

A Pilot Study to Examine the Impact of a 7-day Gratitude Journal
on Perceptions of Physical Activity and Happiness in the Workplace.

by

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A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Approved April 2014 by the
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May 2014

ABSTRACT

Introduction: Less than half of U.S. adults meet the aerobic physical activity guidelines to exercise at least 150 minutes a week. An individual's decision to be physically active is influenced by their perceptions of physical activity. To address perceptions, interventions need to be implemented where adults spend one third of their day; the workplace. A number of physical activity interventions have been conducted and few have been successful at improving physical activity; therefore, there is a need to explore novel approaches to improve physical activity in the worksite. The purpose of this pilot study was to examine the impact of a seven-day gratitude intervention on perceptions of physical activity and happiness in the workplace.

Method: Full-time employees at two worksites participated in a seven-day online journaling study. Participants were randomized into the intervention (gratitude) or control group and were assessed for perceptions of physical activity and happiness at baseline, immediate post-test (day 7) and one-week follow-up (day 14).

Results: Results of this study indicate that the seven-day gratitude intervention may not significantly improve perceptions of physical activity or increase happiness. Future research should consider assessing the individual's readiness for change at baseline, increasing the length of the intervention, testing participant level of gratitude at baseline and employing a larger sample size.

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CHAPTER 1

INTRODUCTION

According to the Centers for Disease Control and Prevention (2011), less than half of U.S. adults report meeting the guideline of 150 minutes or more of aerobic physical activity per week. Americans are spending a majority of their time in sedentary activities such as watching television, gaming, and computer use. Sadly, 32.4% of adult men and women report absolutely no engagement in physical activity (Physical Activity, 2013a).

Physical activity or lack thereof, is a public health concern. One of the Healthy People 2020 objectives is to increase the proportion of adults who engage in the recommended amount of aerobic physical activity each week by 10% (Physical Activity, 2013b). To achieve this objective, programs to increase physical activity are being implemented nationally, locally, and on an individual level in an effort to increase the implementation and adherence to an active lifestyle. The individual adoption of a physically active lifestyle is difficult to achieve and the long-term maintenance of this lifestyle can be even more challenging.

An individual's decision to adopt and maintain a physically active lifestyle is influenced by cultural, demographic, psychological, and social experiences (Allen & Morey, 2010). Some of the most influential variables leading to increase physical activity are fewer perceived barriers and greater perceived benefits (Dominick & Morey, 2008). If an individual perceives there to be significant barriers and little benefit they will be less likely to partake in physical activity. Identifying and understanding an individual's perceptions of the behavior is the first and most important step to facilitating behavior

change. Innovative physical activity programs and strategies addressing this concern are limited in the health promotion field and in need of an appropriate setting for implementation.

As a way to improve the number of people that participate in physical activity, physical activity programs must also be implemented in the workplace. Given that adults spend one third of each day at work, the worksite is an opportune setting in which to promote physical activity in adults. The World Health Organization considers the workplace one of the “priority settings for health promotion in the 21st century” (Workplace, n.d.). Employee’s physical, mental, social, and economic well-being is influenced by the workplace. It is an ideal setting for implementing and supporting health promotion programs to a large audience (Workplace, n.d.). A number of interventions have been conducted and few have been successful at improving physical activity levels. Therefore, there is a need to explore novel approaches to improve physical activity at the worksite.

Gratitude is a “feeling of appreciation or thanks” (Gratitude, n.d.). It generates immediate and long-term effects; as an act or state of being, it is an avenue to happiness, optimism and fulfillment of life. Happiness has been associated with health, love, prosperity and an abundance of other positive outcomes (Emmons & Stern, 2013). Research suggests that gratitude may improve happiness and that happiness may improve the likeliness that individuals will participate in physical activity. However, few interventions have used gratitude as a means to improve perceptions of physical activity (Emmons & McCullough, 2003) and none have been conducted in a worksite setting. Therefore, the purpose of this study is to examine the impact of a gratitude intervention

on happiness and perceptions of physical activity (i.e., perceived benefits and barriers to physical activity) in the workplace. This study may provide worksite health promotion professionals with an innovative strategy to address physical activity at the workplace.

Purpose of Study

The primary objective of this study is to examine the impact of a seven-day (7-day) gratitude journal on perceptions of physical activity in adult men and women in the workplace. The secondary objective of this study is to examine the impact of a 7-day gratitude journal on happiness in adult men and women in the workplace.

Research Hypotheses

1. I hypothesize that the 7-day gratitude journal will impact perceptions of physical activity in the workplace.
2. I hypothesize that the 7-day gratitude journal will impact happiness in the workplace.

Definition of Terms

1. Perceptions of physical activity: Perceived benefits and perceived barriers to physical activity measured using the Exercise Benefits/Barriers Scale (Sechrist, Walker & Pender, 1987).
2. Gratitude: “a feeling of appreciation or thanks” (Gratitude, n.d.)
3. Happiness: “the state of being happy; an experience that makes you happy” (Happiness, n.d.)
4. Gratitude Journal: A journal implemented online for individuals to record “Three Good Things in Life.” Each day, for seven consecutive days, individuals write

about three things that went well each day and provide an explanation for why they went well (Seligman, Steen, Park & Peterson, 2005).

5. Qualtrics: An online survey data collection system for academic research (Qualtrics, n.d.)

Delimitations and Limitations

Participants were men and women aged 18-65, of all ethnic backgrounds, currently working full-time (i.e., 30 or more hours per week) at two worksites in Phoenix, Arizona. All participants were not meeting the physical activity recommendations of 150 minutes of moderate intensity aerobic activity or 75 minutes of vigorous intensity activity each week at baseline (CDC, 2011).

The study utilized a randomized controlled trial pre-test post-test study design. As a pilot study, no sample size was computed but researchers worked to maximize the sample size. Participants self-reported for all assessments which may be limiting due to it rarely being independently verified. Additional limitations are discussed in the discussion at the end of the intervention.

CHAPTER 2

LITERATURE REVIEW

This chapter provides a review of the available literature related to United States' physical activity levels and current perceptions. Previous interventions and new strategies for increasing physical activity in the worksite setting are also included. Lastly, the review addresses the need for an innovative approach to improving perceptions of physical activity.

Physical Activity Guidelines

The 2008 Federal Physical Activity Guidelines suggest that adults (ages 18-64) participate in aerobic physical activity and muscle-strengthening activity each week. The aerobic activity can be achieved by performing at least 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity each week. Muscle-strengthening activities should focus on all major muscle groups and be performed two or more days each week (CDC, 2011). The benefits of participating in the recommended amount of physical activity include: weight control, reduced risk of developing cardiovascular disease, reduced risk for type 2 diabetes, increased strength of muscles and bones, improvement in the ability to complete daily tasks and increase mental health and mood (CDC, 1999).

When combining the 2008 Federal Physical Activity Guidelines for aerobic and muscle-strengthening activity, “48% of adults met neither the aerobic nor muscle-strengthening guideline, 4% met the muscle-strengthening guideline only, 28% met the aerobic guideline only, and 21% met the full guidelines for both” (Schiller, Lucas & Peregoy, 2012). In an effort to increase physical activity adoption and maintenance in

adults and children, Healthy People 2020 created objectives specifically to address these issues (Physical Activity, 2013b).

Perception of Physical Activity

As with all health behaviors, many factors influence an individual's decision to begin and maintain physical activity. Motivators for being physically active are unique to each person and may be impacted by their physical health, cultural background, and social experiences. Demographics to consider include: age, gender, ethnicity, and socioeconomic status (Allen & Morey, 2010). Cognitive, psychological, and social experience influences include: perceived benefit, enjoyment of the activity, readiness to change, competence performing the activity, safety performing the activity, accessibility of the activity on a regular basis, ability to fit the activity into daily schedule, perception of the financial/social cost of the activity, successful management of competing time demands, experiences with negative consequences due to the activity, and social support and influence to maintain physical activity (United States, 1996; Allen & Morey, 2010). Additionally, current health status, prior physical activity and access to an environment that is conducive to physical activity all impact participation (Allen & Morey, 2010). Studies suggest that the most consistent factors associated with greater physical activity levels are: fewer perceived barriers, better psychological health, greater enjoyment of physical activity, greater expected benefits, greater self-efficacy for physical activity, better perceived health or fitness, greater self-motivation for physical activity and greater readiness to change (Allen & Morey, 2010; Dominick & Morey, 2008). For example, studies have shown that when an individual's perception about the barriers to physical activity outweigh the benefits they are less likely to participate in physical activity.

Conversely, when an individual perceives the benefits to physical activity outweigh the barriers they are more likely to participate in physical activity (Kao, Lu & Huang, 2002). Because an individual's perception of the benefits and barriers to exercise weigh so heavily on their decision to be physically active, this may be an important and effective place to start in regard to improving physical activity behavior in adults (Allen & Morey, 2010).

