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Evaluating the Effectiveness of Values Based Training to Impact Physical Activity in Adults

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Evaluating the Effectiveness of Values Based Training to Impact Physical Activity in Adults

by

Jessica Sykes

A thesis in partial fulfillment of the requirements for the degree of Master of Arts Applied Behavior Analysis Department of Child and Family Studies College of Behavioral and Community Sciences University of South Florida

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Dedication

I would like to dedicate this work to my family and friends for always encouraging me to aim higher. And to my son, Dominic, for making my life exceptional.
Acknowledgements

I would like to thank Dr. Timothy Weil for his endless guidance and wisdom throughout my entire time in the program. Also, my labbies, past and present, who have inspired me and helped me through the entire process. Lastly, a special thank you to Kelsey O’Neill and Jillian DeFreitas for their amazing assistance.
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Abstract

This study aimed to investigate the use of values based training with typically developing adults to affect levels of physical activity recorded by FitBit Flex technology in the form of step count. Traditional approaches have shown promise but with mixed results. Interestingly, one must look outside of behavior analysis for interventions attempting to affect control by an individual’s covert verbal behavior. Acceptance and Commitment Therapy (ACT) has been shown to be effective in various behavior change areas by using a values based approach that focuses on the control of rules and their motivative functions. An ACT training protocol (ACTr) consisting of values identification, present moment training, and committed action (goal setting) was implemented across four sessions to teach various tools in an effort to relate personal values to physical activity and create short-term and long-term goals with respect to those values. Results show small to moderate increases in physical activity during intervention with continued increases seen in follow-up. These results support the potential of using values based training to increase physical activity levels.
Chapter One: Introduction

To obtain the health benefits of physical activity, the United States Department of Health and Human Services (USDHHS) guidelines recommend that individuals aged 18-64 years old engage in 150 minutes per week of moderate-intensity (or 75 minutes a week of vigorous-intensity) physical activity, and 2 or more days of muscle-strengthening activities. According to the Centers for Disease Control and Prevention (CDC) only about half of the adult population in the United States meet the guidelines for aerobic physical activity (Centers for Disease Control and Prevention [CDC], 2013). In spite of the recommended minimums, engaging in exercise for roughly half the amount suggested is known to reduce the risk of various health-related issues that may affect cardiorespiratory, musculoskeletal, and metabolic health (United States Department of Health and Human Services [USDHHS], 2008, pg. 7-14). Given this, even modest increases in exercise are likely to yield health benefits. Researchers in various fields have attempted to better understand the factors affecting engagement in physical activity such as sport medicine (George et al., 2012), sociology (Gretebeck, Ferraro, Black, Holland, & Gretebeck, 2012) and physical therapy (Crandall, Howlett, & Keysor, 2013). Researchers report attrition and adherence as primary factors in tackling deficient amounts of physical activity. The field of Applied Behavior Analysis (ABA) has focused on performance in myriad areas of human behavior as well, and has been shown effective at increasing levels of physical activity (e.g., Solley, 2014).

Most of the literature in ABA has focused on improving athletic performance rather than engagement in physical activity (e.g., Andrews, 2014; Benitez-Santiago, 2011; Quinn, Miltenberger, Fogel, 2015). In 1988, Fitterling, Martin, Gramling, Cole, & Milan conducted one of the first
studies that incorporated behavior analytic principles to increase physical activity. This study sought to increase aerobic activity with individuals suffering from vascular headaches. Individualized plans were created for each of the five participants based on such factors as age and current level of physical activity. Aerobic activity was measured using a standardized measure called Cooper points, which assigns points to different activities based on multiple factors. Cooper points were also used for the goal setting component. The study involved multiple components in a changing criterion design: “instructions, modeling, behavioral contracting, goal setting, stimulus control, performance feedback and praise, shaping, and verbal strategies” (Fitterling, Martin, Gramling, Cole, & Mialn, 1988).

Fitterling et al. (1988) showed that this intervention package resulted in participants achieving exercise performance goals for 94% of sessions. Two follow-up sessions were conducted at 3 and 6 months. During follow-up two participants maintained levels from intervention while the other 3 participants dropped down to baseline or right above baseline levels.

Few studies since Fitterling et al. (1988) have looked at increasing physical activity using behavior analytic principles. Van Wormer (2004), Normand (2008), Donaldson and Normand (2009), Valbuena (2013), Solley (2014) and Wack, Crosland and Miltenberger (2014) attempted to increase physical activity and in doing so, provide a clear picture for the limitations and strengths of using applied behavior analytic principles and procedures when targeting overt behavior.

These studies used similar instrumentation, measurements, and interventions. Five of these studies used pedometers (Normand, 2008; Solley, 2014; Valbuena, 2013; Van Wormer, 2004; Wack, Crosland, & Miltenberger, 2014) and one study used a heart monitor (Donaldson & Normand, 2009) to track step count or caloric expenditure, respectively. All studies but Solley (2014) and Wack et al. (2014) included weight as a measurement. Valbuena (2013) and Van
Wormer (2004) used an e-counseling component in the second phase, following baseline where participants self-monitored step count. Van Wormer’s (2004) second phase consisted of a weekly 10 minute e-mail conversation to discuss the step count, weekly goal setting, and provision of praise. Solley (2014) used a similar feedback component but meeting were in person and lasted 5-10 minutes. Valbuena (2013) used video conferencing for the weekly meeting and utilized the same components as Van Wormer (2004). Wack et al. (2014) used a combination of face-to-face and video conferencing to conduct weekly meetings lasting approximately 20 minutes.

While similar in several ways, these studies utilized goal setting differently. Normand (2008) made the weekly daily average the new goal for each day of the next week, while Donaldson and Normand (2009) based the weekly goal on the previous week’s daily average plus 10%. Valbuena (2013) used Galbicka’s (1994) percentage schedule to calculate the new goal for each week. A combination of previous week’s average and percentage increases or decreases were also used by Solley (2014) and Wack et al. (2014). Consequences were not utilized in these studies when participants failed to meet their goals. When this situation was encountered, some studies would continue with the same goal from the week before (Donaldson & Normand, 2009; Normand, 2008), while others would permit the participant to choose increasing or decreasing their goal (Donaldson & Normand, 2009; Solley, 2014; Wack et al., 2014).

