesity
12.	___	___	___	Respiratory problems
13.	___	___	___	Other

14. Do you currently smoke cigarettes?

1. \_\_\_ Yes  
 2. \_\_\_ No  
 9. \_\_\_ No answer

14a. If you smoke, how many packs a day do you smoke?

1. \_\_\_ Less than ½ pack  
 2. \_\_\_ 1/2 to 1 pack  
 3. \_\_\_ More than 1 pack  
 77. \_\_\_ Don't know  
 99. \_\_\_ Refused to answer

15. Do you currently drink alcohol?

1. \_\_\_ Yes  
 2. \_\_\_ No  
 9. \_\_\_ No answer

15a. If you drink alcohol, how many drinks do you have in a usual week?

\_\_\_\_\_ {NOTE: 1 drink = 1 can of beer (12 oz) OR 1 glass of wine (5 oz) OR 1 shot of liquor (1 ½ oz)}

16. Would you say that in general your health is:

1. \_\_\_ Excellent  
 2. \_\_\_ Very good  
 3. \_\_\_ Good  
 4. \_\_\_ Fair  
 5. \_\_\_ Poor  
 77. \_\_\_ Don't know  
 99. \_\_\_ Refused to answer

17. Compared to other Black women your age, is your health:

1. \_\_\_ Excellent  
 2. \_\_\_ Very good  
 3. \_\_\_ Good  
 4. \_\_\_ Fair  
 5. \_\_\_ Poor  
 77. \_\_\_ Don't know  
 99. \_\_\_ Refused to answer

#### ACTIVITY AND EXERCISE

1. Which of the following statements best describes how you would define "exercise"? Check only one answer.

- \_\_\_ 1. When heart rate is increased for a certain period of time  
 \_\_\_ 2. Weight lifting to strengthen muscles  
 \_\_\_ 3. Active playing or hobbies (for example: playing with kids, yard work)  
 \_\_\_ 4. Anything that is physical activity  
 \_\_\_ 5. Burning calories  
 \_\_\_ 6. Other: Please specify \_\_\_\_\_

2. What does "being active" mean to you? Check only one answer.

- \_\_\_ 1. Being strong  
 \_\_\_ 2. Being agile  
 \_\_\_ 3. Doing athletic activities  
 \_\_\_ 4. Dancing  
 \_\_\_ 5. Being healthy  
 \_\_\_ 6. Being graceful  
 \_\_\_ 7. Doing recreational activities  
 \_\_\_ 8. Other: Please specify \_\_\_\_\_

People do not exercise for many reasons. Some of the reasons are listed below. Please read each statement and circle the number which indicates how often you would use the statement as a reason for not exercising.

	Never	Rarely	Sometimes	Often	Very often
3. I feel self-conscious about my looks when I exercise	1	2	3	4	5
4. I'm not very interested in exercise	1	2	3	4	5
5. I don't have the self-discipline to exercise	1	2	3	4	5
6. I don't have enough time	1	2	3	4	5
7. I am too tired	1	2	3	4	5
8. I don't have anyone to exercise with	1	2	3	4	5
9. I don't enjoy exercise	1	2	3	4	5

10. Compared to your health one year ago, is your current health:

1. \_\_\_ Much better than one year ago  
 2. \_\_\_ Somewhat better than one year ago  
 3. \_\_\_ About the same  
 4. \_\_\_ Somewhat worse than one year ago  
 5. \_\_\_ Much worse than one year ago  
 77. \_\_\_ Don't know  
 99. \_\_\_ Refused to answer

11. Now, thinking about your physical health, which includes physical illness and injury, have there been any days in the past 30 days that your physical health was not good?

1. \_\_\_ Yes  
 2. \_\_\_ No  
 77. \_\_\_ Don't know  
 99. \_\_\_ Refused to answer



19a. If yes, how many days in the past month? \_\_\_

12. Now, thinking about your mental health, which includes stress, depression, and problems with emotions, have there been any days in the past 30 days that your mental health was not good?

[HLTH20]

1. \_\_\_ Yes

2. \_\_\_ No

77. \_\_\_ Don't know

99. \_\_\_ Refused to answer

20a. If yes, how many days in the past month? \_\_\_

13. During the past 30 days, were there any days that poor physical or mental health kept you from doing your usual activities, such as work, self-care, home and/or family care, or recreation?

1. \_\_\_ Yes

2. \_\_\_ No

77. \_\_\_ Don't know

99. \_\_\_ Refused to answer

21a. If yes, how many days in the past month? \_\_\_

#### Social Validity Questions

14. What are your reasons for joining the 10 week walking program (please check all that apply)?

\_\_\_ Health Related Benefits

\_\_\_ Curiosity

\_\_\_ My stylist asked me to join

\_\_\_ Lose Weight

\_\_\_ My friend joined

\_\_\_ For the free gifts

\_\_\_ My doctor encouraged me to exercise

\_\_\_ My family member encouraged me to exercise

\_\_\_ I want to be part of a research program that helps African American/Black women

\_\_\_ To solve concerns with hair care/exercise

\_\_\_ Other (Please explain) \_\_\_\_\_

## Appendix D

### Activity Sheet for SPs

#### KU 10 Week Walking Program

Daily Diary

Baseline Week

Front Page



Name \_\_\_\_\_

Date:	Time On (circle am or pm)	Time Off (circle am or pm)	# of Steps	Did you take the pedometer off during the day? If so, please list the amount of time the pedometer was off.
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		

Appendix E  
Activity Sheet Stylists

Date	Time	Steps/RPE	No. of Bouts	Comments	Other

## Appendix F

## Weekly Activity Sheet for Stylists

Date: 11/19-11/26

Name of Stylist:

Name of Client:

1. I *did not* have contact with her this week \_\_\_\_\_If you *did not* have contact this week, please indicate why (check all that apply): She was not scheduled to receive hair care services She canceled/missed her regularly scheduled appointment I canceled/missed her regularly scheduled appointment2. If you *did* have contact this week, please indicate why (check all that apply): She called the shop for hair care support. Why?

Your recommendation(s):

 I called her (please state reason): She visited the shop \_\_\_ time(s) for hair care services.3. If she visited the shop this week, please indicate the following (check all that apply): She visited for her regularly scheduled appointment. She visited outside of her regularly scheduled appointment. We discussed her progress in the walking program. I provided her with encouragement to remain in the 10-Week Walking Program. I provided her with hair care support. If so, please indicate: Why?

Your recommendation(s):

## 4. Additional Comments for the researcher?



# Appendix G

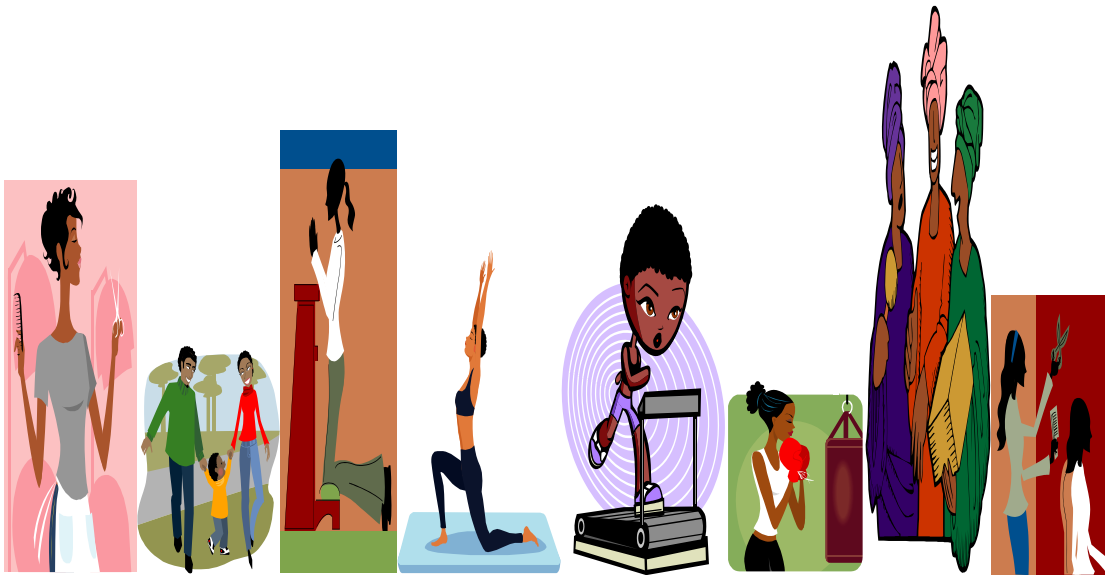
## Activity Sheets for CPs

### KU 10 Week Walking Program

Daily Diary

Baseline Week

Front Page



Baseline

Name \_\_\_\_\_

Date:	Time On (circle am or pm)	Time Off (circle am or pm)	# of Steps	Did you take the pedometer off during the day? If so, please list the amount of time the pedometer was off.
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		

Notes to the researcher

Appendix H  
Activity Sheets for CPs

**KU 10 Week Walking Program**

**Daily Diary**

**Front Page**



**Baseline**

Name \_\_\_\_\_

<b>Date:</b>	<b>Time On (circle am or pm)</b>	<b>Time Off (circle am or pm)</b>	<b># of Steps</b>	<b>Did you take the pedometer off during the day? If so, please list the amount of time the pedometer was off.</b>
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		
	a.m./p.m.	a.m./p.m.		