Promoting Wellness in the Workplace

One of the most opportune places for implementing physical activity programs is in the workplace where employees spend nearly one third of their day. The average employee in the United States spends 47 hours at work each week (Michaels & Greene, 2013). With an increase in the sedentary "work style" and nearly one third of all employees working desk jobs, physical activity interventions at the worksite are important (Michaels & Greene, 2013). The workplace has been identified by a number of entities as a priority setting for implementing physical activity programs due to the benefits to the employer, employee, employee's families, communities, and stakeholders (Michaels & Greene, 2013; Workplace, n.d.). Workplace health programs have the potential to improve individual health biomarkers, increase productivity, increase cost savings, and reduce sick leave absenteeism among many others. It is also estimated that for every \$1 spent on wellness programs, approximately \$5.60 can be saved (Michaels & Greene, 2013).

The laundry list of benefits of implementing health programs in the workplace have prompted many workplaces to implement programs that are strategically designed to increase awareness, educate, and influence behavior change. Modifications to the

workplace environment, incentivizing employees for behavior, health risk assessments and exercise prescription have all been explored to improve physical activity at the worksite (Dishman, Oldenburg, O’Neal & Shephard, 1998; Conn, Hafdahl, Cooper, Brown & Lusk, 2009).

There are, however, conflicting findings regarding the success of workplace physical activity interventions. In a meta-analysis of 26 worksite wellness interventions by Dishman and colleagues (1998), researchers concluded that physical activity interventions in the workplace have only produced small changes in physical activity and have failed to achieve statistical significance (Dishman et al., 1998). However, a more recent meta-analysis from 2009, found a modest effect on the improvement of physical activity at the workplace (Conn et al., 2009).

Hutchinson and Wilson (2012) examined workplace interventions that focused on improving physical activity or nutrition and found that they were successful at producing small changes in health behavior. Additionally, interventions focusing on one health behavior rather than multiple health behaviors and those utilizing a randomized controlled trial produced greater mean effect sizes. Researchers suggested additional strategies are needed along with these findings to achieve long term behavior change in employees (Hutchinson & Wilson, 2012).

In another recent systemic assessment of workplace interventions to increase physical activity, researchers reviewed 58 studies that included interventions such as: physical activity /exercise, health promotion message/information, and counseling/support (Malik, Blake & Suggs, 2013). Though some workplace physical activity interventions were effective, researchers found it difficult to determine which

type of intervention and delivery method was most effective in influencing health behaviors. The investigators suggested future research should focus on the elements of an intervention that lead to the adoption of physical activity (Malik, Blake & Suggs, 2013).

To identify elements of a worksite intervention that impact physical activity participation, Muto and colleagues examined factors associated with male employee's regular physical activity (Muto, Saito & Sakurai, 1996). The non-experimental cross-sectional study included 515 male workers at a manufacturing company who completed questionnaires regarding factors determining their participation in physical activity. Participants were classified as an exerciser if they participated in any leisure-time physical activity or sports activity regularly more than once a week (34% regular exercisers) (Muto et al., 1996). The questionnaire included 124 multiple-choice questions with sports-related and psychological factors. Perceived benefits and barriers were measured with two separate scales. Perceived barriers were divided into three subcategories: environmental factor, misery factor and time factor. A significant association was found between exercise habits and all the three subscales of perceived barriers (Muto et al., 1996). Those who perceived the environment to be insufficient for exercise, employees that reported feeling miserable during exercise and employees who perceived that they were too busy for exercise had lower physical activity levels (Muto et al., 1996). Additionally, employees that reported having fewer perceived time factor barriers, even though they have less leisure time, were in the habit of exercising. Researchers suggest developing programs to decrease perceived barriers to physical activity (Muto et al., 1996).

In 2002 researchers examined the impact of an exercise intervention on perceived exercise benefits and barriers and exercise self-efficacy in male and female workers (Kao, Lu & Huang, 2002). The quasi-experimental pre-test post-test study included 193 participants which were assigned to an intervention or control group. The intervention group was divided into groups based on their readiness to change. Each intervention subgroup was provided exercise materials and teachings specific to their stage of readiness for change. Outcomes were measured at baseline and five-month post-test with the “Scale of Perceived Exercise Benefit,” “Scale of Perceived Exercise Barriers,” “Scale of Exercise Self-Efficacy,” and “Scale of Stages of Exercise Behavior” (Cardinal, 1997; Kao, 2002; Kao et al., 2002). On the perceived exercise benefits scale, the intervention group experienced a statistically significant increase of 1.53 points at post-test compared to the pre-test. A statistically significant decrease of 2.83 points was also observed for the intervention group on the perceived exercise barriers scale (Kao et al., 2002). Participants following the intervention protocol for the exercise maintenance stage had lower perceived exercise barriers than participants in the exercise pre-contemplation and contemplation stages. Thus, individuals that perceived there to be fewer barriers to exercise were more likely to be active. This provides justification of the importance of improving perceptions of physical activity to potentially improve physical activity participation. To date there are no studies which have utilized a gratitude intervention to impact the perceptions of physical activity in the workplace.

Gratitude

Gratitude may be an innovative strategy to improve physical activity perceptions in employees. Gratitude is a “feeling of appreciation or thanks” (Gratitude, n.d.). It

generates immediate and long-term effects; as an act or state of being, it is an avenue to happiness, optimism and fulfillment of life (Emmons & Stern, 2013). There is evidence to suggest that being grateful (e.g., writing down things one is grateful for) has a positive impact on overall well-being and physical health (Emmons & McCullough, 2003; Toussaint & Friedman, 2009; Emmons & Mishra, 2011; Hill, Allemand & Roberts, 2012).

Hill and colleagues (2012) examined the pathways in which gratitude impacts physical health. They measured the gratitude levels, health behaviors, psychological health and self-reported physical health of 962 Swiss adults through self-administered questionnaires and assessed the relationships of gratitude to the different aspects of health. Gratitude positively correlated with the following variables: self-reported physical health ($r(956) = .16$), psychological health ($r(956) = .29$), propensity for healthy activities ($r(953) = .32$), and willingness to seek help for health concerns ($r(952) = .22$). Outcomes suggested that “grateful individuals experience better physical health, in part, because of their greater psychological health, propensity for healthy activities, and willingness to seek help for health concerns” (Hill et al., 2012).

Previous studies utilizing gratitude as an intervention have also produced positive changes to happiness and depression (Emmons & McCullough, 2003; Seligman, Steen, Park & Peterson, 2005; Mongrain & Anselmo-Matthews, 2012). Emmons and McCullough (2003) conducted a study with three experimental conditions that were randomly assigned to students and provided in a packet of ten weekly reports. Participants assigned to the gratitude condition wrote down five things of which they were grateful or thankful, listed up to five hassles that had occurred that day, or write

about life events that had affected them in the last week. Their weekly assessment also included “ratings of mood, physical symptoms, reactions to social support received, estimated amount of time spend exercising, and global life appraisal questions” (Emmons & McCullough, 2003). Results from nine of the weekly reports showed a significant association between grateful emotions and higher ratings of joy and happiness and a moderate association with more favorable life appraisals and more optimism concerning the upcoming week. Most importantly, participants in the gratitude condition reported significantly more time spent exercising and fewer physical complaints (Emmons & McCullough, 2003).

Seligman and colleagues (2005) utilized gratitude journaling as one protocol in their positive psychology intervention to increase happiness. The Internet study utilized a convenience sample visiting the *Authentic Happiness* website. Incentives were offered to increase participation and a total of 411 participants completed assessments for all time periods. Participants were randomly assigned to one of five intervention protocols or the placebo-control protocol and asked to journal for seven consecutive days. Participants in the placebo-control wrote about early memories in life while the intervention group followed one of the following protocols: (a) “gratitude visit;” (b) “three good things in life;” (c) “you at your best;” (d) “ using signature strengths in a new way;” or (e) “identifying signature strengths” (Seligman et al., 2005). The gratitude or the “Three Good Things in Life” protocol asked that participants write down three good things that went well that day and their cause. Measurements were taken at baseline, immediate posttest, one week, one month, three months and six month follow-up. Researchers measured happiness using the Steen Happiness Index (STI) and depression with the

Centers for Epidemiologic Studies-Depression Scale (CES-D). Compared to baseline responses, the participants in the control group reported no change on the test one week after the intervention, and every testing period there-after. The “Three Good Things” protocol produced a significant increase in happiness at the 1, 3 and 6 month follow-up (effect sizes of .21, .36, and .50 respectively). It also produced a significant decrease in depression (Seligman et al., 2005). At each follow-up period participants were asked if they had continued their assigned exercise. Using ANOVAs to address a possible connection, researchers determined that the long-term effects on happiness and depression were most prominent for participants that continued their exercise (Seligman et al., 2005). It is important to note that this convenience sample was comprised of individuals visiting a self-help happiness website (*Authentic Happiness*) with the intention to increase their happiness level.