Regardless of how goals were set, goals appear to have been irrelevant for two main reasons: first, goals can be kept the same if not reached (Donaldson & Normand, 2009; Normand, 2008) or decreased, as was done for two participants in Donaldson and Normand (2009), which negates the use of goals in the first place. Second, there is no evidence that participants had a history of meeting goals as a reinforcer and there were no contingencies for goal attainment other than praise (if met) or encouragement (if not met) (Donaldson & Normand, 2009; Normand, 2008; Solley, 2014; Valbuena, 2013; Van Wormer, 2004; Wack et al., 2014).
The feedback component in these studies varied and is found lacking. Researchers did not conduct an assessment to identify if praise would produce a reinforcing effect for participants’ engagement in physical activity. The rationale for providing one weekly 10 minute e-mail conversation (Van Wormer, 2004), daily e-mail response to data provided by participant on that day (Donaldson & Normand, 2009; Normand, 2008), weekly face-to-face meeting (Donaldson & Normand, 2009; Normand, 2008, Solley, 2014; Wack et al., 2014) or other (Valbuena, 2013) was not provided even though these were major components of the interventions. In short, it is not clear what or how the independent variable functioned in these studies.

Feedback was based off of the daily pedometer step count/distance (Normand, 2008; Solley, 2014; Valbuena, 2013; Van Wormer, 2004; Wack et al., 2014) or heart rate monitor expenditure reading (Donaldson & Normand, 2009); however, no feedback on other possible factors for increasing step count or caloric expenditure was provided. Solley (2014) included a weekly questionnaire regarding possible obstacles to exercise and how to overcome them, but data on these and how they may have affected performance were not reported. Researchers did not collect information about the type of exercise, location, time of day, environment, or preference. When working on increasing physical activity these can be critical factors because there are substantial differences in exercise routines, not all may be suitable, efficient, or preferred by all individuals.

Overt behaviors were measured and evaluated in the aforementioned studies; however, there was no mention of covert behaviors that may have played a role in the participants’ engagement in physical activity. Covert verbal behavior may have a great effect on an individual’s behavior, particularly by setting deleterious rules regarding stimuli with or without the physical presence of such stimuli. These rules can cause rigidity in behavior (Hayes, Strosahl, & Wilson, 2012, pp.52-56). For example, “I only exercise in the morning,” would limit the opportunities an individual has to exercise in any given day because a person could wake up late, have other
commitments, or the weather might be too cold in the morning to go for a run. Acceptance and Commitment Therapy (ACT) works on breaking such rigidity. ACT is an approach to behavioral difficulties that focuses on psychological flexibility. Although by name and description it appears this approach is mentalistic, ACT is fully built from a behavior analytic basis (Hayes, 2004).

Hayes and colleagues developed ACT over 25 years ago (Hayes & Wilson, 1994). Since its development, ACT has been shown to alleviate aversive control of covert behavior for myriad populations who suffer from various physical and psychological ailments. Some of these include anxiety and depression (White et al., 2013), psychosis (Bach & Hayes, 2002), posttraumatic stress disorder (Orsillo & Batten, 2005), traumatic brain injury (Whiting, Simpson, McLeod, Deane, & Ciarrochi, 2012), marijuana dependency (Twohig, Shoenberger, & Hayes, 2007), gambling (Nastally & Dixon, 2012), and chronic tinnitus (Kreuzer et al., 2012).

Psychological flexibility refers to behaving in the present moment in accordance with ones values. While the term ‘values’ does not appear to be a valid behavior analytic construct, used as a mid-level term it helps to orient us to the general concept of rule governance. Rule-governance refers to the effect that rules may have on probability of action. From this, a rule as a value pertains to the identification of long term, intangible (verbal), reinforcers. For example, establishing, “I want to be the best mother I can be” is a value in the sense that it cannot be contacted, but carries discriminative, reinforcing, and motivative functions and as such helps to identify relevant behaviors to engage in in an attempt to draw a correspondence between the mothers’ efforts and the rule. This correspondence is said to serve a reinforcing function. As such, the ACT approach attempts to alter probability of action in the service of values. There has been a recent interest in the dissemination of ACT via workshop training on behavioral protocols in an attempt to teach individuals how to affect positive change in various areas of their lives (e.g. Praxis, https://www.praxiscet.com).

Increasing psychological flexibility has been shown to be effective at impacting behavior
without targeting behaviors with typical reinforcement based strategies. The six ACT processes include acceptance, diffusion, present moment, self-as-context, values and committed action. Psychological flexibility is increased through the use of various tools including metaphors, experiential exercises, homework activities and explanation of rationale behind the different components of the hexaflex (Levin, Hildebrandt, Lillis, & Hayes, 2012). This approach is geared towards covert behavior by changing the way individuals relate to such behaviors, thus allowing individuals to engage in valued-living (committed action) in spite of negative thoughts (Hayes, 2004). This is particularly important when targeting behaviors that are related to stigmatizing thoughts and avoidant behaviors (Lillis, Levin, & Hayes, 2011; Masuda et al., 2008).

Fat, lazy, weak, unmotivated, unattractive and unhealthy are just a few of the words that are used to describe sedentary, overweight/obese people (Berry, Elfeddali, Vries, 2014; Berry & Spence, 2009). These words are not only used as insults from others in society but are also behaviors that these individuals may have about themselves which then can participate in relational frames with “bad”, “undesirable”, etc. (Lillis & Hayes, 2008; Lillis et al., 2011; Lillis, Luoma, Levin, & Hayes, 2010; Weineland, Lillis, & Dahl, 2013). Resulting from this thought process, it is likely that these individuals would have a weak perception of themselves which easily generalizes to other aspects (e.g., if I am undesirable looking I might not get a boyfriend, AND I won’t get a good job). Regardless of how effective a behavior analytic intervention may be, individuals looking to increase physical activity are exposed to various covert aversive events throughout their day that may decrease their chances of engaging in physical activity.

Some research has already been conducted on the efficacy of ACT interventions in increasing physical activity (Butryn, Forman, Hoffman, Shaw, & Juarascio, 2011; Forman, Butryn, Hoffman, & Herbert, 2009; Goodwin, Forman, Herbert, Butryn, & Ledley, 2012; Tapper et al., 2009; Ulmer, Stetson, & Salmon, 2010). These studies used workshops (Butryn et al., 2011;
Forman et al., 2009; Goodwin et al., 2012; Tapper et al., 2009) or study materials (Ulmer et al., 2010) and collected various questionnaires and objective measures with slight overlap (Butryn et al., 2011; Forman et al., 2009; Goodwin et al., 2012; Tapper et al., 2009; Ulmer et al., 2010). These interventions evaluated the effectiveness of an ACT intervention on various aspects related to healthy living behaviors (Butryn et al., 2011; Forman et al., 2009; Goodwin et al., 2012; Tapper et al., 2009; Ulmer et al., 2010).