## Appendix I

## Informed Consent Form



College of Liberal Arts &amp; Sciences

Department of Applied Behavioral Science

June 2012

Approved by the Human Subjects Committee University of Kansas, Lawrence Campus (HSCL) on 3/3/2011. Approval expires one year from 11/19/2010. HSCL# 17686

**INTRODUCTION**

*The Department of Applied Behavioral Sciences at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.*

**PURPOSE OF THE STUDY**

*Adults who engage in the recommended level of moderate physical activity tend to be healthier and have fewer chronic diseases. The exercise rate for a significant number of adults, however, is low, especially for African American/Black women. African American/Black women are at an increased risk for obesity and obesity related diseases, such as type 2 diabetes and heart disease. Although African/American women generally believe in the health benefits of exercise, common barriers to regular participation include lack of social support and hair care issues (i.e. sweating and messing up a hairstyle).*

*The KU study will focus on the effects of goal setting and support in a series of studies. If you are a stylist, you may be asked to participate in more than one study. If you are recruited by a stylist, you will only be asked to participate in one study.*

**PROCEDURES**

Overview

*The 10 week walking program was originally designed by AARP, a nonprofit organization that focuses on the needs of people 50 years and older. The program has been modified by KU for research purposes. The overall purpose of the studies is to encourage adult African American women to become more physically active during leisure time.*

For stylists:

- *As a first step, stylists will be recruited and asked to sign the informed consent form and provide some demographic information (such as name, where you are licensed, etc).*
- *After returning the consent form, you will be asked to complete a survey review of the proposed research protocol and suggest modifications and suggestions as appropriate. For example, you will be asked to provide input on whether you believe hair care during exercise is an issue, if you think the types of recruitment fliers to be used are appropriate, and the types of incentives you think your customers would find useful. The survey review should take no more than 10 minutes.*
- *Stylists wishing to continue with the research program will be asked to complete two surveys about their current physical activity levels. You will also be provided with a brief training on how to recruit participants, how to fill out the weekly report, provide social and hair care support.*

For participants recruited by stylists:

- *As a participant, you will be recruited by your stylist. She will provide you with a flier and give you information on how to contact the researcher.*
- *Once you contact the researcher, she will provide you with additional information and arrange a time to meet with you, should you decide to join the research program. She will collect some demographic information about (such as your age, where you live, they type of style you wear, etc.). She will also ask you to commit to visiting your stylist at least twice a month for services during the 10 weeks.*
- *The researcher will ask you to complete two survey tests as part of a pre-screening process.*
  - a. *The first survey consists of one question about your intentions to become physically active within the next 6 months.*
  - b. *The second survey consists of several questions to determine how active you are now, and how able you are to participate in a walking program. If you answer yes to any of the questions, you will be asked to get medical clearance from your physician before you can join the research program.*

*If you answer no to all of the questions, you will be asked to perform an aerobic activity for up to 10 minutes. If you cannot complete the 10 minutes there is no penalty. It simply provides the researcher with information about how active you are.*

- 18 *Once you have passed through the prescreening, you will be asked to complete a series questionnaires. Completion should not take more than 20 minutes.*
- 19 *The researcher will then meet with you and your stylist to explain how the research will proceed*
  - a. *You will be asked to wear a pedometer as part of a baseline period. You should wear it during waking hours, and record your steps at the end of the day on an activity sheet. You will be asked not to change your normal routine during this time.*
  - b. *At the end of baseline, the researcher will contact you and provide information about the average number of steps you take per day. You will be asked to increase the average number of steps per day by*



*2000—9,000 steps by the end of the 10 week program; the total will not exceed 10,000 steps per day.*

- c. *At the end of the 10 week program 10 weeks, the researcher will meet with you and your stylist and ask and ask you to repeat the same questionnaires you filled out at the beginning of the baseline period. You may also be asked if the researcher can continue to monitor your steps for a period of 3 but not more than 6 months.*

*If you have been recruited for*

*Level 1:*

*Your stylist will provide you with encouragement to remain in the study, and offer hair care tips. You will wear the pedometer everyday, record your steps on the activity sheet provided to you, and turn in the sheet to the researcher each week. You will not hear from the researcher during the 10 weeks unless you are not turning in your activity sheets.*

*Level 2:*

*Same as above for Level 1, however, if you identify problems or barriers to completing the 10 weeks, your stylist will provide you with additional information on how to work around those concerns. You will not hear from the researcher during the 10 weeks unless you are not turning in your activity sheets.*

*Level 3:*

*Same as above for Level 2, however, if you are not achieving your week goals by week four, the researcher will meet with you and assist you with goal setting.*

*Level 4:*

*Same as above for Level 3, however, the researcher will provide you with weekly feedback on your progress in the form of a graph. The graph will be a visual tool to help you track your progress.*

- 20** *At the end of the 10 weeks, all participants recruited by stylists will be asked to complete many of the same pre-survey questionnaires.*

## **RISKS**

*According to the Department of Health and Human Services (DHHS), healthy older adults generally do not need to consult a health-care provider before becoming physically active. However, health-care providers can help people attain and maintain regular physical activity by providing advice on appropriate types of activities and ways to progress at a safe and steady pace. When adults with chronic conditions do activity according to their abilities, physical activity is safe. Adults with chronic conditions should talk with their health-care provider to determine whether their conditions limit their ability to do regular physical activity in any way. Such a conversation should also help people learn about appropriate types and amounts of physical activity.*

*According to the Centers for Disease Control (CDC), there can be some risks associated with physical activity; most can be avoided or minimized by taking reasonable precautions. Risks, according to a variety of experts, can include:*

- Cardiovascular Event—over exertion, physical discomfort, dizziness,*
- Hypoglycemia—low blood sugar*
- Hyperglycemia—high blood sugar*

- Blisters**
- Chafing**
- Muscle pulls, Sprains, Pain**
- Heat Illness**
- Dehydration**
- Embarrassing Problems – exercise related diarrhea, a need to urinate/lack of toilet available while exercising**

**To avoid potential risks, the National Institutes of Diabetes and Digestive Health (NIDDK) and the American Physical Therapy Association (APTA), and the Department of Health and Human Services (DHHS) suggest that you:**

- (1) ***Start slow and easy, gradually building up to your pace and distance. Inactive adults or those who don't yet do 150 minutes of physical activity a week should work gradually toward this goal. You should be able to maintain a "conversational" pace – one that enables you to hold a normal conversation while walking without feeling winded.***
- (2) ***Ask your physician about how to warm up and stretch before exercise and how to cool down after exercise.***
- (3) ***Purchase or wear walking shoes. Shoes can be purchased at a professional shoe store, where trained staff can fit your exact type of foot. For example, a high arch will require a shoe with more cushion; a flat foot will need more arch support. You should also exercise in cotton socks, and comfortable well fitting shoes designed for walking. Ask your health care provider how you should check your feet after each walking period.***
- (4) ***Evaluate your own particular style of walking, or gait, to determine the distribution of the stress to various parts of your legs and feet. If you are experiencing discomfort – particularly back pain, kneecap pain, legs cramps or a sore Achilles tendon – it may be the result of a gait problem and should be analyzed by a physical therapist.***
- (5) ***Make sure you drink enough water – drink comfortably and don't let thirst be your guide. Amounts vary depending on weather and walking conditions; sipping 8-12 oz. of water every 30 minutes from a hydration pack or water bottle stored in a fanny pack is recommended.***
- (6) ***Ask your physician, if you have diabetes, whether you should exercise while your glucose levels are high or low; check your blood glucose levels before and after exercising; change the amount of medications you take before exercise if that medication can cause low blood glucose; whether you should have a snack if your blood glucose falls below 100.***
- (7) ***If you are an older adult at risk for falls, strong evidence, according to the Department of Health and Human Services (DHHS), shows that regular physical activity is safe and reduces the risk of falls. Balance training/muscle strengthening standardized exercises such as backward walking, sideways walking, heel walking, toe walking and standing from a sitting position can help reduce falls. Tai Chi exercises may also help prevent falls.***

## **BENEFITS**

***Engaging in any level of physical activity each week will result in some benefits and is better than not participating in any physical activity physical activity at all. Substantial benefits, however, can result with at least 150 minutes of moderate aerobic activity each week. Benefits can include a lower risk of***