In 2012, Mongrain and Anselmo-Matthews replicated the study by Seligman et al. (2005) in hopes of reproducing their results. The “Three good things” and “Using signature strengths in a new way” protocols were employed in this study because Seligman et al., (2005) found that both protocols were effective in changing moods over a period of time. Researchers also included the placebo-control (early memories) protocol but changed the name to “expectancy control” and provided more detailed directions addressing the rationale behind revisiting early memories. The 344 Canadian participants were recruited via advertisements on “Facebook” and offered incentives to improve compliance and completion. The study design and outcome measures mimicked that of Seligman et al. (2005). The original baseline tests, the SHI and the CES-D, were administered and participants were randomly assigned to one of four conditions. The

conditions included: expectancy control (early memories), positive placebo (positive early memories), three good things, and using signature strengths in a positive way; Three Good Things (n=102) produced ($p = .004, d = .15$) ($p = .001, d = .22$) ($p = .02, d = .16$) Though this study produced more modest effects compared with Seligman and colleagues (2005), it also included a more powerful placebo-control protocol. It is also possible that the positive placebo control group decrease the gap between intervention groups (Mongrain et al., 2012). The findings from these studies suggest that gratitude may be an innovative strategy to improve perceptions of physical activity (Emmons & McCullough, 2003) and happiness (Seligman et al., 2005; Mongrain & Anselo-Matthews, 2012) in worksite employees.

Happiness

Happiness, as an emotion, has been associated with health, love, prosperity and an abundance of other positive outcomes (Emmons & Stern, 2013). Happiness, as defined by Webster's Dictionary, is "the state of being happy; an experience that makes you happy" (Happiness, n.d.).

In 2011 Baruth and colleagues examined how the "emotional outlook on life predicts increases in physical activity among initially inactive men" (Baruth et al., 2011). Utilizing the Aerobics Center Longitudinal Study, 2,132 inactive men and women took part in the study. Each participant received extensive clinical examinations at baseline and follow-up and was provided comprehensive exercise and diet recommendations with a strong message about engaging in regular physical activity. Physical activity levels were recorded and emotional outlook on life was assessed with one question using a 5-point scale. After analysis, the unhappy and happy men were compared at baseline and men

that reported being happy and optimistic at baseline were significantly more physically active at follow-up. In women, however, an association between emotional outlook on life and physical activity was not established (Baruth et al., 2011).

Though there is evidence to support that happy employees are generally healthier and perform better work, few worksites have incorporated programs to improve employee happiness or well-being (Lyubomirsky, King & Diener, 2005; Page & Vella-Brodrick, 2012a). In 2012 Page and Vella-Brodrick developed a positive, strength-based program to help employees identify and apply their strengths to enhance well-being (2012b). The sample included a diverse group of 50 participants from a large government agency with only 23 completing all outcome measurements. Participants were randomly assigned to an intervention or control group. The control group only completed assessments and the intervention group received a six week intervention consisting of a one-hour session each week. Each week included activity books and resource packs with a different topic on utilizing individual strengths. Measurements were taken at baseline, one week after the intervention, three month and six month follow-up (Page & Vella-Brodrick, 2012b). Significant improvements were found for psychological well-being and subjective well-being across time for the intervention compared to the control group. Results support the implementation of worksite wellness programs to enhance employee well-being (Page & Vella-Brodrick, 2012b).

Researchers Grant, Curtayne and Burton utilized individual coaching in the workplace to improve employee well-being, goal attainment, stress and depression (2009). The study was conducted at a public health agency with 41 employees participating and completing all questionnaires. Participants were assigned to the

intervention or control group and attended a half-day leadership training workshop which included information about leadership styles and details to the components of the program. Participants in the intervention group began coaching after the workshop while the control group was placed on a waitlist to receive the intervention. Individual coaching sessions (4) led by a facilitator focused on cognitive-behavioral and solution-focused were conducted over an eight to ten week period (Grant et al., 2009). Using the Workplace Well-Being Index, researchers measured well-being. Compared to the control, the intervention group produced a significant group time interaction for workplace well-being (Grant et al., 2009).

In another study interested in enhancing the well-being of employees at work, researchers implemented an individual online positive psychology program (Ouweneel, Le Blanc & Schaufeli, 2013). Researchers focused on improving individual's positive emotions, self-efficacy and work engagement through the completion of online happiness, goal setting and resource building assignments. The eight week intervention included a total of 25 different assignments. Of the 878 participants recruited on the website for the intervention group, 86 completed all measurements (Ouweneel et al., 2013). The job-related affective well-being scale was used to measure positive emotions. At the end of the eight week intervention, the intervention group produced a significant interaction effect on group and time on positive emotions. Additionally, participants from the intervention group that scored low on positive emotions at baseline benefited significantly more than those with medium or high baseline scores (Ouweneel et al., 2013).

It is evident that gratitude and happiness have the potential to impact health and physical activity. However, there is a lack of literature on the use of gratitude interventions to impact perceptions of physical activity and happiness in the workplace. Gratitude, as an innovative worksite wellness intervention may be the cutting-edge approach needed to influence happiness and physical activity perceptions and thus impact physical activity.

CHAPTER 3

METHODS

Overview

The main purpose of this research was to examine the impact of a 7-day gratitude journal on the perceptions of physical activity in adults in the workplace. The second objective of this study was to examine the impact of a 7-day gratitude journal on happiness in adults in the workplace. A pre-test post-test intervention was implemented to measure changes in perceptions of physical activity. The methods section provides an explanation of the research design, participants, procedures, measurement, data collection and analysis strategies.

Study Design

The pilot study was randomized controlled trial with a pre-test post-test design. The 7-day experiment included an intervention and control group. The intervention group was asked to complete a 7-day online journal. The control group was asked to record memories in an online journal for seven days. Outcome measures were examined at baseline, immediate post-intervention, and at one week follow-up. Outcomes were measured at baseline and post-intervention to examine changes in perceptions of physical activity and happiness. A one week follow-up measurement was utilized to determine if participant's perceptions and happiness changed or remained the same one full week after the intervention is completed (Figure 1).

Participants

This study was approved by the Arizona State University Institutional Review Board and all participants consented to participate in the study prior to any procedures (APPENDIX A). Participants included employees from a Fortune 100 company that produces a variety of engineering services and aerospace systems and a branch campus of a large university in Phoenix, Arizona. The study included full-time employees ages 18-65, not currently meeting the recommendations for physical activity as defined by the 2008 Physical Activity Guidelines for Americans (CDC, 2011). Employees that work part-time or per-diem were ineligible to participate. As a pilot study, no sample size could be computed, so the participation was maximized. Participants were recruited through a variety of methods including a monthly wellness newsletter, mass-email, face-to-face and flyers (APPENDIX B). Face-to-face recruitment included visiting multiple site cafeterias to hand out flyers, site vendor fairs and personal visits to open offices. The study was promoted as a “journaling study to improve wellness” to avoid disclosing the primary objective of the study. Recruitment took place for three weeks prior to the initial start date. If interested, participants were instructed to visit a link to the Qualtrics website to complete an eligibility assessment. Once deemed eligible, participants were assigned a participant code and emailed a unique link to complete the informed consent and baseline questionnaires prior to the start of the intervention (APPENDIX B). (Demographics, Godin Leisure-Time Exercise Scale, Authentic Happiness Inventory, Exercise Benefits/Barriers Scale). After completion of the consent and baseline questionnaires, participants were randomly assigned to the intervention or control group using the Research Randomizer (Research Randomizer, n.d.) Participants were then be emailed

instructions for completion of the study and their assigned journaling protocol (APPENDIX B). As an incentive, participants were entered in a drawing to win a pedometer, resistance band or \$25 VISA gift card. For each day participants completed their journal entry they received one entry into the drawing. For each time period they completed the questionnaires and each questionnaire completed they also received an entry. Five additional entries were submitted for individuals completing all journal entries and questionnaires. (Total of entries possible = 21)

Procedures

This was a one-week intervention with a one-week follow-up. Participants completed an assigned 7-day online journal and assessments at baseline (pre), post-intervention (day seven) and follow-up (day 14).

Intervention group.

The intervention group was emailed instructions specific to their assigned 7-day journaling protocol and provided a link to sign into their online journal (Qualtrics) at the start of the intervention. Each day of the 7-day intervention, participants were sent an email with a new unique link to complete their journal for the day (APPENDIX B). In the instructions participants were reminded of the importance of complying with the journaling protocol for all seven days. Instructions advised participants to avoid using real names when explaining events or situations in their journal. Participants were made aware that journal content is viewable by the researchers but will not be shared or used at any time during the study. It was only necessary that the researcher was able to determine that each participant journal had an entry for seven days.

Seven-Day Gratitude Journal Protocol.

Journal entries were based on the “Three Good Things in Life” protocol (Seligman et al., 2005). Each day participants were directed to write down three good things that went well that day and an explanation for why they went well. Participants were advised to be mindful that even the seemingly small successes are worth recognizing and celebrating.

The online modality was utilized for all assessments and journaling. To complete the journal each day, participants clicked on their individual Qualtrics link sent to their email. Each link included the same journaling instructions and a space for writing their response. There was no minimum word requirement for each journal entry. Journals were only monitored each day to ensure participant adherence to the protocol. If participants missed more than two journal entries, they were not included in the data analysis. Additional emails were sent on day five and day seven of the intervention to remind participants to finish the study and complete immediate posttest assessments. Reminders were also sent on day 13 to remind participants to complete the one week follow-up assessments on day 14.