Forman, Butryn, Hoffman, and Herbert (2009) used an intervention that involved a one-hour a week workshop for 12 consecutive weeks. The researchers used ACT components (acceptance, committed action, and present moment), as well as behavioral training adapted from The LEARN Program for Weight Management (Brownell, 2004). The LEARN program uses a combination of education, behavioral training (e.g. goal setting, data collection), and cognitive restructuring (Brownell, 2004). Forman and colleagues replaced cognitive restructuring with mindfulness by introducing ACT techniques.

Tapper et al. (2009) incorporated an ACT workshop across three consecutive weeks. There was no dietary advice as part of these workshops. Rather, the researchers focused on acceptance and committed action, but also included values and defusion in the ACT training.

Goodwin, Forman, Herbert, Butryn, and Ledley (2012) and Butryn, Forman, Hoffman, Shaw, and Juarascio, (2011) used workshops with similar characteristics: Goodwin et al. (2012) conducted four 90 minute workshops that focused on mindfulness, acceptance, values and committed action, while the workshops of Butryn et al. (2011) lasted two hours and were once a week for two consecutive weeks. The length and targets of workshops in the aforementioned studies is consistent with previous research in the area of ACT (Butryn et al., 2011; Forman et al., 2009; Goodwin et al., 2012; Tapper et al., 2009). Experiential exercises, metaphors, homework, and other tools were used as part of the workshops (Butryn et al., 2011; Forman et al., 2009;
Researchers used a total of 20 different questionnaires as measures for these studies with some overlap between them. The questionnaires targeted various aspects such as eating habits and attitudes, exercise behaviors and attitudes, and psychological flexibility/mindfulness. Ulmer et al. (2010) also included questionnaires about motivation (WALL), desinhibition (EI subscale), cognitive restraint (CRT-EI subscale), and quality of life (IWQOL-Lite). Results from questionnaires that compared pre- to post-treatment were as expected by researchers, with scores showing favorable changes in most scales at post-treatment and follow-up (Butryn et al., 2011; Forman et al., 2009; Goodwin et al., 2012; Tapper et al., 2009; Ulmer et al., 2010) with few exceptions. Goodwin et al. (2009) collected other self-report measures without the use of formal questionnaires: caloric intake, physical activity, and open-ended values questions.

Objective measures were scarcely used in these studies. Ulmer et al. (2010) included self-report only. Forman et al. (2009), Goodwin et al. (2012) and Tapper et al. (2009) collected data on BMI at three, two and three times throughout the study, respectively. Butryn et al. (2011) used swipes of participant’s identifications at the school gym as a measure of how many times a week they accessed the facilities, however, they had no understanding what the participant engaged in while in the gym, nor how long they were there. However, these studies failed to use an objective measure to accurately analyze the possible effects of the intervention (Butryn et al., 2011; Forman et al., 2009; Goodwin et al., 2012; Tapper et al., 2009; Ulmer et al., 2010). For example, Butryn et al. (2011) would have benefitted from knowing how much time participants spent at the gym and how much of that time was spent exercising. So too, knowing what types of exercise the participants engaged in while at the gym. No data was collected on exercise duration, intensity, or topography by any of the researchers other than what was self-reported.
Participants’ ongoing repertoires also play a role in the limitations of these studies. In the case of Butryn et al. (2011), the participants were already attending the gym and the study lasted eight weeks; which the authors point out is considered too short for this area of study. Ulmer at al. (2010) used participants that were already attending their local YMCA and were actively trying to lose weight. The participants in Tapper et al. (2009) were already actively trying to lose weight, while the participants in Forman et al. (2009) were instructed to not participate in other weight loss programs while being a part of the study. Forman et al. (2009) had no control over whether the participants followed those instructions or failed to report on a new weight loss program.

From an ACT perspective, the use of a target weight or a target weight loss is counterintuitive (Lillis & Kendra, 2014). The goal of ACT is to change one's relationship to thoughts in order to increase valued based behaviors, not to focus on a desired number on a scale. As Lillis and Kendra (2014) point out, by weighting “individuals prior to treatment meetings, you are sending an implicit message that the scale is important in and of itself” (pg. 4). Lillis and Kendra (2014) explain how food diaries and caloric intake records send the wrong message.

Typical research on increasing physical activity focuses on goal setting (Fitterling et al., 1988), feedback (Donaldson & Normand, 2009) and self-monitoring (Valbuena, 2013). Although these approaches have been shown to be effective at increasing physical activity, long lasting effects are rarely seen (Valbuena, 2013). Achieving long lasting effects may require interventions geared towards motivative operations linked to physical activity; specifically, interventions designed to impact verbal relational responding. The notion is that verbal motivative operations may positively influence engagement during otherwise low probability conditions. This approach includes both a focus on current deleterious rules and the establishment of adaptive rules (values oriented rules).

The aim of this study was to increase levels of physical activity in adults through a values-
based verbal behavior approach. The intervention consisted of teaching participant’s how to identify values related to physical activity, learn about goal setting via committed action, and the benefits of present moment concepts when covert verbal behavior is functioning as an abolishing operation. Participants were trained across four weekly sessions in an attempt to develop their ability to identify deleterious rules that serve to interfere with engagement in physical activity, to develop rules based on desired reinforcers, and to incorporate those rules so that they serve as verbal establishing operations.
Chapter Two: Method

Participants

Four participants between the ages of 25-40 who presented with no physical or cognitive impairments were recruited for this study. It was determined at intake that the participants were not engaging in the recommended levels of physical activity provided by the USDHHS, and who also stated that they were looking to increase their levels of physical Activity. To avoid potential extraneous factors, participants could not actively be engaged in efforts to lose weight or increase their levels of physical activity prior to joining the study (USDHHS, 2008, pg. 64). Participants were screened using the PAR-Q (Thomas, Reading, & Shepard, 1992) to ensure they did not have any preexisting conditions that would limit their physical activity or pose a health risk if physical activity were increased. Recruitment was through flyers posted on the community, Facebook posts, Listserv e-mails and word of mouth.