- premature death***
- coronary heart disease***

- stroke
- hypertension
- type 2 diabetes
- depression

#### **PAYMENT TO PARTICIPANTS**

*Participants will not be provided with compensation.*

*Each stylist will receive:*

- 21 Medical grade pedometer at the beginning of the study. You are not, however, required to wear it or participate in walking for 10 weeks.*
- 22 A \$25.00 Visa gift card if you complete the pre-survey review and return it to the researcher within 2 weeks; a \$10.00 Visa gift card if you complete the pre-survey review and return it within 3-4 weeks.*
- 23 A \$5.00 payment each week for each participant activity form you return to the researcher on time.*

*Each participants recruited by a stylist and accepted into the research program:*

- Medical grade pedometer at the beginning of the study to wear each day for 1 week of baseline and 10 weeks of walking program.*
- A “Personal Cooling Cloth” at the beginning of the study as an optional tool to help control sweat you may produce*
- Hairdo Pillow at the end of the study to help you maintain your salon style.*
- An activity video at the end of the study to motivate ongoing physical activity.*
- A \$15.00 reduction in hair care services at the end of the first week if you have completed your activity sheet and reached your goal. Payment will be provided directly to the stylist. Activity sheets mailed to the researcher should be postmarked no more than 2 days following the end of the week. Activity sheet information left on voice mail or sent by email or text should be sent within 24 hours of the end of the week.*
- A \$25 reduction in hair care services at the end of the 5<sup>th</sup> week, if you have increased your daily steps by at least 1000 steps over baseline, and you have completed and returned your activity sheet on time following the 5<sup>th</sup> week (see above guidance for turning in activity sheets). Payment will be provided directly to the stylist.*
- A \$50.00 reduction in hair care services at the end of the 8<sup>th</sup> week if you have increased your daily steps average by at least 1600 steps over baseline, and you have completed and returned your activity sheet on time following the 8<sup>th</sup> week (see above guidance for turning in activity sheets). Payment will be provided directly to the stylist.*

#### **PARTICIPANT CONFIDENTIALITY**

*Your name will not be associated in any way with the information collected about you or with the research findings from this study. The researcher(s) will use a study number or a pseudonym instead of your name. The researchers will not share information about you unless required by law or unless you give written permission. All information will be stored in a secure location accessible only by the researcher. The information will be shredded and discarded within three years of the completion of the research.*

*Permission granted on this date to use and disclose your information remains in effect indefinitely. By signing this form you give permission for the use and disclosure of your information for purposes of this study at any time in the future.”*

#### **INSTITUTIONAL DISCLAIMER STATEMENT**

*“In the event of injury, the Kansas Tort Claims Act provides for compensation if it can be demonstrated that the injury was caused by the negligent or wrongful act or omission of a state employee acting within the scope of his/her employment.”*

## REFUSAL TO SIGN CONSENT AND AUTHORIZATION

*You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, you cannot participate in this study.*

## CANCELLING THIS CONSENT AND AUTHORIZATION

*You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose information collected about you, in writing, at any time, by sending your written request to: Maren Turner. If you cancel permission to use your information, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above*

## QUESTIONS ABOUT PARTICIPATION should be directed to:

*Maren E. Turner, MS, MA  
University of Kansas  
Department of Applied Behavioral Science  
1000 Sunnyside Avenue  
Room 4001  
Lawrence, KS 66045  
785/864-4840  
[mturner@ku.edu](mailto:mturner@ku.edu)*

*Edward K. Morris, Ph.D.  
Chair, Department of Applied  
Behavioral Science  
University of Kansas  
1000 Sunnyside Avenue  
Room 4001  
Lawrence, KS 66045  
785/864-4840  
[ekm@ku.edu](mailto:ekm@ku.edu)*

If you have any questions about your rights as a research participant you may contact the Human Subjects Committee Lawrence Campus (HSCL) office at 864-7429 or 864-7385 or write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, email [dhann@ku.edu](mailto:dhann@ku.edu) or [mdenning@ku.edu](mailto:mdenning@ku.edu).

**KEEP THIS SECTION FOR YOUR RECORDS. IF YOU WISH TO PARTICIPATE TEAR OFF THE FOLLOWING SECTION AND RETURN IT TO THE RESEARCHER(S).**

-----  
*The Effects of Social and Hair Care Support Provided by  
African American Stylists on the Number of Steps Taken by Sedentary African American Women Who Cite Hair  
Care Issues as One Barrier to Physical Activity*

HSCL # 17686

## PARTICIPANT CERTIFICATION:

**If you agree to participate in this study please sign where indicated, then tear off this section and return it to the investigator(s). Keep the consent information for your records.**

**I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study and the use and disclosure of information about me for the study.**

**I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.**

\_\_\_\_\_  
**Type/Print Participant's Name**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Participant's Signature or Parent/Guardian Signature if Participant is less than 18 years old or an adult under care of a guardian.**

## Appendix J

## Summary of Informed Consent



College of Liberal Arts &amp; Sciences

Department of Applied Behavioral Science

March 2012

## Summary of the Informed Consent Form

- **KU is conducting a 10-week walking program to encourage African American women to increase their physical activity.**
- **If you are a stylist, you will be asked to recruit 2-3 clients and refer them to the researcher. You will be asked to provide clients enrolled in the research program with encouragement and hair care support.**
- **If you are recruited by a stylist, you will be asked to do the following:**
  1. **Agree to provide the researcher with information regarding your health, weight, your interest in becoming physically active, and the type of support you receive from friends, family, and your stylist to become physically active. You will provide this information at the beginning and end of the 10 weeks.**
  2. **Wear a pedometer and record your daily steps every day during the baseline and 10-week program.**
  3. **Set a goal to increase your steps during the 10 week program.**
  4. **Understand there can be some risks associated with physical activity. Risks can include dehydration, blisters, high/low blood sugar, or over exertion resulting in a cardiovascular event.**
  5. **If you identify certain health conditions, the researcher will ask you to have your physician provide written approval before you can begin the research program.**
  6. **Stylists and participants recruited by stylists will receive incentives for their participation.**

## Appendix K

## Incentives Schedule for Customer Participants

**For Customer Participants:**

- **Cool Cloth**      **All participants will receive a cool cloth at the beginning of the 10 week program to help control sweating.**
  
- **Medical Grade Pedometer**
  
- **Gift**              **For each participant who remains in the 10 week program and turned in activity sheets on time – even if goal has not been met. The gift will be distributed by the stylists.**
  
- **\$15.00**            **Reduction in price for hair care service at your next appointment, if you have reached your daily step goal, and returned a completed activity sheet on time for the first week. Funding will be paid directly to the stylist.**
  
- **\$25.00**            **Reduction in price for hair care service at your next appointment, if you have increased your daily average of steps from baseline by at least 2000 steps by week 5, *and* returned your activity sheet on time for the fifth week. Funding will be paid directly to the stylist.**
  
- **\$50.00**            **Reduction in price for hair care service at your next appointment, if you have increased your daily average of steps from baseline by at least 3600 steps by week 8, *and* returned your activity sheet on time for the 8<sup>th</sup> week. Funding will be paid directly to the stylist**

Appendix L

Medical Clearance Form for Provider

**Patient's Name:** \_\_\_\_\_

**Date of Birth:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**Healthcare Provider Name:** \_\_\_\_\_

\_\_\_\_\_  
**Health Care Provider Office Phone Number:** (    ) \_\_\_\_\_

**Health Care Provider Office Fax Number** (    ) \_\_\_\_\_

**Please indicate below your approval or disapproval for participation in the KU 10 Week Walking Physical Activity Program.**

**I approve participation in this study and give clearance for this patient to participate**

**I DO NOT approve participation at this time.**

**Additional comments:**

**Health Provider's Signature :** \_\_\_\_\_ **Date:** \_\_\_\_\_

**( Physician, or ARNP must sign this form)**

**Thank You!!**



Appendix M  
Medical Clearance Form

To: Healthcare Provider

From: Maren E. Turner, MS, MA

Re: Participation in a KU 10-Week Walking Program

Your patient is interested in participating in a research study to evaluate the role African American hair stylists have in helping their sedentary African American female customers become more physically active. The study is being conducted by the University of Kansas (KU).

During this study, your patient will participate in a program consisting of 10 weeks of walking, with steps measured by a pedometer. Your patient will be asked to gradually increase her steps so that there is an increase of at least 2000 steps a day from the baseline to the end of the 10 weeks. The physical activity will be a low impact program to encourage sedentary African American women to achieve the level of physical activity that has been recommended to improve health for all U.S. adults. This recommendation is that adults between the ages of 18yrs- and 64 years should participate in at least 150 minutes of moderate aerobic activity each week.

Prior to participation in this study, we require that all participants complete a Physical Activity Readiness Questionnaire (PAR-Q), which is used to determine their readiness to participate in physical activity. Your patient answered yes to at least one of the questions on the PAR-Q, indicating that medical clearance is necessary prior to enrollment in our program.

Please complete the form on the reverse side of this page in its entirety and return to your patient.

If you have any questions regarding the study procedures, please contact Maren Turner at (785) 331-9310 or email me at [mturner@ku.edu](mailto:mturner@ku.edu).