Control Journal Protocol.

The control group followed the same protocol as the intervention group. The control participants, however, were asked to journal daily about their early memories in life. They were advised they recall any life events such as events from childhood, school, family, etc.

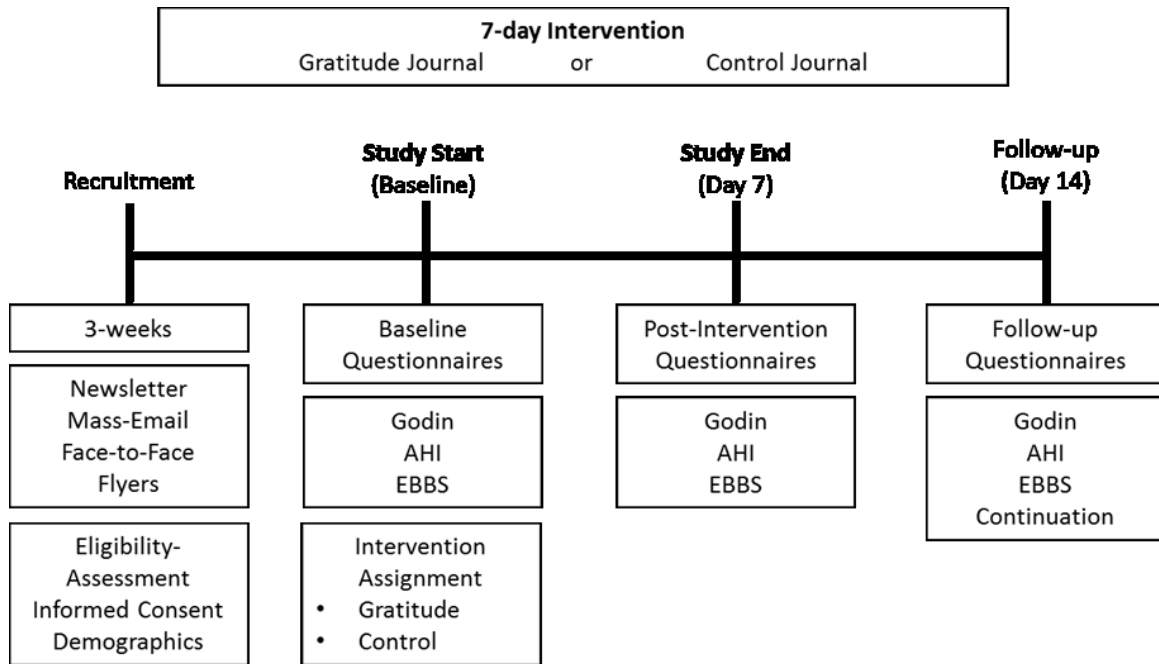


Figure 1. Study Design Time Line

Measurement

Eligibility Assessment.

To assess eligibility, participants were asked their name, address, email address, phone number, age, employment status, employer and participation in physical activity (APPENDIX C).

Demographics.

The demographics questionnaire that was administered at baseline included the following: race, occupation, education level, marital status, household income, height, weight, religious status, tobacco use, and chronic disease status (APPENDIX D). The questions included were utilized to address possible confounding factors.

Physical Activity.

To determine physical activity levels at baseline a portion of the Physical Activity Stages of Change questionnaire was used: “Physical activity 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. For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes. Do you currently engage in regular physical activity?” (Marcus & Forsyth, 2009). If individuals answered “no” they were eligible to participate.

To measure if physical activity levels changed throughout the study, the Godin Leisure-Time Exercise Questionnaire (APPENDIX E) was used. The self-administered questionnaire developed by Godin and Shephard (1985) uses four brief questions to an individual’s usual leisure-time exercise habits. It asks individuals to identify the times per week in which they participated in 15 minutes or more of strenuous, moderate and mild physical activity. It also asks participants to circle the frequency in which they are regularly active enough to work up a sweat in a typical seven day period. To calculate the total score responses are multiplied (x9) strenuous, (x5) moderate and (x3) mild and then added together (Godin & Shephard, 1985). In employees, this questionnaire has been identified as a valid and useful assessment of exercise behaviors and the “impact of exercise promotion programs at the work site” (Gionet & Godin, 1989). Additionally, in a study of 53 healthy adults, the questionnaire was statistically significant at $P < 0.05$ and reported reliability was .48 (mild), .46 (moderate), .94(strenuous), .74 (total), and .80 (work up a sweat) (Godin & Shephard, 1985).

Happiness.

The Steen Happiness Index (SHI), now known as the Authentic Happiness Inventory (APPENDIX F) was created to measure upward changes in happiness by week (Seligman et al., 2005). The 24-item questionnaire asks individuals to pick a statement from five choices that best describes the way they have felt for the past week. For example, one question includes the following choices: (a) “I feel like a failure.” (b) “I do not feel like a winner.” (c) “I feel like I have succeeded more than most people.” (d) “As I look back on life, all I see are victories.” (e) “I feel I am extraordinarily successful.” For each question, one to five points are awarded. Scores for each question are added together and divided by 24 to get the total score. Validity and reliability have shown to be satisfactory in previous research studies (Seligman et al., 2005; Schiffrin & Nelson, 2010). When the AHI was implemented in a pilot study the scores merged well with the General Happiness Scale ($r=.79$) by Lyubomirsky & Lepper (1999) and the Happiness Scale ($r=.74$) by Fordyce (1977) (Seligman et al., 2005).

Perceptions of Physical Activity.

The Exercise Benefits/Barriers Scale was used to examine perceptions of physical activity (APPENDIX G). The instrument was developed to “determine perceptions of individuals concerning the benefits of and barriers to participating in exercise” (Sechrist, Walker & Pender, 1987). The initial use of this tool was to assess the “Health Belief Model” which was created to identify the cognitive/perceptual factors affecting the frequency of exercise and other health behavior. Two of the determinants included in the model were benefits or barriers to exercise or engaging in other healthy behaviors. The 43 item Likert-scale questionnaire contains two separate scales to measure benefits and

barriers to exercise. When totaling the scores for both scales, a higher score indicates a more positive perception of exercise (Sechrist et al., 1987). The Exercise Benefits/Barriers Scale has since then been recognized for its ability to measure the change in perceptions among many various populations. Sechrist and colleagues (1987) reported impressive internal consistency with a Cronbach's alpha score of .95 for the benefits scale and .86 for the barriers scale. The benefits and barriers test-retest reliability over a two week time frame were reported as $[r = .89]$ and $[r = .77]$ respectively (Sechrist et al., 1987).

Continuation Question.

In addition to the above outcomes, all participants were asked about their adherence to keeping a journal after the intervention. The question was, "Did you continue to use the journal after the seven days?" followed by "If yes, how many days?" Participants can answer zero, one, two, three, four, five, six or seven. The question is provided in APPENDIX H.

Statistical Analysis

Descriptive statistics (Means, SD) for the study participants were estimated across intervention and control groups. All data were analyzed for normality assumption and justified using Shapiro-Wilk's test. An independent t-test and a chi-square test were used to compare baseline mean or frequency differences between intervention and control groups. Changes in the outcome variables were compared across all three time periods (baseline, immediate posttest, and one week follow-up). Mean differences from baseline to post-intervention, post intervention to follow-up, and baseline to follow-up were calculated. General linear models were used to test mean differences for perceptions of

physical activity and happiness between intervention and control groups after adjustment for covariates (i.e., age, gender, race, BMI, education, household income, marital status, tobacco use, and religion). Three methods of computing the perceptions of physical activity were used and included a total, barriers and benefits score. A mean percent difference (95% confidence interval) was used to express the within and between-group differences. In this study, all statistical procedures were performed by SPSS Statistical software (version, 22.0). All *p*-values were two-tailed, and values of less than 0.05 were considered to indicate statistical significance.

Chapter 4

RESULTS

Participants were 18 full-time employees randomized to the intervention (n=10) and control (n=8) groups. Participants were primarily female, (67%) middle-aged (M age = 43.17 ± 11.30 years), Caucasian (83%) and well-educated (83% with bachelor's degree or above). Descriptive characteristics of the participants across intervention and control groups are presented in Table 1. Eligibility, enrollment, participation and attrition are illustrated in Figure 1. All participants completed at least five out of seven days of their online journal along with assessments at baseline, post and one-week follow-up. No significant demographic differences were observed between groups at baseline for age, gender, race, BMI, education, household income, marital status, tobacco use or religion.