The first four participants who contacted the primary researcher and fit the criteria were provided with informed consent and upon signing were included in the study. One participant was removed from the study due to not wearing the FitBit for two consecutive weeks after multiple requests.

Charlotte. Charlotte was a 25 year old female, married, living with her husband. She had no preexisting conditions limiting her engagement in physical activity. She weighed 144.6 pounds at the start of the study. Her AAQ-Ex score was 46 at the start of the study. She worked full time during the study.

Poppy. Poppy was a 40 year old female, married, living with her husband and two
children. She had no preexisting conditions limiting her engagement in physical activity. Her weight at the start of the study was 145.5 pounds. Her AAQ-Ex score at the beginning of the study was 49. Poppy worked full time during the study.

**Tyrion.** Tyrion was a 36 year old male, married, living with his wife. He reported taking medication for heart pressure but being cleared and encourage by his doctor to increase his levels of physical activity. He weighed 373.5 pounds at the start of the study. His AAQ-Ex score at the beginning of the study was 60. He worked full time during the study.

**Setting**

Sessions were conducted at the participants’ homes or a private study room in the university main library. This was decided based on the participant’s availability. Out of the total of 18 meetings conducted with all participants, four were conducted in private rooms in the university main library.

**Materials**

A video recorder was used during all sessions for later review using a task analysis for treatment integrity purposes. Brochures with information on physical activity guidelines and suggestions of physical activity was provided during baseline. Handouts were provided at each session for homework as well as for guidance through exercises and metaphors. A set of values cards were provided for each participant as part of an exercise and continued reference to their values during the intervention and follow up conditions (Ciarrochi & Bailey, 2008). Another homework assignment consisted of an Activity Log (Appendix A), which served as a self reported measure of physical activity. All paper materials were compiled into a portfolio for review at follow-up and for the participants to keep. At the participant’s request, graphs with FitBit Flex data showing phase changes were included at the last meeting. In Charlotte’s case, an extra week of follow-up was conducted following data overview on the last day of regular
follow-up.

**Experimental Design**

The experimental design was a non-concurrent multiple baseline across participants design. A multiple baseline design was selected due to the inability of a reversal based on the type of intervention employed. Due to the difficulties inherent in starting participants at the same time, a non-concurrent design variation was chosen.

**Dependent Variables and Measures**

The target behaviors included levels of physical activity as measured by step count (frequency/day) on the FitBit Flex and self-reported psychological flexibility in regards to physical activity. Weight measures were also recorded to see if any changes occurred in this aspect of the participants’ lives.

**Levels of physical activity.** Physical activity was measured by step count on a pedometer (FitBit Flex). Step counts were collected daily through the FitBit USB wireless syncing program for computers. Data on step count was collected each day the FitBit was worn from day one of baseline until the last day of follow-up. Participants did not have access to FitBit data throughout study; that is, the participants were blind to their actual daily performance.

**Psychological flexibility.** Psychological flexibility is a mid-level construct used to identify how closely one is behaving with respect to their chosen values. Indirectly it measures experiential avoidance, or rather, the extent to which a person is under the control of aversive stimulation and as a result is not able to contact their reinforcers (i.e., behave with respect to their values). Psychological flexibility was measured in regards to exercise using the AAQ-Ex (Staats, 2014). The AAQ-Ex is a 15-item questionnaire that uses a 7-point Likert scale. Scores on the AAQ-Ex range from 15-105, with higher scores indicating higher levels of experiential avoidance in regards to exercise. The AAQ-Ex was administered four times throughout the study: day one of baseline, first day of
values based training (Session 1), first day of follow-up, and last day of follow-up. AAQ-Ex for Poppy and Tyrion has not been administered yet as they have not reached the last day of follow up.

**Weight.** Weight was recorded to see if the increase in physical activity also had a beneficial effect on the participants’ weight. It is important to note that if weight didn’t decrease very much or at all, this does not necessarily mean the intervention failed. There are a myriad of factors that may affect weight, physical activity being just one of them. Participants’ weight was measured using a bathroom scale (same for all participants) at three points throughout the study: first day of baseline, first day of follow-up, and last day of follow-up. Due to technical issues with the scale, weight was not collected for Charlotte on the fist day of follow-up. Last weigh in for Poppy and Tyrion is not yet available.

**Treatment Integrity**

All sessions were recorded and graded by a second observer using a task analysis created for each session (Appendix B). Treatment integrity was calculated using a checklist of items to be discussed and/or explained during each session. A second observer watched the videos for each session while marking the checklist. Scores were calculated by diving the number checked over the total number of items for each session. Session 2 with Charlotte and half of Session 2 with Tyrion were not recorded due to user error, so 79% of sessions were evaluated. Based on the items available, treatment integrity scores for each participant are as follows: Charlotte, 96%; Poppy, 94%; and Tyrion 99%. When looked at as a whole, treatment integrity was 96% across participants. When looked at by session, scores were as follows: Session 1, 98%; Session 2, 94%; Session 3, 92%; and Session 4, 99%.

**Interobserver Agreement**

Due to the nature of data collection, there was no interobserver agreement possible for data collection. FitBit Flex automatically collects daily step count data and other measures are
standardized testing with scoring protocols that have no room for disagreement. A second observer reviewed the FitBit Flex data collected from the web dashboard and ensured that it matched participant data on data sheets.

Interobserver agreement was calculated by dividing the number of agreements over the number of agreements + disagreements of data between primary researcher and secondary observer. Calculations were done for 100% of data. Scores for weight and AAQ-Ex scores showed a 100% agreement between primary researcher and second observer. Agreement for FitBit data was 95% across participants. When separated by participant, agreement was as follows: Charlotte, 94%; Poppy 96%; and Tyrion 95%.

Social Validity

Social validity was assessed using a questionnaire on the last day of follow-up (Appendix C). The questionnaire consisted of statements rated 1-5, with 1 being ‘Completely Disagree’ and 5 being ‘Completely Agree’. The social validity questionnaire asked questions related to the participant’s experience throughout the study. Charlotte was the only participant to complete the questionnaire, as she was the only participant who completed follow up to this point. Her scores are below in Table 1.