Appendix N  
CURVES Pamphlet

Toolbox for Stylists: Levels 2-4  
Body Image

C U R V E S

cover



Inside cover



A majority of Americans—especially women, are overweight. As African American/Black women, however, we are more likely to be overweight than men as well as women from other ethnic groups. Why?



One reason we may be overweight is because we have a great appreciation for fuller bodies and curves. But having fuller curves may come at a cost, and can increase our risk for developing disease and premature death.

African American women have high rates of

- diabetes
- hypertension
- cancer
- high cholesterol

and other diseases related to being overweight. So what can we do?

---

Corresponding page



We can and we should continue to appreciate our bodies, no matter what size we are.

Our goal is not to tell you if you should lose weight, because *being fit is not about being thin*. But as you become more fit, you may lose weight, which will decrease your risk for developing disease and premature death.

Back Panels



The Department of Health and Human Services (DHHS) has several recommendations to help you become more fit.

#### Guidelines for Adults

For adults, the guidelines advise that:

- **Some physical activity is better than none. Inactive adults should gradually increase their level of activity. People gain some health benefits from as little as 60 minutes of moderate-intensity aerobic activity per week.**
- **For major health benefits, do at least 150 minutes (2 hours and 30 minutes) of moderate-intensity aerobic activity or 75 minutes (1 hour and 15 minutes) of vigorous-intensity aerobic activity each week. Another option is to do a combination of both. A general rule is that 2 minutes of moderate-intensity activity counts the same as 1 minute of vigorous-intensity activity.**
- **When doing aerobic activity, do it for at least 10 minutes at a time. Spread the activity throughout the week.**
- **For more health benefits, do 300 minutes (5 hours) of moderate-intensity aerobic activity or 150 minutes (2 hours and 30 minutes) of vigorous-intensity activity each week (or a combination of both). More physical activity will increase your health benefits.**
- **Muscle-strengthening activities that are moderate or high intensity should be included 2 or more days a week. These activities should work all of the major muscle groups (legs, hips, back, chest, abdomen, shoulders, and arms). Examples include lifting weights, working with resistance bands, doing sit-ups and pushups, doing yoga, and doing heavy gardening.**

#### Guidelines for Older Adults

For older adults, the guidelines advise that:

- **All older adults should avoid inactivity. Older adults who do any amount of physical activity gain some health benefits. If inactive, older adults should gradually increase their activity levels and avoid vigorous activity at first.**
- **You should follow the guidelines for adults, if possible. Older adults should do a variety of activities, including walking. Walking has been shown to provide health benefits and a low risk of injury.**
- **If you can't do 150 minutes (2 hours and 30 minutes) of activity each week, be as physically active as your abilities and condition allow.**
- **You should do balance exercises if you're at risk for falls. Examples include walking backward or sideways, standing on one leg, and standing from a sitting position several times in a row.**
- **If you have a chronic (ongoing) condition, such as heart disease, lung disease, or diabetes, talk to your doctor about whether you can do physical activity. Ask your doctor which activities are safe for you.**



## Appendix O

### RPE Scale

#### RPE Scale

<b>0-1</b>	<b>Little to no exertion; you're lying on the couch, lifting nothing heavier than a potato chip</b>
<b>2-3</b>	<b>You're moving, but it's easy and slow, like stretching or strolling; this is how you warm up your body before exercise and cool down afterwards</b>
<b>4-5</b>	<b>Your muscles are warm and you're starting to sweat; your breathing rate is slightly elevated but you can still hold a conversation while you exercise</b>
<b>6-7</b>	<b>You're working harder, but you can still take a sip from your water bottle and utter a full sentence without gasping</b>
<b>8-9</b>	<b>You're breathing hard and getting close to your maximum limit; you can only say a few words</b>
<b>10</b>	<b>This is the absolute limit of what you can do; you can't waste a breath on a single word</b>

### Brisk Walking

Brisk walking is usually defined as approximately 100 steps per minute. Please aim to walk *at least* 100 steps (or more) per minute over the next 10 weeks.

<b>10 minutes =</b>	<b>1000 Steps</b>
<b>15 minutes=</b>	<b>1500 Steps</b>
<b>20 minutes=</b>	<b>2000 Steps</b>
<b>25 minutes=</b>	<b>2500 Steps</b>
<b>30 minutes=</b>	<b>3000 Steps</b>
<b>35 minutes=</b>	<b>3500 Steps</b>
<b>40 minutes=</b>	<b>4000 Steps</b>
<b>45 minutes=</b>	<b>4500 Steps</b>
<b>50 minutes=</b>	<b>5000 Steps</b>
<b>55 minutes=</b>	<b>5500 Steps</b>
<b>60 minutes=</b>	<b>6000 Steps</b>

Appendix P

Improving Your Health Brochure

Toolbox for Stylists: Levels 2-4 (use same cover as body image)  
Neighborhood and Time

cover

# Improving Your Health

*Tips for African American Men and Women*



[www.niddk.nih.gov/publications](http://www.niddk.nih.gov/publications)

Inside

**Be More  
Physically  
Active**

Regular, moderate-intensity physical activity can be fun and help you feel great. When you share physical activity with your friends and family, it can also be a social event. Perhaps members of your church or place of worship would be interested in starting an exercise program at the place where you gather.

Make it your goal to try to do at least 30 minutes of moderate-intensity physical activity on most, preferably all, days of the week. You may need to be physically active for more than 30 minutes a day to help you lose and keep off extra weight.

**Note:** If you are a man over age 40 or a woman over age 50, or if you have chronic health problems such as heart disease, high blood pressure, diabetes, osteoporosis, or obesity, talk to your doctor before starting a vigorous physical activity program.

Beat your physical activity roadblocks!

If you  
...

Then try . . .

*Do not have child care.* Sharing physical activities such as walking, biking, or playing tag with your child each day.

*Do not have time or are too busy.* Doing 10 minutes of moderate-intensity physical activity three times a day, or putting more energy into activities with the kids.

*Do not like or do not want to exercise.* Doing something you enjoy, like dancing to the radio or planning active outings with a friend, family member, or pet.

*Do not feel safe being physically active.* Forming a group of people to walk, jog, or bike together, working out with videos in your home, or visiting a community center.

## Appendix Q

## Walking Brochure


Toolbox for Stylists: Levels 2-4  
Walking Barriers

cover



# Walking

## *A Step in the Right Direction*

 **NIDDK** *Weight-control Information Network*

### Inside

Walk for  
Your  
Health

Walking is one of the easiest ways for you to be physically active. This brochure provides you with general tips on how to create and follow a walking plan.

Walking is inexpensive, and you can walk almost anywhere and at any time. Walking may

- Give you more energy and stamina and lift your mood.
- Tone your muscles and strengthen your bones.
- Increase the number of calories your body uses.
- Lower your risk of health problems, such as high blood pressure, heart disease, high cholesterol, and type 2 diabetes.
- Give you an opportunity to actively socialize with friends and family.

The Weight-control Information Network (WIN) offers numerous free resources to help you begin working on your health and fitness goals. Visit <http://www.win.niddk.nih.gov/> to download and share this and other WIN materials.

[back to top](#)

Know  
Before  
You Go

Answer the following questions before you begin a walking program.

- Has your health care provider told you that you have heart trouble, diabetes, or asthma?
- When you are physically active, do you have pains in your chest, neck, shoulder, or arm?
- Do you often feel faint or have dizzy spells?
- Do you feel extremely breathless after you have been physically active?
- Has your health care provider







told you that you have bone or joint problems, such as arthritis?

- Are you over 50 years old and not used to doing any moderate physical activity?
- Do you smoke?
- Do you have a health problem or physical reason not mentioned here that might keep you from starting a walking program?

If you answered “yes” to any of these questions, check with your health care provider before starting a walking program.

[back to top](#)



Start  
Walking  
Now!

Leave time in your busy schedule to follow a walking program that will work for you. Keep the following points in mind:



- Choose a safe place to walk. Find a partner or group to walk with you. Encourage and support each other in committing to walking regularly even if each of you has a different fitness level or walks at a different pace.
- Wear shoes with proper arch support, a firm heel, and thick flexible soles. They will cushion your feet and absorb shock. Before you buy new shoes, walk in them in the store.
- Wear clothes that will keep you dry and comfortable. Put on fabrics that absorb sweat and remove it from your skin.
- Divide your walk into three parts. Warm up slowly, then increase your speed to a brisk walk. This means walking fast enough to elevate your heart rate while still being able to speak comfortably, concentrate, and breathe without effort. Cool down slowly.
- Stretch lightly after warm-up and cool-down.
- Spread your walking evenly throughout the week. Try to walk at least 3 days each week if you cannot walk daily. Each week, add a few minutes to your walk.
- Break up your walk into multiple sessions throughout the day if you have a busy schedule. Make sure each session is at least 10 minutes long. Some physical activity is better than none.
- To avoid stiff or sore muscles and joints, start gradually. Over several weeks, begin walking faster, going further, and taking longer walks.
- Set goals and reward yourself.
- Keep track of your progress with a walking journal or log. Record date, time, and distance.