Perceptions of Physical Activity

As shown in Table 2, there were no baseline mean differences for benefits, barriers, or total benefits and barriers between intervention and control groups. Both groups had moderately high baseline benefits scores. There were no statistical differences for change in benefits from baseline to post ($p= 0.122$), post to one-week follow-up ($p= 0.959$) and baseline to one-week follow-up ($p= 0.137$) between intervention and control groups after adjustment for covariates (i.e., age, gender, race, BMI, education, household income, marital status, tobacco use or religion). There were no mean differences for change in barriers at baseline, from baseline to post ($p= 0.934$), post to one-week follow-up ($p= 0.671$) and baseline to one-week follow-up ($p= 0.770$) after adjustment for covariates. Additionally, there were no statistical differences in changes of combined benefits and barriers from baseline to post ($p= 0.145$), post to one-week follow-up ($p=$

0.794) and baseline to one-week follow up ($p= 0.090$) between intervention and control groups after adjustment for covariates.

Happiness

At baseline, there was no significant mean difference in happiness between intervention and control groups. There were no statistical mean differences in changes in happiness from baseline to post ($p= 0.322$), post to one-week follow-up ($p= 0.607$) and baseline to one-week follow-up ($p= 0.393$) between intervention and control groups after adjustment for multiple confounding variables.

Chapter 5

DISCUSSION

The purpose of this study was to examine the impact of a seven-day gratitude journal on perceptions of physical activity and happiness in the workplace. To the author's knowledge, this was the first study to determine the impact of a gratitude journal on perceptions of physical activity and happiness. Results of this study indicate that seven days of a gratitude journal intervention may not significantly improve perceptions of physical activity nor increase happiness among adults who are employed full-time. More research is necessary to determine if a gratitude journal intervention improves perceptions of physical activity and happiness when journaling is longer than a seven day time period.

In the examination of our research findings, the gratitude intervention did not significantly improve perceptions of physical activity as determined using the three scales within the Exercise Benefits/Barriers Scale. The lack of change in perceptions of physical activity may have occurred because participants of this study may not have been ready to change perceptions of physical activity. Research suggests that readiness to changes is associated with changes in physical activity. For example, if an individual is ready to change their physical activity behaviors, they are more likely to improve them as a result of an intervention (Dominick & Morey, 2008). Kao and colleagues (2002) suggest evaluating participants for their readiness to change prior to an intervention and tailoring materials specifically for that stage of readiness. In our study, the online gratitude journal was not tailored to readiness of change. All participants were asked to participate similarly (i.e. follow an assigned journaling protocol for seven consecutive days).

Our study was also not successful at improving happiness as a result of a seven-day gratitude intervention. However, other studies applying a seven-day gratitude intervention have been successful at significantly increasing happiness levels. Using a gratitude intervention to increase happiness in a workplace setting is worth further exploration considering the impact of happiness on mental and physical health. For example, happiness has been associated with better-functioning immune systems, decreased bodily pain, better general health perceptions, and levels of stress and anxiety (Lyubomirsky et al., 2005; Baruth et al., 2011; Siahpush, Spittal, M & Singh, 2008). Future research is necessary to determine if happiness may have significantly increased in the intervention group if the gratitude journal was longer than seven days. Seligman and colleagues (2005) found that those who journal beyond one week are more likely to significantly improve their happiness levels. Additionally, research by Emmons and McCullough (2003) suggests that a longer intervention (10 weeks) may significantly improve happiness and time spent exercising.

While not an outcome measure in our study, a baseline assessment of an individual's level of gratitude may be another important consideration. Researchers have suggested that individuals who are grateful, as compared to their less grateful counterparts, exhibit greater positive emotion and life satisfaction and lower negative emotions. The grateful individuals are also more helpful, forgiving, empathetic and supportive (McCullough, Emmons & Tsang, 2002). It is possible that our sample of participants assigned to the gratitude intervention had higher levels of gratitude at baseline, and thus, did not benefit from the seven-day gratitude journal.

A major distinction between our study and previous seven-day gratitude interventions centers on the participant's reason for enrolling in the study. To avoid disclosing the desired outcomes, our study was promoted as a "seven-day online journaling study to improve wellness." Past studies used feeling better or increased happiness levels as promotion for participation in the study (Mongrain & Anselmo-Matthews, 2012; Seligman et al., 2005). For example, Seligman and colleagues (2005) utilized a convenience sample of individuals visiting the website associated with a self-help book, *Authentic Happiness*, to improve their happiness. Those individuals came with motivation and the intention to make a change. Our approach to recruitment provided a more generalizable sample without a bias from personal motive to impact their outcomes.

Given the current low levels of physical activity in the United States and the amount of time adults spend at work each week, the workplace is an opportune setting to intervene to positively impact employee's perceptions of physical activity. Using an online gratitude journal may be an inexpensive, convenient approach to improving perceptions to physical activity in employees. However, this has been challenging as 7-21% of employees actually participate in worksite health promotion programs when they are offered (U.S. Department, 2013). The present study, although promising, had a small sample size. There is a need to explore the impact of the seven-day gratitude journal at a worksite with a much larger sample size.

Limitations

Although this study lacked significant improvements in the outcomes of interest, the design of this study is promising and warrants future research. The design of this study is promising because: 1) employees can participate online 2) it is easy to implement and 3) it is cost-efficient (little staff time to implement).

Despite the promise in its design, this study was not without limitations. First, and most importantly, this study had a limited sample size. There were a number of reasons that the sample size was small. These include:

- 1) Limited distribution. There were two worksites in which information about the study was distributed. At worksite two, distribution of information about the study was conducted during the week of the school spring break and that may have impacted the number of employees we were able to reach (i.e., some taking vacation for spring break). At worksite one the study was promoted in the wellness center's monthly newsletter, mass-email communication, and face-to-face. However, of the 90 that completed the eligibility criteria from worksite one, there were only 27 eligible. Individuals were ineligible because they were already meeting physical activity guidelines. Inactive individuals (eligible participants) were not responding to the strategies used to promote the study. In the future, sampling strategies may be more effective by first testing the approach to recruiting the targeted population. Getting involved with the company, building rapport with employees and gaining support from company stakeholders are additional techniques to improve distribution (Yancey, Ortega & Kumanyika, 2006).

- 2) Busy employees. Time is the most reported barrier to participation in physical activity (Dominick & Morey, 2008). Potential participants in face-to-face settings (i.e. cafeteria, company vendor fair) often neglect to participate reporting they have no time. Future recruitment strategies should address the potential costs (time) and ensure that the benefits (i.e. incentives or benefits associated with participating in the study) outweigh the costs to increase the response rate (Patel, Doku & Tennakoon, 2003).
- 3) Strict eligibility requirements. In order to be eligible, participants in this study must not have been currently meeting the physical activity guidelines. However, a majority of responses to our study were from active individuals (n=63). Prior exercise has been established as a strong determinant of participant enrollment in wellness programs (Abraham, Feldman, Nyman & Barleen, 2011).
- 4) Worksite demographic characteristics and study design influence on participation. Worksite one employs a high percentage of males and individuals of older age (participation rates in the second National Health and Nutrition Examination Survey of 60% for those aged 60 and older compared to 75% for those aged 21 to 60) (Annest & Mahaffey, 1984). These two factors have been reported as adversely affecting response rate and may have negatively impacted the response to this study (Patel et al., 2003). Additionally, participants in our study were asked to provide their name and other identifiable information when completing the eligibility questionnaire. The lack of anonymity of this study may have deterred individuals from participating (Patel et al., 2003).

Conclusion

The research reported here represents findings from a pilot gratitude intervention to impact perceptions of physical activity and happiness in the workplace. The seven-day gratitude intervention was not effective in increasing perceptions of physical activity or happiness. Future research should consider assessing the individual's readiness for change at baseline, increasing the length of the intervention, testing participant level of gratitude at baseline and employing a larger sample size.

Table 1.

Control and Intervention Descriptive Characteristics

Table 1. Control and Intervention Descriptive Characteristics			
	Control (n=8)	Intervention	Total (n=18)
	M (SD)	M (SD)	M (SD)
Age (years)	41.50 (11.10)	44.50 (11.87)	43.17 (11.30)
BMI	31.6 (9.30)	27.98 (6.71)	29.59 (7.93)
Gender			
Male	2	4	6
Female	6	6	12
Race			
Caucasian	7	8	15
African American	0	1	1
Asian	0	1	1
Other	1	0	1
Education			
High school diploma	1	0	1
Some college	1	0	1
Associates/2-year degree	0	1	1
Bachelor's Degree	4	6	10
Graduate school or above	2	3	5
Income (per year)			
\$21,000 - \$40,000	1	1	2
\$41,000 - \$60,000	0	2	2
\$61,000 and above	7	7	14
Marital Status			
Single	2	2	4
Partnered/In a relationship	0	2	2
Married	6	5	11
Divorced	0	1	1
Religion			
I do not observe a religion	3	4	7
Roman Catholic	1	1	2
Evangelical Christian	0	2	2
Other Protestant	1	0	1
Other Christian	3	2	5
Jew	0	1	1
Tobacco			
Yes	1	1	2
Not anymore, I quit	2	2	4
No, I have never used tobacco	5	7	12

Notes: M=Mean, SD=Standard Deviation, n=Sample Size
No significant demographic differences were detected between groups.

Table 2.