Table 1. Social validity questionnaire results

<table>
<thead>
<tr>
<th>Social Validity Question</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>My participation in this study did not cause any discomfort or injuries</td>
<td>5</td>
</tr>
<tr>
<td>The tools and information provided in this study have been helpful for me</td>
<td>5</td>
</tr>
<tr>
<td>I have shared the tools learned from this study with other people</td>
<td>2</td>
</tr>
<tr>
<td>I will continue to use the tools I learned in this study</td>
<td>5</td>
</tr>
<tr>
<td>My participation in this study has improved my overall wellbeing</td>
<td>4</td>
</tr>
<tr>
<td>I will share my experience with others to improve their life</td>
<td>3</td>
</tr>
<tr>
<td>The researcher answered my questions and ensured my understanding of tools</td>
<td>5</td>
</tr>
</tbody>
</table>
Incentive

A weekly cumulative incentive was provided for syncing FitBit Flex data and having homework completed weekly. This incentive consisted of $5 being added to a Visa prepaid card that participants could claim at the end of their participation that would be loaded with the amount that was accrued by the participants’ adherence. In order to earn the $5 amount for any given week, participants had to wear the fit bit for at least 5 days of the week, for a minimum of 10 hours a day, with data sync occurring at the least every 2 days. Homework must have been completed at least 90% of opportunities for that week.

Procedures

Prior to baseline, individuals were provided with informed consent and given one week to look over the information before providing final consent.

Baseline. On the first day of baseline, informed consent was signed and returned to the primary investigator. Participants answered the AAQ-Ex (Staats, 2014) and received brochures with information on the importance of physical activity and safety while engaging in physical activity.

Lastly, participants were weighed in. Baseline consisted of the participants wearing the FitBit Flex and receiving feedback on their use as well as reminders of use, charge and information sync via e-mail every four days.

Values based training. Values based training consisted of Acceptance and Commitment Therapy delivered in a protocolized manner as Acceptance and Commitment Training (ACTr). These trainings were conducted in one-on-one sessions with each participant. These sessions took place at the participant’s home or university main library study room at a preset time for four consecutive weeks. Each of the four sessions lasted no longer than one hour.
**Session 1.** Session 1 began with any questions from the participant on FitBit Flex use or other parts of the study. The AAQ-Ex was administered after questions are answered. An overview and discussion of the brochures provided at baseline followed the AAQ-Ex. This session aimed to introduce the concept of values, how values function, the difference between values and goals, and to provide an opportunity for the participant to establish their own set of values. A variation of the Card Sorting Task developed by Ciarrochi and Bailey was conducted next (Ciarrochi & Bailey, 2008). This exercise served as an introduction to values, the importance of clarifying them and identification of how these values affect physical activity engagement. Lastly, the Detailed Bull’s Eye worksheet and Goal Setting Worksheet were explained, done and assigned for homework (Stoddard & Afari, 2014). These worksheets served as an opportunity for the participant to not only discuss and question values and committed action during session, but at other points throughout the week.

**Session 2.** The session began with an overview of the homework and feedback on the use of tools throughout the previous week in regards to physical activity. This session focused on identification of competing contingencies as well as on viewing obstacles that may get in the way of exercising and how to still achieve goals and behave in accordance to ones values. The Classroom Professor exercise was explained and conducted with reference to the values card sorting exercise from session 1 (Stoddard & Afari, 2014). The Willingness and Action Plan worksheet from The Happiness Trap was filled out and discussed (Harris, 2008). The Simple Bull’s Eye worksheet and Goal Setting Worksheet were provided as assigned homework (Stoddard & Afari, 2014).

**Session 3.** The session began with a review of the homework from the previous week and feedback on the use of tools in regards to physical activity. Following this, the researcher explained the Passengers on the Bus metaphor to highlight struggles with thoughts and committed
action (Hayes, Strosahl, & Wilson, 2012, p. 250-251). This session built upon the previous session by providing a strategy to deal with unwanted thoughts and urges that may prevent one from engaging in physical activity. Homework sheets were handed out at the end of the session.

**Session 4.** The last session began in the same fashion as the others, with a review of the homework and feedback. A review of all previous exercises and metaphors was conducted. This was followed by the Sweet Spot exercise (Stoddard & Afari, 2014). The Sweet Spot exercise was used as a tool to identify appetitives for engaging in physical activity that can be incorporated into future exercise to increase the likelihood of engaging in physical activity. Session concluded with detailed explanation of follow-up.

**Follow-up**

Follow-up was conducted for four weeks after the last day of intervention. On the last day of intervention, instructions were provided to continue to use the FitBit Flex, sync data and fill out activity logs for four more weeks. The AAQ-Ex was also administered on this day and the participants were weighted in. A last overview of homework completed was done and participants were given their portfolio with all the homework assignments provided.

During follow-up there were no scheduled meetings with the researcher. E-mail reminders to wear FitBit, charge it, and fill out the Activity Log were sent approximately every four days (sooner if data had not been synced). At the conclusion of the four weeks, the researcher met with each participant to do the final weight in, administer the AAQ-Ex, provide social validity questionnaire, and retrieve the final activity log.
Chapter Three: Results

Data analysis is provided in a multiple baseline across participants’ design wherein data are graphed either by day (Fig. 1), or weekly aggregate (Fig. 2). Phase change decisions were made based on daily step count data shown in Figure 1. Figure 3 shows the same multiple baseline design, however, the data of interest are the percent change between phases for each participant. Weight and AAQ-Ex scores are shown in Figure 4 (Charlotte), Figure 5 (Poppy), and Figure 6 (Tyrion).

Charlotte

**Daily.** A slight increasing trend is seen during baseline as seen in Figure 1. During baseline the number of steps ranged between 1908 and 11300 with an overall average for the condition of 5800. Through the condition, data were observed to trend up slightly. During intervention, high variability continued as seen in baseline with a range of 1941-11738. While slight, there was an increase in level observed during intervention to 5933 but with an overall decreasing trend towards the end of the phase. Her follow-up data show an increasing trend with a range between 3405-10168 and average of 6044. This level is higher than what was seen in baseline and intervention. During the extra week of follow up, trend was observed to increase and there was high variability with a range between 4865-12962. Level in the last phase was the highest in the entire intervention at 7664.

**Weekly.** In Figure 2, we present weekly aggregates to aide in analysis of overall performance each week and to decrease the “noise” observed in the daily display seen in Figure 1. Charlotte's weekly average data shows an increasing trend before intervention began due to a high step count three days before beginning of intervention, which can be seen on Figure 1. As seen in her daily step
count, weekly averages also show high variability. During intervention her weekly average step counts were within baseline range or below. Variability is high, with a slight decreasing trend. During follow up there was less variability than in intervention but still high. Level was higher than in previous phases and trend is increasing. In the extended follow up level is higher than baseline and intervention but shows a decreasing trend. Variability was high throughout all phases.