Experts recommend at least 150 minutes each week of moderate intensity physical activity. Divide these minutes up over the week as your schedule allows. Review the guide on the back of this brochure for suggestions on beginning and gradually building your walking program. The more you walk, the more health benefits you may gain!

[back to top](#)



Walk  
Safely

Stretch It Out!

Stretch gently after you warm up your muscles, and the stretches listed below. Do not bounce or hold your slow movements and stretch only as far as you feel c



Step Right This Way



Side Reach

**Reach one arm over your head and to the side. Keep steady and your shoulders straight to the side. Hold 10 seconds and repeat on the other side.**

Wall Push

**Lean your hands on a wall and place your feet about 2 feet away from the wall. Bend one knee and point it toward the wall. Keep your back leg straight with your foot flat and your toes pointed straight ahead. Hold for 10 seconds and repeat with the other leg.**



Knee Pull

**Lean your back against a wall. Keep your head, hips, and ankles in a straight line. Pull one knee toward your chest, hold for 10 seconds, and then repeat with the other leg.**

Leg Curl

**Pull your right foot toward your buttocks with your knee bent. Stand straight and keep your bent knee pointing straight ahead. Hold for 10 seconds and repeat with your other foot.**



Hamstring Stretch

**Sit on a sturdy bench or hard surface so that one leg is extended straight out in front of you with your toes pointing up. Keep your other foot flat on the floor. Hold for 10 seconds, and if you feel a stretch in the back of your thigh, change sides and repeat. If you do not feel a stretch, hold for 30 seconds until you feel a stretch.**

[back to top](#)



Walking with proper form is very important.


- Walk with your chin up and your shoulders back.
- Let the heel of your foot touch the ground first.
- Walk with your toes pointed forward.
- Swing your arms naturally as you walk.

Try to walk daily. If you are walking fewer than three times a week, increase your walking frequency over a period of two weeks before increasing the pace and frequency.





[back to top](#)




Weight-control Information Network

**1 Win Way**  
Bethesda, MD 20892-3665  
Phone: 202-828-1025  
Fax: 202-828-1028  
Toll-free number: 1-877-946-4627  
Email: [win@info.niddk.nih.gov](mailto:win@info.niddk.nih.gov)  
Internet: <http://www.win.niddk.nih.gov>

The Weight-control Information Network (WIN) is a part of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), which is the Federal Government's lead agency responsible for research on diabetes, nutrition and obesity.

Publications produced by WIN are reviewed by both scientists and health care experts. This publication is not copyrighted. WIN encourages you to duplicate and distribute as many copies as desired.



NIH Publication No. 07-4155  
September 2004  
Updated September 2010  
E-Text updated September 2010

Contact Us

Toll free: 1-877-946-4627 Fax: (202) 828-1028 E-mail: [win@info.niddk.nih.gov](mailto:win@info.niddk.nih.gov)  
Weight-control Information Network, 1 WIN Way, Bethesda, MD 20892-3665

---

## Appendix R

## Demographic Profile for Stylists

1. Name: \_\_\_\_\_
2. Home Address: \_\_\_\_\_
3. Are you a licensed cosmetologist? \_\_\_\_\_ If so, which state? \_\_\_\_\_
4. What year were you first licensed? \_\_\_\_\_
5. How old were you on your last birthday? \_\_\_\_\_ years
6. When is your birthday? \_\_\_\_/\_\_\_\_/\_\_\_\_
7. What is the highest grade (or year) of regular school you have finished?  

Elementary School _____	Vocational School _____
High School _____	College _____
Graduate School _____	
8. What is the highest degree you earned?  

High school diploma or GED _____
Vocational School _____
Associate degree (junior college) _____
Bachelor's degree _____
Master's degree _____
Professional (MD, JD, DDS) _____
Other _____
None of the above _____
9. Please indicate if you are:  

<input type="checkbox"/> Married
<input type="checkbox"/> Widowed
<input type="checkbox"/> Living with significant other
<input type="checkbox"/> Divorced
<input type="checkbox"/> Separated
<input type="checkbox"/> Never married/single
<input type="checkbox"/> Other
10. Which of the following categories best describes your annual household income from all sources?  

<input type="checkbox"/> Less than \$5,000
<input type="checkbox"/> \$5,000 to less than \$10,000
<input type="checkbox"/> \$10,000 to less than \$15,000
<input type="checkbox"/> \$15,000 to less than \$20,000
<input type="checkbox"/> \$20,000 to less than \$25,000
<input type="checkbox"/> \$25,000 to less than \$35,000
<input type="checkbox"/> \$35,000 to less than \$50,000
<input type="checkbox"/> \$50,000 to less than \$75,000
<input type="checkbox"/> Over \$75,000
<input type="checkbox"/> Not sure
11. What type of salon do you work in (please check all that apply)?  

<input type="checkbox"/> I am the owner	<input type="checkbox"/> I work for a franchise (name: _____)
<input type="checkbox"/> I work from home	<input type="checkbox"/> I rent/own my own booth
<input type="checkbox"/> I work in a small salon (less than 3 operators)	
<input type="checkbox"/> I work in a medium size salon (4-6 operators)	
<input type="checkbox"/> I work in a large size salon (7 or more operators)	

12. Salon Address(es): \_\_\_\_\_
13. Do you work in more than one salon? \_\_\_\_\_
14. If you answered yes to question 14, please indicate how often you work in each salon? \_\_\_\_\_
15. What type of styles do you specialize in?
- \_\_\_\_\_ Short, natural, heat straightened hair
  - \_\_\_\_\_ Long, natural, heat straightened hair
  - \_\_\_\_\_ Short, chemically straightened hair
  - \_\_\_\_\_ Long, chemically straightened hair
  - \_\_\_\_\_ Braided, afro, twisted, locked, weaved hair
  - \_\_\_\_\_ Other (please specify) \_\_\_\_\_
16. Do you plan to leave the area within the next 3 months? \_\_\_\_\_



## Appendix S

## Demographic Profile for Customer Participants

1. Name: \_\_\_\_\_
2. Home Address: \_\_\_\_\_
3. How old were you on your last birthday? \_\_\_\_ years
4. When is your birthday? \_\_\_\_ / \_\_\_\_ / \_\_\_\_
5. What type of hairstyle do you wear now?
  - \_\_\_\_ Short, natural, heat straightened hair
  - \_\_\_\_ Long, natural, heat straightened hair
  - \_\_\_\_ Short, chemically straightened hair
  - \_\_\_\_ Long, chemically straightened hair
  - \_\_\_\_ Braided
  - \_\_\_\_ Two strand twist
  - \_\_\_\_ Afro
  - \_\_\_\_ Weaved
  - \_\_\_\_ Locked
  - \_\_\_\_ Combination (please describe)
6. What is the name of your hair stylist? \_\_\_\_\_
7. Do you have more than one stylist? \_\_\_\_\_ If so, name(s) \_\_\_\_\_
8. Do you know anyone else in the study? \_\_\_\_\_
9. What is the highest grade (or year) of regular school you have finished?
  - Elementary School \_\_\_\_\_ Vocational School \_\_\_\_\_
  - High School \_\_\_\_\_ College \_\_\_\_\_
  - Graduate School \_\_\_\_\_
10. What is the highest degree you earned?
  - High school diploma or GED \_\_\_\_\_
  - Vocational School \_\_\_\_\_
  - Associate degree (junior college) \_\_\_\_\_
  - Bachelor's degree \_\_\_\_\_
  - Master's degree \_\_\_\_\_
  - Professional (MD, JD, DDS) \_\_\_\_\_
  - Other \_\_\_\_\_
  - None of the above \_\_\_\_\_
11. Please indicate if you are:
  - \_\_\_\_ Married
  - \_\_\_\_ Widowed
  - \_\_\_\_ Living with significant other
  - \_\_\_\_ Divorced
  - \_\_\_\_ Separated
  - \_\_\_\_ Never married/single
  - \_\_\_\_ Other
12. Which of the following categories best describes your annual household income from all sources?
  - \_\_\_\_ Less than \$5,000
  - \_\_\_\_ \$5,000 to less than \$10,000
  - \_\_\_\_ \$10,000 to less than \$15,000
  - \_\_\_\_ \$15,000 to less than \$20,000
  - \_\_\_\_ \$20,000 to less than \$25,000
  - \_\_\_\_ \$25,000 to less than \$35,000
  - \_\_\_\_ \$35,000 to less than \$50,000
  - \_\_\_\_ \$50,000 to less than \$75,000
  - \_\_\_\_ Over \$75,000
  - \_\_\_\_ Not sure

## Appendix T

### Protocol Approval Sheet for Stylists

**To be placed on letterhead**

**Dear Stylist:**

**Thank you for agreeing to review the proposed research program. Please answer each question carefully and return the form to me in the provided self-addressed envelope. I will provide you with \_\_\_\_\_ once I have received the completed form.**