Differences in Outcome Variables Between Control and Intervention

	Baseline		Week 1		Week 2		Difference		Week 1		Week 2		Difference								
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	p value	Mean	SD	Mean	SD	p value	p value						
Happiness	3.21	±0.54	3.37	±0.41	0.16	±0.27	0.322	3.37	±0.41	3.35	±0.45	-0.02	±0.12	0.607	3.21	±0.54	3.35	±0.45	0.14	±0.19	0.393
Intervention (10)	2.93	±0.59	3.04	±0.55	0.11	±0.18		3.04	±0.55	2.90	±0.60	-0.14	±0.28		2.93	±0.59	2.90	±0.60	-0.03	±0.40	
EBBS Total	125.00	±11.08	128.25	±11.90	3.25	±4.59	0.145	128.25	±11.90	127.75	±14.81	-0.50	±7.89	0.794	125.00	±11.08	127.75	±14.81	2.75	±6.96	0.09
Intervention (10)	119.00	±13.52	117.70	±14.13	-1.30	±5.62		117.70	±14.13	119.60	±10.68	1.90	±6.38		119.00	±13.52	119.60	±10.68	0.60	±5.21	
EBBS Barriers	32.38	±4.44	31.63	±4.96	-0.75	±2.82	0.934	31.63	±4.96	31.50	±4.48	-0.13	±2.95	0.671	32.38	±4.44	31.50	±4.48	0.88	±3.64	0.77
Intervention (10)	33.50	±2.64	33.80	±4.05	0.30	±2.75		33.80	±4.05	33.10	±5.582	-0.70	±3.23		33.50	±2.64	33.10	±5.582	-0.40	±3.17	
EBBS Benefits	88.00	±9.81	89.88	±9.60	1.88	±4.79	0.122	89.88	±9.60	89.88	±13.89	0.00	±6.93	0.959	88.00	±9.81	89.88	±13.89	-1.88	±7.06	0.137
Intervention (10)	82.50	±15.16	82.50	±14.47	0.00	±4.64		82.50	±14.47	83.70	±12.63	1.20	±4.80		82.50	±15.16	83.70	±12.63	1.20	±4.34	

Notes

SD= Standard Deviation

Adjusted for age, gender, race, BMI, income, education, marital status, tobacco use and religion.

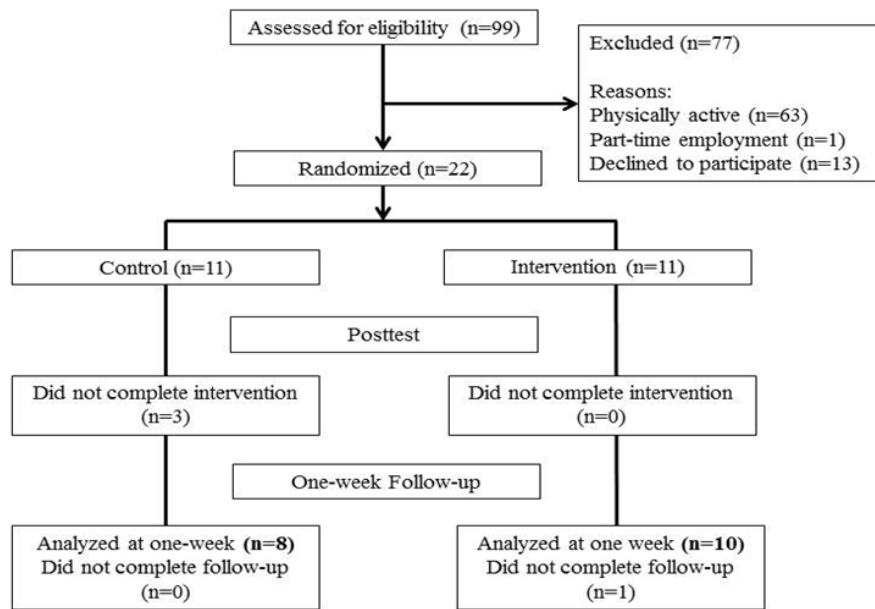


Figure 2. Consort Diagram

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APPENDIX A
CONSENT FORM

A Pilot Study to Examine the Impact of Journaling in a Workplace

I am a graduate student under the direction of Dr. Jennifer Huberty, an associate professor in the School of Nutrition and Health Promotion at Arizona State University. I am conducting a research study to examine the impact of journaling in a workplace.

I am inviting your participation, which will involve the completion of a seven day online journal and questionnaires at three time points over a period of two weeks. If interested, the first step is to complete the demographics and baseline questionnaires.

(Questionnaires will take less than 20 minutes to complete) After completing the questionnaires you will be assigned to the intervention or control group. (Participants assigned to the control protocol during the study will have the opportunity to complete the intervention after the study has concluded). Participants will be emailed instructions for their assigned journal protocol and a unique link to complete the journal entry for day one. Each day (seven days) during the study participants will be sent a unique link to complete the daily journal entry. After completing day seven of journaling, participants will complete online post-test questionnaires (day 7) and then again one-week later (day 14).

Participants will receive email reminders to complete all assessments. The duration of the study will be two weeks. You have the right not to answer any question and to stop participation at any time.

You must be 18 or older to participate in this study. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time there will be no penalty. Participants that withdraw will not be eligible for the drawing.

Participants will have the opportunity to accumulate multiple entries into a prize drawing. For each day of the journal completed (7) and each questionnaire completed, (3 questionnaires x 3 time-periods) participants will be entered into the drawing. Participants that successfully complete all journal entries and questionnaires will receive an additional **5 entries**. (Maximum possible entries= **21**) Participants will be entered to win one of three prizes: \$25 VISA gift card, resistance-band, or pedometer. There are no additional benefits and no foreseeable risks or discomforts to your participation.

In order to protect your confidentiality, participants will be assigned a participant code. Only the participant code will be linked to the data. All personally identifiable information will be locked in the office of the principle investigator and secure in a lockbox. Personally identifiable information will not be stored with the participant codes. Only the principle and co-investigator will have access to the information.

Journal responses will be visible to investigators, but will not be reviewed for content. Researchers only need to confirm that the journal was completed for each of the seven days for compliance. Journal content will be destroyed after it is reviewed for compliance and will not be used in any reports, presentations or publications. The questionnaire


results may be used in reports, presentations or publications but your name will not be used.

If you have any questions concerning the research study, please contact the research team at: Jennifer Huberty, Jennifer.Huberty@asu.edu, 602-827-2456 or Lacey Rowedder, Lacey.Rowedder@asu.edu, 602-827-2314. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

By completing the questionnaires you are agreeing to be a part of the study.

APPENDIX B
RECRUITMENT MATERIALS

INSERT FOR WELLNESS NEWSLETTER

 *Study begins March 5th*

ASU graduate student seeking your participation in a short journaling study

Participants in this study will be entered into a drawing to **win one of three prizes!**

Copy & paste the link below to learn more & *sign-up!*
bit.ly/JournalStudy

Participation is voluntary.
Questions?
Contact Lacey Rowedder at:
Lacey.Rowedder@asu.edu

EMAIL SCRIPT

My name is Lacey Rowedder and I am a graduate student in the School of Nutrition and Health Promotion. Under the direction of Dr. Jennifer Huberty, I am conducting a research study to examine the impact of journaling in a workplace.

I am recruiting full-time employees at XXXX to participate in my 7-day online journaling study to improve happiness. I've included a more detailed description below.

I would greatly appreciate your assistance in distributing information about the study. Please let me know if you would be willing to email this flyer or post it to the common areas at your worksite.

(Feel free to forward the flyer and/or include the verbiage below in an email to your colleagues.)

I appreciate your time. Please let me know if you have any questions or concerns.

Sincerely,

Lacey Rowedder

XXXX employees- Please join us for a 7-day online journaling study to improve wellness!

Your participation in this study will involve the completion of a short online journal (7 days) and online questionnaires at three time points over a two week time period. Complete the eligibility questionnaire using the link below and you will be emailed further instructions. Participants completing the study will be entered into a drawing to win one of three prizes! Participation is voluntary.

Sign-up by March 10th!

Visit the link below to learn more and sign-up!

bit.ly/JournalStudy

(Questions? Contact Lacey.Rowedder@asu.edu)

FLYER



Seeking adults to participate in a 7-day journaling study!

Please join us for a 7-day online journaling study to improve wellness!

Your participation will involve the completion of a short online journal and questionnaires at three time points over a two week time period.

*If you are a full-time employee
we need you!*

Sign up today!

Study begins March XX!

Please visit the link below to
learn more and sign-up!
bit.ly/JournalStudy



Participants completing
the study will be entered
into a drawing to **win** one
of **3 prizes!!**

If you have questions, please
contact Lacey Rowedder at:
Lacey.Rowedder@asu.edu
(602)-827-2314

Participation is voluntary.

IN PERSON RECRUITMENT SCRIPT

I am a graduate student under the direction of Dr. Jennifer Huberty in the School of Nutrition and Health Promotion at Arizona State University. I am conducting a research study to examine the impact of journaling in the workplace. I am recruiting men and women ages 18-65 years that are employed at the worksite full-time. Your participation would include the completion of a seven day online journal and online questionnaires. Your participation in this study is voluntary.