**Percent.** Percentage change scores may be reviewed in Figure 3. Percentage change scores are often used to observe departure of performance from prior condition(s). In this case, an average was taken of all data in the intervention and follow up conditions and separately divided by the average step count in the baseline condition. Additionally, the average for the follow-up condition was divided by the same for the intervention condition. If increases are observed in later phases, a positive percentage is produced, whereas a negative percentage would be observed if decreases in average step count occur in later phases. Her percentage change for each phase shows a 2% increase over baseline in step count during intervention, seen in Figure 3. Follow up data shows a 4% increase over baseline. Her second follow up condition shows a 32% increase over baseline levels.

**Weight and AAQ-Ex.** Charlotte’s weight was measured two times during the study, on the first day of baseline and the last day of follow up as seen in Figure 4. Her weight change was + 2.2 pounds. Her AAQ-Ex score was no more than 10 points different throughout the study, with all levels falling under 50% of possible points. Both weight and AAQ-Ex scores can be seen in Figure 4.

**Poppy**

**Daily.** Poppy’s daily step count shows high variability during baseline with a range between 1123-11053 (average 4763). Trend was slightly increasing during baseline. Intervention shows a sharper increase in trend. Variability during intervention was less than during baseline. Range of step
count was 2260-10054, with an average of 5262. Variability during follow up was greatly reduced, as seen on Figure 1. Her range was 4111-6152 with an average of 5113. Trend was decreasing during follow up. Her follow up is missing the last two weeks. Her level is low throughout, aside from a week in baseline when she was on holiday and a couple of outliers. Her trend is slightly increasing during baseline with a higher increase during intervention and decrease during follow up. Poppy’s daily step count showed less variability throughout the study than Charlotte’s data as seen on Figure 1. Charlotte’s data showed an increase in trend over the last three data points before intervention with Poppy began, as seen in Figure 1.

**Weekly.** In Figure 2, we present weekly aggregates to aide in analysis of overall performance each week and to decrease the “noise” observed in the daily display seen in Figure 1. Step count level increased during intervention with an increasing trend during baseline. There is a higher increasing trend during intervention and a decreasing trend during follow up. Poppy’s step count was stable as seen in Figure 2 while Charlotte’s showed an increasing trend when intervention with Poppy was started as seen in Figure 2, in Charlotte’s first two data points for intervention.

**Percent.** Percentage change scores may be reviewed in Figure 3. Percentage change scores are often used to observe departure of performance from prior condition(s). In this case, an average was taken of all data in the intervention and follow up conditions and separately divided by the average step count in the baseline condition. Additionally, the average for the follow-up condition was divided by the same for the intervention condition. If increases are observed in later phases, a positive percentage is produced, whereas a negative percentage would be observed if decreases in average step count occur in later phases. Overall, her step count percentage change from baseline was 11% with a 4% decrease during follow up. This is a higher increase during intervention as compared to Charlotte but lower during follow up.
**Weight and AAQ-Ex.** Poppy’s weight increased by 4.9 pounds from baseline to follow up. Her AAQ-Ex scored show a decreasing trend, with a 4 point drop from baseline to beginning of intervention and a 5 point drop from beginning of intervention to first day of follow up as seen in Figure 5.

**Tyrion**

**Daily.** Tyrion’s daily step count shows a small increasing trend during baseline. His level was the highest for all participants during baseline. His range was 1741-9344, with an average of 5999. Tyrion’s variability was slightly high. During intervention, Tyrion’s variability decrease, his trend was increasing. His range of step count during intervention was 4691-9414, with an average of 6516.8. When intervention was started for Tyrion, Poppy’s data showed a slight increasing trend in daily steps. Charlotte was in follow up at the time and showed an increasing trend. Variability during follow up is lower than intervention, with level higher than levels in baseline and intervention. His step count range during follow up was 6540-8390, with an average of 7611. Follow up daily steps show a slight decreasing trend. Tyrion’s follow up is currently in week one of four.

**Weekly.** In Figure 2, we present weekly aggregates to aide in analysis of overall performance each week and to decrease the “noise” observed in the daily display seen in Figure 1. Weekly averages show a decreasing trend during baseline and high variability. During intervention, his weekly average showed an increasing trend with high level and no variability. Follow up level is higher than baseline and intervention. When the decision to begin intervention with Tyrion was made Poppy’s data showed an increasing trend and Tyrion’s showed a decreasing trend, as seen in Figure 2.

**Percent.** Percentage change scores may be reviewed in Figure 3. Percentage change scores are often used to observe departure of performance from prior condition(s). In this case, an average was taken of all data in the intervention and follow up conditions and separately divided by the
average step count in the baseline condition. Additionally, the average for the follow-up condition was divided by the same for the intervention condition. If increases are observed in later phases, a positive percentage is produced, whereas a negative percentage would be observed if decreases in average step count occur in later phases. Figure 3 shows a 8% step count average increase over baseline levels and a total 27% increase at follow up.

**Weight and AAQ-Ex.** Tyrion’s weight increased from 373.5 at baseline to 388.5 at follow up. AAQ-Ex scored for Tyrion were the highest from all participants, which would indicate less psychological flexibility in regards to physical activity. There was a 4 point decrease in his score from day one of baseline to day one of intervention as seen in Figure 6.
Figure 1. Daily step count by phase for all participants. Open diamonds indicate holiday. Open circles indicate session day.
Figure 2. Average weekly step count by participant for each phase.
Figure 3. Percentage change across participants by condition. Bl=Baseline, VBT= Values based training, FU= Follow up, FU2=Extended follow up (Charlotte only).
Figure 4. Weight and AAQ-Ex scores for Charlotte. Weight was measured during baseline and follow up, as seen in diamonds. AAQ-Ex was administered at baseline, first day of values based training, first day of follow up and last day of follow up, as seen in squares.
Figure 5. Weight and AAQ-Ex scores for Poppy. Weight was measured at first day of baseline and first day of follow up, as seen in diamonds. AAQ-Ex was administered on first day of baseline, first day of values based training and first day of follow up, as seen in squares.
Figure 6. Weight and AAQ-Ex scores for Tyrion. Weight was measured on the first day of baseline and the first day of follow up, as seen in diamonds. AAQ-Ex was administered on the first day of baseline, first day of values based training and first day of follow up, as seen in squares.
Chapter Four: Discussion

Prior studies on the effects of behavior analytic approaches and ACT on increasing physical activity provided the tools to create an intervention with beneficial aspects from both. Behavior analytic research provided the inclusion of goal setting and objective measures (e.g. Valbuena, 2013). ACT research provided the framework to intervene from a verbal behavior approach on covert behaviors and deleterious rules that affect engagement in physical activity in adults (e.g. Butryn et al., 2011). Results of this study provide a new picture for investigation into physical activity with typically developing adults by evaluating a verbal behavior intervention using ACT principles in the form of ACTr while measuring overt behavior in the form of step count. The results of this study showed a slight increase in step count for all three participants. The goal of the intervention was to reduce the impact that deleterious rules can have on behavior, in particular when rules decrease the probability of an individual engaging in physical activity.