**Attached to this letter you will find the following for your review:**

- **A brief survey**
- **A draft copy of the recruitment flier**
- **A draft copy of the Activity Sheet for customer women**
- **A draft copy of the Activity Sheet for stylists**
- **A draft copy of the informed consent form**
- **A draft example of a graph**

## Appendix T

### Questions for Stylists: Review/Survey of Protocol

#### Questions about Recruitment Flier

**Is the flier easy to understand?**

**Does it give enough information to generate interest in the research program?**

**Is there anything on the flier that should be deleted?**

**Is there anything on the flier that should be included?**

**Other comments?**

#### Questions about the Activity Sheet for customers

**Is the Activity Sheet easy to understand? Easy to use?**

**Do you think this is the best way for women to keep track of their daily steps?**

**Is there a better way for women to keep track of their daily steps?**

**Other comments?**

#### Questions about the Activity/Attendance Sheets for Stylists

**Are the Activity/Attendance Sheets easy to understand?**

**Are they easy to use?**

**Do you believe you can fill out the sheet every week?**

#### Questions about the graphs

**Are the graphs easy to understand?**

**Do you think it can be motivating for women to see their progress each week?**

#### General Questions

**Do you think African American and Black women could benefit from becoming more physically active?**

**Do you think that some African American and Black women cite hair care issues as one reason they do not participate in physical activity?**

**Do you think stylists can help African American and Black women to become more physically active?**

**Before women (your clients) can join the 10 week program, they will have to agree to the following:**

- **Provide general health information before and after the 10 weeks**
- **Indicate how much social support/encouragement they receive from friends/family/stylist to exercise before and after the 10 weeks**
- **Set a goal to increase their steps over the 10 weeks**
- **Continue with regular hair care appointments—at a minimum.**
- **Wear a pedometer *every day* and record their steps**
- **Communicate their step counts to the researcher every week**

**Do you think the 10-week walking program described above is a good idea?**



What type of incentives or gifts from the researcher would encourage stylists to participate in this research program and fill out the activity sheets each week? Please rank.

- |                        |                                       |
|------------------------|---------------------------------------|
| _____ Movie Tickets    | _____ Discounts on hair care products |
| _____ T-Shirts         | _____ Gas Card                        |
| _____ Cash             | _____ No gifts necessary              |
| _____ Hair Care Pillow | _____ Other (please describe)         |

Would the following incentives at the beginning of the 10 weeks program from the researcher encourage your customers to remain in the 10 week walking program and achieve their goals?

- \_\_\_\_\_ t-shirts, water bottles, and/or cool cloths, etc. for everyone
- \_\_\_\_\_ Women who have reached their goals and turned in their activity sheets the end of the 1<sup>st</sup>, 5<sup>th</sup>, 8<sup>th</sup> weeks will receive a free hair care appointment with their stylist (\$15,00 , \$25.00 and \$50.00 per appointment, respectively). The funds will be paid directly to the respective stylist. At the end of the 10th week, participants will receive a hair care pillow.

At the end of the 10 weeks, how would you like to celebrate the successes of the customers who participated in the program and met their goal?

Would you like to remain in the research program and recruit 3 participants?

Are there other stylists that I should contact who might also like to participate?

Thank you for your time. Please be sure to mail this survey to the researcher in the envelope provided.



## Appendix U

## TTM Survey

**Physical Activity: Stages of Change – Short Form**

**Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities.**

**Question:**

**Do you exercise or engage in physical activity regularly according to that definition?**

- **Yes, I have been for MORE than 6 months.**
- **Yes, I have been for LESS than 6 months.**
- **No, but I intend to in the next 30 days.**
- **No, but I intend to in the next 6 months.**
- **No, and I do NOT intend to in the next 6 months.**

**Scoring**

- **answered with choice #1: stage = Maintenance**
- **answered with choice #2: stage = Action**
- **answered with choice #3: stage = Preparation**
- **answered with choice #4: stage = Contemplation**
- **answered with choice #5: stage = Precontemplation**

## Appendix V

## Decisional Balance

Decisional Balance Scale Name: \_\_\_\_\_

Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, and any other activity in which the exertion is at least as intense as these activities.

Please rate how important each of these statements is in your decision of whether to be physically active.

In each case, think about how you feel right now, not how you have felt in the past or would like to feel.

Scale

1= not at all

2 = slightly important

3 = moderately important

4 = very important

5= extremely important

I would have more energy for my family and friends if I were regularly physically active.	1	2	3	4	5
Regular physical activity would help me relieve tension.	1	2	3	4	5
I think I would be too tired to do my daily work after being physically active.	1	2	3	4	5
I would feel more confident if I were regularly physically active.	1	2	3	4	5
I would sleep more soundly if I were regularly physically active.	1	2	3	4	5
I would feel good about myself if I kept my commitment to be regularly physically active.	1	2	3	4	5
I would find it difficult to find a physical activity that I enjoy and that is not affected by bad weather.	1	2	3	4	5
I would like my body better if I were regularly physically active.	1	2	3	4	5
It would be easier for me to perform routine physical tasks if I were regularly physically active.	1	2	3	4	5
I would feel less stressed if I were regularly physically active.	1	2	3	4	5
I feel uncomfortable when I am physically active because I get out of breath and my heart beats very fast.	1	2	3	4	5
I would feel more comfortable with my body if I were regularly physically active.	1	2	3	4	5
Regular physical activity would take too much of my time.	1	2	3	4	5
Regular physical activity would help me have a more positive outlook on life.	1	2	3	4	5
I would have less time for my family and friends if I were regularly physically active.	1	2	3	4	5
At the end of the day, I am too exhausted to be physically active.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

## Appendix W

## Self-Efficacy Scale

Self Efficacy Scale Name: \_\_\_\_\_

## EXERCISE CONFIDENCE SURVEY

Below is a list of things people might do while trying to increase or continue regular exercise. We are interested in exercises like running, swimming, brisk walking, bicycle riding, or aerobics classes.

Whether you exercise or not, please rate how confident you are that you could really motivate yourself to do things like these consistently, for at least six months.

Please circle one number for each question.

How sure are you that you can do these things? know I cannot	I know I can			Maybe I can		I
	1	2	3	4	5	
Get up early, even on weekends, to exercise.	1	2	3	4	5	
Stick to your exercise program after a long, tiring day at work.	1	2	3	4	5	
Exercise even though you are feeling depressed.	1	2	3	4	5	
Set aside time for a physical activity program; that is, walking, jogging, swimming, biking, or other continuous activities for at least 30 minutes, 3 times per week.	1	2	3	4	5	
Continue to exercise with others even though they seem too fast or too slow for you.	1	2	3	4	5	
Stick to your exercise program when undergoing a stressful life change (e.g., divorce, death in the family, moving).	1	2	3	4	5	
Attend a party only after exercising.	1	2	3	4	5	
Stick to your exercise program when your family is demanding more time from you.	1	2	3	4	5	
Stick to your exercise program when you have household chores to attend to.	1	2	3	4	5	
Stick to your exercise program even when you have excessive demands at work.	1	2	3	4	5	
Stick to your exercise program when social obligation are very time consuming.	1	2	3	4	5	
Read or study less in order to exercise more.	1	2	3	4	5	

## Appendix X

## Intake Questionnaire for CPs

**Demographic Profile for Customer Participants**

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

How old were you on your last birthday? \_\_\_\_ years

When is your birthday? \_\_\_\_/\_\_\_\_/\_\_\_\_

What type of hairstyle do you wear now?

\_\_\_\_ Short, natural, heat straightened hair

\_\_\_\_ Long, natural, heat straightened hair

\_\_\_\_ Short, chemically straightened hair

\_\_\_\_ Long, chemically straightened hair

\_\_\_\_ Braided

\_\_\_\_ Two strand twist

\_\_\_\_ Afro

\_\_\_\_ Weaved

\_\_\_\_ Locked

\_\_\_\_ Combination (please describe)

\_\_\_\_\_  
\_\_\_\_\_

What is the name of your hair stylist? \_\_\_\_\_

Do you have more than one stylist? \_\_\_\_\_ If so, name(s) \_\_\_\_\_

Do you know anyone else in the study? \_\_\_\_\_

What is the highest grade (or year) of regular school you have finished?

Elementary School \_\_\_\_\_ Vocational School \_\_\_\_\_

High School \_\_\_\_\_ College \_\_\_\_\_

Graduate School \_\_\_\_\_

What is the highest degree you earned?

High school diploma or GED \_\_\_\_\_

Vocational School \_\_\_\_\_

Associate degree (junior college) \_\_\_\_\_

Bachelor's degree \_\_\_\_\_

Master's degree \_\_\_\_\_

Professional (MD, JD, DDS) \_\_\_\_\_

Other \_\_\_\_\_

None of the above \_\_\_\_\_

Please indicate if you are:

\_\_\_ Married

\_\_\_ Widowed

\_\_\_ Living with significant other

\_\_\_ Divorced

\_\_\_ Separated

\_\_\_ Never married/single

\_\_\_ Other

Which of the following categories best describes your annual household income from all sources?