Would you be interested in participating in this study?

[If no] Thank you for your time. If you change your mind or have any questions concerning the research study, please call me at (602)-827-2314 or email me at lacey.rowedder@asu.edu.

[If yes] Great! Here is a flyer which includes the link to complete the eligibility questionnaire. If eligible you will be emailed additional information regarding study details and the next steps for participating. If you have any questions please call me at (602)-827-2314 or email me at lacey.rowedder@asu.edu.

ELIGIBLE/INELIGIBLE EMAIL SCRIPT

Eligible

Congratulations!! You are eligible to participate in the 7-day online journaling study.

Your participation in this study is greatly appreciated. Below you will find a unique link to complete the next steps for the study. This link will take you to complete the informed consent, demographics and baseline questionnaires. These questionnaires generally take less than 20 minutes to complete. The informed consent will include additional study details.

Please complete these questionnaires by March XX. On March XX you will be emailed your assigned journaling protocol and additional details to get started with your journal.

Follow this link to the Survey:

{LINK}

Or copy and paste the URL below into your internet browser:

{LINK}

If you have any questions please contact me at: lacey.rowedder@asu.edu

Ineligible

Thank you for completing the eligibility questionnaire for the journaling study. Unfortunately, you are not eligible to participate in this study.

We sincerely appreciate your interest.

If you have any questions please contact: lacey.rowedder@asu.edu

PROTOCOL ASSIGNMENT EMAIL AND DAILY JOURNAL PROMPTS

Journaling Instructions (Intervention)

Dear Participant,

Your participation in this study is greatly appreciated. Below you will find details for the study and specific instructions for your journaling protocol.

Study details: You will be completing a journal online over the next seven days. Each day, for seven consecutive days, you will receive an email with a link that is unique to you. (Linked to your participant code) Each day is a new unique link. To write in your online journal, you will need to click on the link that is emailed to you that day. You will only be able to use the link for one entry. There is no word requirement for your entry.

When journaling, please do not include any real names when describing events/situations.

Once you've completed your entry for the day you must click on the "submit" button at the bottom of the screen or your entry will not be recorded.

Journal Instructions: You will be following this protocol for all seven days of the study. In your journal, please write down three good things that went well that day and an explanation for why they went well. Be mindful that even the seemingly small successes are worth recognizing and celebrating.

To write your first entry please click on this link: **{INSERT LINK}**

For each day that you write in your journal you will receive an entry into the drawing to win a prize. It is very important that participants complete all journal entries.

If you have questions at any time during the study please email Lacey.Rowedder@asu.edu.

Daily Journaling Prompts (Intervention)

Please complete your journal for Day X by clicking on the link below. You will only be able to use the link for today's entry. **When journaling, please do not include any real names when describing events/situations.** Please click "submit" when you've finished your entry.

In your journal, please write down three good things that went well today and an explanation for why they went well. Be mindful that even the seemingly small successes are worth recognizing and celebrating.

{INSERT LINK}

Journaling Instructions (Control)

Dear Participant,

Your participation in this study is greatly appreciated. Below you will find details for the study and specific instructions for your journaling protocol.

Study details: You will be completing a journal online over the next seven days. Each day, for seven consecutive days, you will receive an email with a link that is unique to you. (Linked to your participant code) Each day is a new unique link. To write in your online journal, you will need to click on the link that is emailed to you that day. You will only be able to use the link for one entry. There is no word requirement for your entry. **When journaling, please do not include any real names when describing events/situations.**

Once you've completed your entry for the day you must click on the "submit" button at the bottom of the screen or your entry will not be recorded.

Journal Instructions: You will be following this protocol for all seven days of the study. In your journal, please write each day about your early memories in life. You can use memories from childhood, school, family, friends, etc.

To write your first entry please click on this link: {INSERT LINK}

For each day that you write in your journal you will receive an entry into the drawing to win a prize. It is very important that participants complete all journal entries.

If you have questions at any time during the study please email Lacey.Rowedder@asu.edu.

Daily Journaling Prompts (Control)

Please complete your journal for Day X by clicking on the link below. You will only be able to use the link for today's entry. **When journaling, please do not include any real names when describing events/situations.** Please click "submit" when you've finished your entry.

In your journal, please write about your early memories in life.

{INSERT LINK}

APPENDIX C
ELIGIBILITY QUESTIONNAIRE

Thank you for your interest in this study. A brief description is included below along with directions for the eligibility questionnaire. After submitting the eligibility questionnaire, eligible participants will be contacted with additional study details.

Description: The purpose of the study is to improve wellness through journaling. Your participation in this study will involve the completion of a seven day online journal and questionnaires at three time points over a period of two weeks. Participants will be assigned a simple journaling protocol (with no length requirements) and provided links to complete their online journal. Individual journal content is confidential and will not be used for this study.

If interested, please complete the eligibility questionnaire below. The questionnaire is used for eligibility purposes and does not confirm your consent to participate.

Eligibility Questionnaire

Instructions: Complete each question accurately. All information provided is **confidential**. Questions 1-4 will be removed from the data and replaced with a participant code. All data will only contain the participant code. If you are deemed ineligible to participate or withdraw, all information will be immediately destroyed. If eligible, you will be sent a link to the informed consent which includes study details and the opportunity to confirm your participation. Participation is voluntary and individuals can withdraw at any time.

1. _____
Name (first & last)

2. _____
Address (street name & number, city, state, zip)

3. **Phone Number:** (____) _____

4. **Preferred Email Address (This is the email that is used to send instructions and links for the study. It is important that you are able to access this email when not at work):** _____

5. **Please list your birth date (MM/DD/YYYY).**
_____/_____/_____

6. Employment status:

- Part-time
- Full-time (i.e. more than 30 hours)

7. Place of employment:

8. The next question is related to your regular participation in PA. PA 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. For activity to be *regular*, it must add up to a **total of 30 minutes or more per day and be done at least 5 days per week**. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.

Do you currently engage in regular PA?

- Yes
- No

APPENDIX D
DEMOGRAPHIC QUESTIONNAIRE

Instructions: Complete each question accurately.

All information provided is **confidential**. All data will only contain the participant code.

1. Gender:

- Male
- Female

2. What is your race (or the race with which you most identify if you are of more than one race)?

- Caucasian
 - African American
 - Asian
 - American Indian
 - Alaska Native/ Pacific Islander
 - Other (please Specify)
-

3. Are you Hispanic?

- Yes
- No
- I don't know

4. What is your household income?

- Less than \$20,000 per year
- \$21,000-40,000 per year
- \$41,000-60,000 per year
- \$61,000 per year and above

5. Please select the level of education you have completed.

- Some high school
- High school diploma
- Some college
- Associates/2-year degree
- Bachelor's degree
- Graduate school or above

6. What is your marital status?

- Single
- Partnered/In a relationship
- Married

- Separated
- Divorced
- Widowed

7. What is your height? (Feet/Inches- example: 5ft 6in.)

8. What is your weight? (Pounds)

9. Do you currently use tobacco?

- Yes
- Not anymore, I quit
- No, I have never used tobacco

10. Please indicate below which chronic condition(s) you have (if any):

- Diabetes
- Asthma
- Emphysema or COPD
- Fibromyalgia
- Depression
- Other lung disease *Type of lung disease:* _____
- Heart disease *Type of heart disease:* _____
- Arthritis or other rheumatic disease *Specify type:* _____
- Cancer *Type of cancer:* _____
- Other chronic condition *Specify:* _____

11. Do you have a specific religion?

- I do not observe a religion
- Roman Catholic
- Church of England/Anglican
- Other Protestant
- Evangelical Christian
- Other Christian
- Shi'ite Muslim
- Sunni Muslim
- Jew
- Hindu
- Jain
- Sikh
- Buddhist
- Other

APPENDIX E

GODIN LEISURE-TIME PA QUESTIONNAIRE

Godin Leisure-Time Exercise Questionnaire

1. During a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

Times Per Week

a) STRENUOUS EXERCISE

(HEART BEATS RAPIDLY)

(e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

b) MODERATE EXERCISE

(NOT EXHAUSTING)

(e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

c) MILD EXERCISE

(MINIMAL EFFORT)

(e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

2. During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

OFTEN

SOMETIMES

NEVER/RARELY

APPENDIX F
AUTHENTIC HAPPINESS INVENTORY

Please read each group of statements carefully. Then pick the one statement in each group that best describes the way you have been feeling for the past week, including today. Be sure to read all of the statements in each group before making your choice in the dropdown list next to the statements.