The results of this study give a first look at combining objective data collection with an individual protocolized intervention to increase levels of physical activity by relating it to health related values. This can provide a picture for future research to explore avenues that incorporate some aspects while improving on others. There are various important features that could be beneficial in future research while some were found lacking.

Although step count increases were low compared to what is seen in some behavior analytic studies on the topic (e.g. Fitterling et al., 1988; Valbuena, 2013), the results are still relevant as all participants showed an increase following intervention. Additionally, it is important to bear in mind that the effects observed, while modest, occurred sans manipulation of any antecedents, response
effort, or particular tangible consequences. From a behavior analytic perspective, no effect should be observed.

Of interest in the ACT literature is a delayed effect of the verbal interventions. It is posited that the delayed effects are a result of two primary causes: first, as is common in parenting, histories of negative reinforcement continue to affect responding by parents even when attempting to change behavior patterns. Thus, change occurs over time with respect to control by reinforcement history. Secondly, the verbal components in ACT require practice, and it is surmised that continued practice results in a fluency with the techniques. In order to assess the potential for delayed effects, a follow up condition was implemented in this study. Interestingly, most behavior analytic research on this topic does not provide follow up data to ascertain effects observed, or not, in intervention. More importantly, when data is provided for follow up or return to baseline, levels drop back to baseline levels (e.g. Donaldson & Norman, 2009). In this study, none of the participants returned to baseline levels during follow up.

The ACTr intervention was shorter than ACT interventions seen in previous research (e.g. Goodwin et al., 2011). It would be interesting to continue research with brief protocols such as this one, but also compare to lengthier protocols that require more practice with more of the ACT components included. Although shorter, an effect was still seen in participant scores in AAQ-Ex, with all participants showing lower scores at the beginning of follow up than at baseline. Both Poppy and Tyrion dropped nine points in their score between baseline and first day of follow up, while Charlotte showed a decrease of three points throughout the study. There was a drop of nine points for Charlotte between baseline and beginning of intervention, followed by an increase at first day of follow up and last day of follow up. Although her score dropped overall from beginning to the end of the study, it is hard to say why there was an increase from first day of intervention to last day of follow up.
Charlotte’s increase in AAQ-Ex scores could be due to various reasons. This could be due to an increase in focus on goals as reported by her. From intake until the end of the study, it was a challenge for Charlotte to focus on behavior as being oriented towards values, but rather on goals. Her main goal was to reach a certain weight, which she did not achieve and gained 2.2 pounds. When focusing on weight instead of her value of health, Charlotte may have felt discouraged by the fact that she had actually gained weight during intervention. This could be the reason why her data shows an initial increase, but as would be expected when no environmental modifications are made (alter MO’s/antecedents, response effort, or consequences) step count decreased again. Charlotte also reported she would have lower levels during weekends due to her desire to spend time with her husband wherein they would partake in recreational use of marijuana and “be lazy”. For this reason, Charlotte was given visual feedback at the end of the first four weeks of follow up by reviewing her data. This showed an increase in step count, including her highest step count on the second day of this extended follow up.

Self-report by participants showed an improvement in their views towards physical activity, particularly in regards to time arrangements needed to increase level of physical activity. As tools were provided for relating physical activity to values, participants showed less rigidity/avoidance regarding scheduling conflicts that may arise to engage in physical activity. For example, Tyrion reported creating the opportunity for physical activity while walking his dogs. Where before he saw that as a task and a moment for his dogs to get out of the house, during intervention he mentioned that dog walking would be a great moment for him to increase his step count by taking the dogs on longer walks. During the first intervention session, Charlotte stated that she wanted to exercise at least three times a week, which is something she was not previously doing. Based on the patterning of her data, and the information provided by her, she did achieve this goal of attending the gym
three times a week. Her Bulls Eye worksheets show that she saw her daily behaviors as being very close to her health related values.

Poppy’s data is not as clear to read due to the amount of missing data. There were several instances where it took two or more reminders to achieve compliance with syncing data and wearing the FitBit. She stated that she would charge overnight and forget to put it back on the next morning. Various strategies were suggested for improving this but none were implemented (as reported by Poppy). With the data available we can see that her daily step count as seen in Figure 1 shows an increasing trend that was not seen during baseline, particularly towards the end of intervention. Follow up data shows stability that was not seen in previous phases with levels above the average for each of the other two phases. Follow up data shows a decreasing trend, which is the opposite of what was seen with Charlotte’s data.

Generalizations were observed with the training on values with two participants. Poppy reported that her values training was applied with regards to her family, so although it seems the intervention had an effect on her behavior, based on self-report, it had an effect in an area not targeted by the intervention. Tyrion discussed how physical activity used to be something he had to do because his doctor told him to, but now it was something that he wanted to do because he wanted to be healthy to be able to live longer and spend more time with his wife and helping others.

There were several limitations to this study. A lack of compliance from Charlotte and Poppy to wear the FitBit daily and to sync daily was a particular challenge. This created problems due to lack of complete daily data as well as delays in receiving data in order to make intervention decisions. Several attempts were made to improve this by increasing reminders, providing strategies for better compliance and explaining the importance of wearing and syncing the FitBit daily. Poppy and Charlotte reported at times to have forgotten to charge the FitBit even after receiving reminders, based on receiving reminders when they were already at work and had no access to the charger at
the time. Reminders were sent at different times in the day and even on weekends, so this does not match up with their report. Response to email reminders were not received by Charlotte other than by syncing and charging. Poppy would reply within 24 hours with an explanation and stating she would charge and sync immediately, but would not always do so. Poppy in particular stated that she would forget the FitBit on the charger or at home since she would remove it every night.