\_\_\_ Less than \$5,000

\_\_\_ \$5,000 to less than \$10,000

\_\_\_ \$10,000 to less than \$15,000

\_\_\_ \$15,000 to less than \$20,000

\_\_\_ \$20,000 to less than \$25,000

\_\_\_ \$25,000 to less than \$35,000

\_\_\_ \$35,000 to less than \$50,000

\_\_\_ \$50,000 to less than \$75,000

\_\_\_ Over \$75,000

\_\_\_ Not sure



## Appendix Y

### PAR-Q Form

#### Physical Activity Readiness Questionnaire (PAR-Q) and You

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

If you are planning to become much more physically active than you are now, start by answering the seven 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. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

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

Check YES or NO:

YES NO

- \_\_\_ \_\_\_ 1. Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
- \_\_\_ \_\_\_ 2. Do you feel pain in your chest when you do physical activity?
- \_\_\_ \_\_\_ 3. In the past month, have you had chest pain when you were not doing physical activity?
- \_\_\_ \_\_\_ 4. Do you lose your balance because of dizziness or do you ever lose consciousness?
- \_\_\_ \_\_\_ 5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
- \_\_\_ \_\_\_ 6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
- \_\_\_ \_\_\_ 7. Do you know of any other reason why you should not do physical activity?

If you answered YES to one or more questions

Talk to your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- 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.

If you honestly answered NO to all of the questions you can be reasonably sure that you can:

- 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

Delay becoming much more active:

! 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 be pregnant – talk to your doctor before you start becoming more active.

Please note: If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

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

# Appendix AA

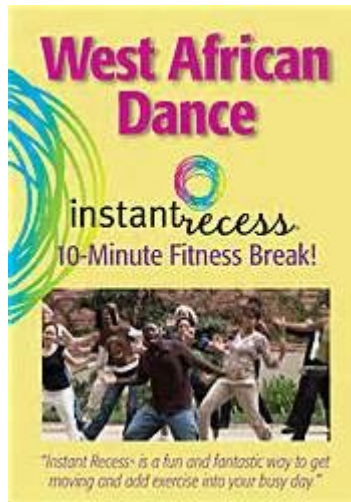
## Cool Cloth





Appendix BB

Instant Recess DVD



## Appendix CC

My Hairdo Pillow is the Solution to Maintaining a Freshly Styled Hairdo While Allowing for a Comfortable, Healthy Night's Sleep

*Invented for Black Women by a Black Woman*



My Hairdo Pillow



Birmingham, AL (BlackNews.com) – Black women spend a fortune having their hair styled every week to maintain a salon perfect hairdo. They look great walking out of the salon, but maintaining that just styled perfection requires nights of uncomfortable, unhealthy sleeping positions and mornings trying to restyle the areas that inevitably get flattened. Ann Denson-Willis had spent one too many mornings gorging on coffee and painkillers to make up for the lousy nights sleep and bursitis in her elbow she'd gotten trying to avoid messing up her hair, so she took the problem to task ultimately creating My Hairdo Pillow.

“I’d had enough. I used to get my hair done every Thursday and if I wanted my fabulous style to last at least the weekend, I had to sleep in creative (awkward and always uncomfortable) positions. I’d wake up with aches and pains, rarely got a good night sleep and inevitably ruined my hairstyle within a day of having spent a fortune at the salon. I was desperate to ease my pain and save my mane. I knew sleeping on my elbow worked best to preserve my style, so I started playing around with a rolled up towel and different ways of bending and securing it. With the help of a company in New Mexico, I built a soft, fleece covered, flexible foam prototype with an adjustable strap that would eventually become My Hairdo Pillow.”

Designed with the elbow and arm in mind, the unique shape of My Hairdo Pillow mimics the natural sleep position, comfortably cradling the face, chin, neck and shoulder. Users are able to maintain their salon hair style, while awaking refreshed and renewed. Time spent correcting “bed head” is minimized and users often require fewer salon maintenance visits because My Hairdo Pillow allows curls relax in place rather than unravel or dishevel.

My Hairdo Pillow has been evaluated by Birmingham, AL Chiropractor Morgan Wood, who feels that “the therapeutic design of My Hairdo Pillow supports the head and neck for a proper sleeping posture.” Additionally, because the ear can fit in the cavity formed by the pillow, hearing aid wearers can sleep comfortably with their devices in place avoiding the feedback or ringing that often keeps them from sleeping safely with their hearing aids on.

My Hairdo Pillow comes in soft and firm density and can be purchased online for \$39.99 plus shipping. Wholesale pricing is available. For more information or to purchase My Hairdo Pillow, contact Leslie Guria / 770-573-4694 / [leslie@footinthedoormarketing.com](mailto:leslie@footinthedoormarketing.com), or visit [www.myhairdopillow.com](http://www.myhairdopillow.com)

## Appendix DD

### Social Support Survey

Name: \_\_\_\_\_

#### Social Support Survey (pre/post)

**Social support for physical activity scale**

The following questions refer to social support for your physical activity.

The following is a list of things people might do or say to someone who is trying to do physical activity regularly. Please read and answer every question. If you are not physically active, then some of the questions may not apply to you.

Please rate each question *three times*. Under “Family,” rate how often anyone living in your household has said or done what is described during the past three months. Under “Friends,” rate how often your friends, acquaintances, or coworkers have said or done what is described during the past three months. Under “Stylist” rate how often your stylists encouraged you to participate in the 10 week walking program.

Please write *one* number from the following rating scale in each space:

- 1 = none
- 2 = rarely
- 3 = a few times
- 4 = often
- 5 = very often
- 0 = does not apply

Family Friends Stylist

- |  |       |       |       |
|--|-------|-------|-------|
| 1. Did physical activities with me.  | _____ | _____ | _____ |
| 2. Offered to do physical activities with me.  | _____ | _____ | _____ |
| 3. Gave me helpful reminders to be physically active (i.e., “Are you going to do your activity tonight?”). | _____ | _____ | _____ |
| 4. Gave me encouragement to stick with my activity program.  | _____ | _____ | _____ |
| 5. Changed their schedule so we could do physical activities together.                                     | _____ | _____ | _____ |
| 6. Discussed physical activity with me.  | _____ | _____ | _____ |
| 7. Complained about the time I spend doing physical activity.  | _____ | _____ | _____ |
| 8. Criticized me or made fun of me for doing physical activities.  | _____ | _____ | _____ |
| 9. Gave me rewards for being physically active (i.e., gave me something I liked).                          | _____ | _____ | _____ |
| 10. Planned for physical activities on recreational outings.   | _____ | _____ | _____ |
| 11. Helped plan events around my physical activities.  | _____ | _____ | _____ |
| 12. Asked me for ideas on how they can be more physically active.  | _____ | _____ | _____ |
| 13. Talked about how much they like to do physical activity.   | _____ | _____ | _____ |

*Added questions by researcher for post survey:*

- 14 Please tell me which family/friends supported you? How did they support you?
- 15 Which family/friends provided barriers? What type of barriers did they provide to your walking goals?
- 16 How did your stylist provide support to you? Did your stylist provide any barriers to your walking goals?

## Appendix EE

## IPAQ

Name: \_\_\_\_\_

## IPAQ Survey

Participant Name/Date: \_\_\_\_\_

**VIGOROUS PHYSICAL ACTIVITY**

First we are going to ask you some questions about your participation in vigorous or “hard” activities. These are activities that take hard physical effort, make you breathe much harder than normal, and cause heavy sweating.

1. In general how many days per week do you do vigorous activities like running, heavy lifting, aerobics, or fast bicycling for at least 10 minutes in a row? Do not count any vigorous activities you did for less than 10 minutes in a row. Assume that one week is seven (7) days.

CHECK ONLY ONE ANSWER

- |  |  |
|--|--|
| <input type="checkbox"/> 0 Days per week | <input type="checkbox"/> 4 Days per week |
| <input type="checkbox"/> 1 Day per week  | <input type="checkbox"/> 5 Days per week |
| <input type="checkbox"/> 2 Days per week | <input type="checkbox"/> 6 Days per week |
| <input type="checkbox"/> 3 Days per week | <input type="checkbox"/> 7 Days per week |

2. On the days that you do vigorous activities, how much time do you usually spend doing them? Only count the time that you spend doing vigorous activity for at least 10 minutes in a row.

CHECK ONLY ONE ANSWER

- I do not do vigorous activity for more than 10 minutes in a row
- 10-15 minutes per day
- 15-30 minutes per day
- 30-45 minutes per day
- 45-60 minutes per day
- Over 60 minutes per day

**DAILY WALKING**

Next we are going to ask you about your daily walking.