1.
 - A. I feel like a failure.
 - B. I do not feel like a winner.
 - C. I feel like I have succeeded more than most people.
 - D. As I look back on my life, all I see are victories.
 - E. I feel I am extraordinarily successful.
2.
 - A. I am usually in a bad mood.
 - B. I am usually in a neutral mood.
 - C. I am usually in a good mood.
 - D. I am usually in a great mood.
 - E. I am usually in an unbelievably great mood.
3.
 - A. When I am working, I pay more attention to what is going on around me than to what I am doing.
 - B. When I am working, I pay as much attention to what is going on around me as to what I am doing.
 - C. When I am working, I pay more attention to what I am doing than to what is going on around me.
 - D. When I am working, I rarely notice what is going on around me.
 - E. When I am working, I pay so much attention to what I am doing that the outside world practically ceases to exist.
4.
 - A. My life does not have any purpose or meaning.
 - B. I do not know the purpose or meaning of my life.
 - C. I have a hint about my purpose in life.
 - D. I have a pretty good idea about the purpose or meaning of my

life.

E. I have a very clear idea about the purpose or meaning of my life.

5. A. I rarely get what I want.

B. Sometimes, I get what I want, and sometimes not.

C. Somewhat more often than not, I get what I want.

D. I usually get what I want.

E. I always get what I want.

6. A. I have sorrow in my life.

B. I have neither sorrow nor joy in my life.

C. I have more joy than sorrow in my life.

D. I have much more joy than sorrow in my life.

E. My life is filled with joy.

7. A. Most of the time I feel bored.

B. Most of the time I feel neither bored nor interested in what I am doing.

C. Most of the time I feel interested in what I am doing.

D. Most of the time I feel quite interested in what I am doing.

E. Most of the time I feel fascinated by what I am doing.

8. A. I feel cut off from other people.

B. I feel neither close to nor cut off from other people.

C. I feel close to friends and family members.

D. I feel close to most people, even if I do not know them well.

E. I feel close to everyone in the world.

9. A. By objective standards, I do poorly.

- B. By objective standards, I do neither well nor poorly.
 - C. By objective standards, I do rather well.
 - D. By objective standards, I do quite well.
 - E. By objective standards, I do amazingly well.
- 10.
- A. I am ashamed of myself.
 - B. I am not ashamed of myself.
 - C. I am proud of myself.
 - D. I am very proud of myself.
 - E. I am extraordinarily proud of myself.
- 11.
- A. Time passes slowly during most of the things that I do.
 - B. Time passes quickly during some of the things that I do and slowly for other things.
 - C. Time passes quickly during most of the things that I do.
 - D. Time passes quickly during all of the things that I do.
 - E. Time passes so quickly during all of the things that I do that I do not even notice it.
- 12.
- A. In the grand scheme of things, my existence may hurt the world.
 - B. My existence neither helps nor hurts the world.
 - C. My existence has a small but positive effect on the world.
 - D. My existence makes the world a better place.
 - E. My existence has a lasting, large, and positive impact on the world.
- 13.
- A. I do not do most things very well.
 - B. I do okay at most things I am doing.

- C. I do well at some things I am doing.
 - D. I do well at most things I am doing.
 - E. I do really well at whatever I am doing.
- 14.
- A. I have little or no enthusiasm.
 - B. My enthusiasm level is neither high nor low.
 - C. I have a good amount of enthusiasm.
 - D. I feel enthusiastic doing almost everything.
 - E. I have so much enthusiasm that I feel I can do most anything.
- 15.
- A. I do not like my work (paid or unpaid).
 - B. I feel neutral about my work.
 - C. For the most part, I like my work.
 - D. I really like my work.
 - E. I truly love my work.
- 16.
- A. I am pessimistic about the future.
 - B. I am neither optimistic nor pessimistic about the future.
 - C. I feel somewhat optimistic about the future.
 - D. I feel quite optimistic about the future.
 - E. I feel extraordinarily optimistic about the future.
- 17.
- A. I have accomplished little in life.
 - B. I have accomplished no more in life than most people.
 - C. I have accomplished somewhat more in life than most people.
 - D. I have accomplished more in life than most people.
 - E. I have accomplished a great deal more in my life than most

people.

18. A. I am unhappy with myself.
B. I am neither happy nor unhappy with myself--I am neutral.
C. I am happy with myself.
D. I am very happy with myself.
E. I could not be any happier with myself.
19. A. My skills are never challenged by the situations I encounter.
B. My skills are occasionally challenged by the situations I encounter.
C. My skills are sometimes challenged by the situations I encounter.
D. My skills are often challenged by the situations I encounter.
E. My skills are always challenged by the situations I encounter.
20. A. I spend all of my time doing things that are unimportant.
B. I spend a lot of time doing things that are neither important nor unimportant.
C. I spend some of my time every day doing things that are important.
D. I spend most of my time every day doing things that are important.
E. I spend practically every moment every day doing things that are important.
21. A. If I were keeping score in life, I would be behind.
B. If I were keeping score in life, I would be about even.
C. If I were keeping score in life, I would be somewhat ahead.
D. If I were keeping score in life, I would be ahead.

- E. If I were keeping score in life, I would be far ahead.
22. A. I experience more pain than pleasure.
B. I experience pain and pleasure in equal measure.
C. I experience more pleasure than pain.
D. I experience much more pleasure than pain.
E. My life is filled with pleasure.
23. A. I do not enjoy my daily routine.
B. I feel neutral about my daily routine.
C. I like my daily routine, but I am happy to get away from it.
D. I like my daily routine so much that I rarely take breaks from it.
E. I like my daily routine so much that I almost never take breaks from it.
24. A. My life is a bad one.
B. My life is an OK one.
C. My life is a good one.
D. My life is a very good one.
E. My life is a wonderful one.

APPENDIX G

EXERCISE BENEFITS/BARRIERS SCALE

EXERCISE BENEFITS/BARRIERS SCALE

DIRECTIONS: Below are statements that relate to ideas about exercise. Please indicate the degree to which you agree or disagree with the statements by circling SA for strongly agree, A for agree, D for disagree, or SD for strongly disagree.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I enjoy exercise.	SA	A	D	SD
2. Exercise decreases feelings of stress and tension for me.	SA	A	D	SD
3. Exercise improves my mental health.	SA	A	D	SD
4. Exercising takes too much of my time.	SA	A	D	SD
5. I will prevent heart attacks by exercising.	SA	A	D	SD
6. Exercise tires me.	SA	A	D	SD
7. Exercise increases my muscle strength.	SA	A	D	SD
8. Exercise gives me a sense of personal accomplishment.	SA	A	D	SD
9. Places for me to exercise are too far away.	SA	A	D	SD
10. Exercising makes me feel relaxed.	SA	A	D	SD
11. Exercising lets me have contact with friends and persons I enjoy.	SA	A	D	SD
12. I am too embarrassed to exercise.	SA	A	D	SD
13. Exercising will keep me from having high blood pressure.	SA	A	D	SD
14. It costs too much to exercise.	SA	A	D	SD
15. Exercising increases my level of physical fitness.	SA	A	D	SD
16. Exercise facilities do not have convenient schedules for me.	SA	A	D	SD
17. My muscle tone is improved with exercise.	SA	A	D	SD
18. Exercising improves functioning of my cardiovascular system.	SA	A	D	SD
19. I am fatigued by exercise.	SA	A	D	SD
20. I have improved feelings of well being from exercise.	SA	A	D	SD
21. My spouse (or significant other) does not encourage exercising.	SA	A	D	SD

	Strongly Agree	Agree	Disagree	Strongly Disagree
22. Exercise increases my stamina.	SA	A	D	SD
23. Exercise improves my flexibility.	SA	A	D	SD
24. Exercise takes too much time from family relationships.	SA	A	D	SD
25. My disposition is improved with exercise.	SA	A	D	SD
26. Exercising helps me sleep better at night.	SA	A	D	SD
27. I will live longer if I exercise.	SA	A	D	SD
28. I think people in exercise clothes look funny.	SA	A	D	SD
29. Exercise helps me decrease fatigue.	SA	A	D	SD
30. Exercising is a good way for me to meet new people.	SA	A	D	SD
31. My physical endurance is improved by exercising.	SA	A	D	SD
32. Exercising improves my self-concept.	SA	A	D	SD
33. My family members do not encourage me to exercise.	SA	A	D	SD
34. Exercising increases my mental alertness.	SA	A	D	SD
35. Exercise allows me to carry out normal activities without becoming tired.	SA	A	D	SD
36. Exercise improves the quality of my work.	SA	A	D	SD
37. Exercise takes too much time from my family responsibilities.	SA	A	D	SD
38. Exercise is good entertainment for me.	SA	A	D	SD
39. Exercising increases my acceptance by others.	SA	A	D	SD
40. Exercise is hard work for me.	SA	A	D	SD
41. Exercise improves overall body functioning for me.	SA	A	D	SD
42. There are too few places for me to exercise.	SA	A	D	SD
43. Exercise improves the way my body looks.	SA	A	D	SD

APPENDIX H
CONTINUATION QUESTION

Instructions: Please complete the following question.
All information provided is **confidential**.

1. Have you continued journaling since completing the study? (online or paper-based) If yes, how many days?

- 1 day**
- 2 days**
- 3 days**
- 4 days**
- 5 days**
- 6 days**
- 7 days**