In conjunction with the delays and incompleteness of data, sessions had to be scheduled several days ahead of time due to the participants’ schedule, which can be clearly seen as a limitation when looking at the timing of intervention start with Charlotte in Figure 1 and Figure 2. If data had been up to date, the decision to start intervention with her would have been delayed due to the spike in step count during the last week of baseline. However, it should be pointed out that the large increase at the end of baseline was primarily due to one day where her step count was quite high. This is also seen in the beginning of intervention with Tyrion, as Poppy’s data showed an increase followed by a decrease right when the first session with Tyrion was conducted. Truly, as this is a non-concurrent design, the rules regarding showing experimental control for the between analysis are weakened given the participants did not share environments and thus extraneous factors for one person could not have been active for the other.

There were also issues with the scale used to measure weight, which made it impossible to collect weight data for Charlotte on the first day of follow up. This also occurred with Poppy, but her weight was measured a week and a half after follow up began. This is not particularly troublesome as weight was not a main target of this intervention.

Follow up was short in comparison to other ACT centered interventions, which may be why the intervention effects are lower than what is usually seen. It is important to note though, that this is still an improvement over traditional applied behavior analysis interventions that show an increase in intervention follow by a return to baseline in follow-up (e.g. Fitterling et al., 1988). This was not
the case in this study, but rather, a steady increase is seen throughout intervention and follow-up, for two out of the three participants.

Future research should continue on a search for effective verbal behavior based approaches to impacting physical activity as results of this study and previous research in the area of ACT show effects that may continue to follow-up when the research concludes/practitioner ends consultation (Goodwin et al., 2011). Furthermore, an intervention with more components and ACT based tools per session may be found to have greater effect on performance of physical activity. Finally, a better assessment of participants’ current physical activity and goals should be conducted in order to create an intervention that focuses on long-term values from a goal-centered approach. This would require an understanding of the participant’s short and long-term goals, their values and providing the motivation and tools to approach goals from a values perspective.
References


Solley, E.A. (2014). *Improving consistency of goal attainment to increase physical activity*. Retrieved from University of South Florida Scholar Commons (ETD 5314).


Appendices
Appendix A: Activity Log

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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</tbody>
</table>

Date range

Please fill out each cell with the amount of minutes/hours per day that you engage in physical activity other than daily walking. Be as accurate/specific as possible. Thank you.

Please note below any life events that prevented you or caused an uncommon increase in physical activity over the past week. Include date of event.

________________________________________________________________________________________________________________________________________________________________________
## Appendix B: Fidelity Checklist

### Session Fidelity Checklist – Session 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thank participant for participation</td>
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<tr>
<td>Explain how sessions will be conducted</td>
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<tr>
<td>Ask participant if he/she has any questions about how sessions will work</td>
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<tr>
<td>Ask participant if they have far about the use of the FitBit Flex</td>
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<tr>
<td>Overview of brochures provided during baseline</td>
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<tr>
<td>Administer AAQ-Ex</td>
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<tr>
<td>Explain and discuss difference between values and goals</td>
<td></td>
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<tr>
<td>Card Sorting Task</td>
<td></td>
</tr>
<tr>
<td>What is it?</td>
<td>Yes</td>
</tr>
<tr>
<td>Why do we do it?</td>
<td>Yes</td>
</tr>
<tr>
<td>Let's do it</td>
<td>Yes</td>
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<tr>
<td>Ask participant understands exercise</td>
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<tr>
<td>Provide participant at least 30 minutes to complete task</td>
<td></td>
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<tr>
<td>Discuss results with participant (e.g. any surprising values?)</td>
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<tr>
<td>Bull’s Eye worksheet (detailed)</td>
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<tr>
<td>What is it?</td>
<td>Yes</td>
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<tr>
<td>Why do we do it?</td>
<td>Yes</td>
</tr>
<tr>
<td>Ask participant to fill it out</td>
<td>Yes</td>
</tr>
<tr>
<td>Discuss answers and importance of exercise</td>
<td>Yes</td>
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<tr>
<td>Goal Setting Worksheet</td>
<td></td>
</tr>
<tr>
<td>What is it?</td>
<td>Yes</td>
</tr>
<tr>
<td>Why do we do it?</td>
<td>Yes</td>
</tr>
<tr>
<td>Ask participant to fill it out</td>
<td>Yes</td>
</tr>
<tr>
<td>Discuss answers and importance of exercise</td>
<td>Yes</td>
</tr>
<tr>
<td>Provide assistance to participant throughout if they have questions</td>
<td></td>
</tr>
<tr>
<td>Provide participant blank Bull’s Eye (short version) and Goal Setting Worksheet for coming week</td>
<td></td>
</tr>
<tr>
<td>Ask them to refer to the filled out ones if they need to in order to fill out the new ones for homework</td>
<td></td>
</tr>
<tr>
<td>Provide participant with blank Activity Log to fill out for the next week</td>
<td></td>
</tr>
<tr>
<td>Ask participant if he/she has any questions</td>
<td></td>
</tr>
<tr>
<td>Remind participant to wear FitBit Flex, sync it daily and charge it every 4 days</td>
<td></td>
</tr>
<tr>
<td>Confirm next session time and date with participant</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Social Validity Questionnaire

Please answer the following questions as honestly as possible. For each statement you will have numbers 1 (Completely Disagree) to 5 (Completely Agree) to rate them. Thank you.

1. My participation in this study did not cause any discomfort or injuries

2. The tools and information provided in this study have been helpful for me

3. I have shared the tools learned from this study with other people

4. I will continue to use the tools I learned in this study

5. My participation in this study has improved my overall wellbeing

6. I will share my experience with others to improve their life

7. The researcher answered my questions and ensured my understanding of tools
Appendix D: USF IRB Approval

June 23, 2015

Jessica Sykes
ABA-Applied Behavior Analysis
Tampa, FL  33612

RE: Expediting Approval for Initial Review
IRB#: Pro00021716
Title: Evaluating the Effectiveness of Values Based Training to Impact Physical Activity in Adults


Dear Ms. Sykes:

On 6/23/2015, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents outlined below.

Approved Item(s):
Protocol Document(s):
Final Proposal Manuscript

Consent/Assent Document(s):*
Informed Consent.pdf

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:
(4) Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving X-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing.

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

[Signature]

Kristen Salmon, Ph.D., Vice Chairperson
USF Institutional Review Board