3. In general, how many days per week do you walk for at least 10 minutes in a row?

Think about all the walking you do during the day, including walking for exercise, walking to get to places (transportation), walking at work or home, or any other walking that you do during the day. Do not count any walking that you do for less than 10 minutes in a row. CHECK ONLY ONE ANSWER

- |  |  |
|--|--|
| <input type="checkbox"/> 0 Days per week | <input type="checkbox"/> 4 Days per week |
| <input type="checkbox"/> 1 Day per week  | <input type="checkbox"/> 5 Days per week |
| <input type="checkbox"/> 2 Days per week | <input type="checkbox"/> 6 Days per week |
| <input type="checkbox"/> 3 Days per week | <input type="checkbox"/> 7 Days per week |

4. On the days that you walk, how much time do you usually spend walking? Only count the time that you spend walking for at least 10 minutes in a row. CHECK ONLY ONE ANSWER

- I do not walk for more than 10 minutes in a row
- 10-15 minutes per day
- 15-30 minutes per day
- 30-45 minutes per day
- 45-60 minutes per day
- Over 60 minutes per day

5. Of the time you spend walking for at least 10 minutes in a row, how much of that time is spent in brisk walking that increases your heart rate and breathing faster than normal? CHECK ONLY ONE ANSWER

- I do not do walk briskly for more than 10 minutes in a row
- 10-15 minutes per day
- 15-30 minutes per day
- 30-45 minutes per day
- 45-60 minutes per day
- Over 60 minutes per day

**OTHER MODERATE PHYSICAL ACTIVITY**

Last, we are going to ask you about your participation in moderate activities other than walking. These are activities that take some physical effort, and increase your heart rate and breathing above resting levels, but is not as hard as vigorous activity. Please do not include walking in any of your answers about moderate activity.

6. In general, how many days per week do you do moderate activities like carrying light loads, playing doubles tennis, or regular bicycling, *for at least 10 minutes in a row*. Assume that one week is seven (7) days. CHECK ONLY ONE ANSWER

- |  |  |
|--|--|
| <input type="checkbox"/> 0 Days per week | <input type="checkbox"/> 4 Days per week |
| <input type="checkbox"/> 1 Day per week  | <input type="checkbox"/> 5 Days per week |
| <input type="checkbox"/> 2 Days per week | <input type="checkbox"/> 6 Days per week |
| <input type="checkbox"/> 3 Days per week | <input type="checkbox"/> 7 Days per week |

7. On the days that you do other moderate activities, how much time do you usually spend doing them? Only count the time that you spend doing moderate activity *for at least 10 minutes in a row*. CHECK ONLY ONE ANSWER

- |  |  |
|--|--|
| <input type="checkbox"/> I do not do moderate activity for more than 10 minutes in a row |  |
| <input type="checkbox"/> 10-15 minutes per day   | <input type="checkbox"/> 15-30 minutes per day |
| <input type="checkbox"/> 30-45 minutes per day   | <input type="checkbox"/> 45-60 minutes per day |
| <input type="checkbox"/> Over 60 minutes per day   |  |

## Appendix FF

### Social Validity Questionnaires

Thank you for completing the KU 10 Week Walking Program. Please take a few minutes to give the researcher your feedback on the Program.

Why did you join the 10 Week Program?

- |  |   |
|--|---|
| <input type="checkbox"/> Lose Weight   | <input type="checkbox"/> Invitation from a friend |
| <input type="checkbox"/> Stress Relief | <input type="checkbox"/> Spiritual Reasons        |
| <input type="checkbox"/> Enjoy Walking | <input type="checkbox"/> Better Sleep             |

Other: \_\_\_\_\_

What benefits did you receive from participating in the 10 Week Program?

- |   |  |
|---|--|
| <input type="checkbox"/> Lost Weight                            | <input type="checkbox"/> Changed My Diet             |
| <input type="checkbox"/> Less Stress                            | <input type="checkbox"/> Spiritual Gains             |
| <input type="checkbox"/> Increased Time with family/<br>Friends | <input type="checkbox"/> Overall Healthier Lifestyle |
| <input type="checkbox"/> Better Sleep                           |  |

Other: \_\_\_\_\_

Would you recommend this program to other stylists? Why/Why not?

Will you continue to walk at least 150 minutes per week? If so, can I check in with you once every month for the next 6 months to see how you are doing?

Are you still interested in participating in Study 3, by recruiting customers and providing them with hair care support while they go through the 10 week program?

Please give the researcher feedback on the research process. Again, check all that apply:

Baseline: baseline was used to determine your average daily activity level.

Baseline Period

- The baseline period was explained well. I understood what to expect.  
 The baseline period was not well explained. I found it confusing.

What advice about the baseline period would you give the researcher for future research studies?  
 What advice would you give a participant about the baseline period?

Length of Baseline

- The length of the baseline period was shorter than I expected.  
 The length of the baseline period was longer than I expected.

\_\_\_\_\_ The length of the baseline period was about what I expected.

What advice would you give the researcher about the length of the baseline period for future research studies?

What advice would you give a participant about the length of the baseline period?

#### Reporting Data (Steps)

\_\_\_\_\_ I found it hard to keep up with my steps and report them each day

\_\_\_\_\_ I found it easy to keep up with my steps and report them each day

What advice would you give the researcher about reporting data for future research studies?

What advice would you give participants in future research studies?

#### Pedometer

\_\_\_\_\_ I found it easy to remember to wear my pedometer each day.

\_\_\_\_\_ I found it hard to remember to wear my pedometer each day.

What advice would you give the researcher about the pedometer for future research studies?

What advice would you give participants about the pedometer in future research studies?

#### Walking Program: The 10 Week Program

##### 10 Week Program

\_\_\_\_\_ The 10 Week Walking Program was explained well. I knew what to expect.

\_\_\_\_\_ The 10 Week Walking Program was not well explained. I found it confusing at times.

*What advice would you give the researcher about how to explain the 10 week program?*

*What advice would you give future participants about what to expect with the 10 week program?*

#### Activity Sheets

\_\_\_\_\_ The Activity Sheets were easy to use. I had no problems.

\_\_\_\_\_ The Activity Sheets were hard to use. I had problems.

\_\_\_\_\_ I had no problem remembering to mail my Activity Sheet each week.

\_\_\_\_\_ I found it hard to remember to mail my Activity Sheet each week.

*What advice would you give the researcher about how to collect weekly data from participants?*

*What advice would you give to participants about recording data on a weekly basis?*

#### Weekly Goals

\_\_\_\_\_ I would have preferred more help from the researcher in setting my weekly Walking goal

\_\_\_\_\_ I enjoyed setting my own weekly walking goals.

\_\_\_\_\_ I could have walked more than 150 minutes per week.

*What advice would you give the researcher about setting and meeting weekly walking goals of at least 150 minutes?*

*What advice would you give a participant about setting and meeting weekly walking goals of at least 150 minutes*

## Social Validity Survey for CPs

Name: \_\_\_\_\_

## Post Social Validity Survey

- What did you like about the KU 10 Week Walking Program (check all that apply):

<input type="checkbox"/> Length of Time	<input type="checkbox"/> Support provided by Stylists
<input type="checkbox"/> Helping to Solve a Health Problem	<input type="checkbox"/> Recognition that stylists are important
<input type="checkbox"/> Lost Weight	<input type="checkbox"/> Learned New Things
<input type="checkbox"/> Created a New Hairstyle	<input type="checkbox"/> Health Benefits
<input type="checkbox"/> Met New Friends	<input type="checkbox"/> Reached My Goals
<input type="checkbox"/> Free Gifts	<input type="checkbox"/> Cool Cloth
<input type="checkbox"/> Activity Video	<input type="checkbox"/> Support from the researcher
<input type="checkbox"/> Baseline	<input type="checkbox"/> Other

---

- Did you achieve all of your goals?

Yes  No (please explain)

---

- Did you change your hairstyle during the 10 Week Walking Program?

Yes (please explain)  No (please explain)

---

- Do you think this program can help women become more physically active if they wear the following hairstyles (check all that apply):

Short, natural, heat straightened hair  
 Long, natural, heat straightened hair  
 Short, chemically straightened hair



Long, chemically straightened hair

Braided Hair

Afro Hair

Twisted Hair

Locked Hair

Weaved Hair

Combination Hairstyle

- Would you recommend this program to friends or colleagues?

Yes

No (please explain)

---

- Would you change anything about the 10 Week Walking Program (check all that apply)?

Shorter Time (less than 10 Weeks)

Change the Activity Sheet

More Time (more than 10 Weeks)

Use Text instead of Activity Sheet

More contact from the stylist

Use EM instead of Activity Sheet

Less contact from the stylist

Need better explanation of Program

More contact from the researcher

Needed more information about

Less contact from the research

the program

Baseline

Wearing a pedometer

Better incentives

More questionnaires

Being Weighed

Fewer questionnaires

Other (please explain) \_\_\_\_\_

- Do you have any general comments or advice for the researcher?