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### Impact of Motivational Interviewing on Body Mass Index

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ABSTRACT

IMPACT OF MOTIVATIONAL INTERVIEWING  
ON BODY MASS INDEX

by

Tajsier L. Thompson

Chair: Jochebed Bea Ade-Oshifogun

## ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University

School of Health Professions

Title: IMPACT OF MOTIVATIONAL INTERVIEWING ON BODY MASS INDEX

Name of researcher: Tajsier L. Thompson

Name and degree of faculty chair: Jochebed Bea Ade-Oshifogun, Ph.D.

Date completed: May 2018

### Introduction

Being overweight and obese has become a common lifestyle. More than half of American adults are overweight and more than a quarter of overweight adults are obese. Despite this overwhelming statistic, weight-loss coaching by primary care providers is usually disregarded due to time constraints and lack of skills to motivate patients to reach weight-loss goals. Motivational interviewing (MI) focuses on helping people investigate and overcome ambivalence toward healthy lifestyle modifications by helping them to explore their weaknesses, strengths, and preferences in an effort to facilitate behavioral changes.

## Objective

The primary objective of this project is to assess the effectiveness of MI as a coaching technique to decrease body mass index (BMI).

## Method

The thirty-three participants for this project were selected through a random systematic sampling method. Those who met the inclusion criteria were systematically assigned to either the control or experimental group (odd number participants [1, 3, 5 ...] were selected for the experimental group; and even number participants [2, 4, 6 ...] were selected for the control group). The relationship between MI and a potential reduction in BMI was evaluated by performing an independent sample *t-test* and two-group pre-test/post-test design in order to analyze the mean difference in BMI for the two groups. At the end of a 6-week period, the treatment group chose and implemented behavior modifications that aided in weight loss after receiving MI. During the same 6-week period, the control group continued without MI as an intervention.

## Results

There was no significant difference,  $t(31) = 1.62$ ,  $p = 0.58$  in mean pre-/post-BMI outcomes for participants who received MI as an intervention during a brief consultation. The BMI outcomes for the experimental group were  $M = 33.09$ ,  $SD = 6.5$ ; and for the control group were  $M = 29.8$ ,  $SD = 5.05$ ; 95% CI.

## Conclusion

Weight loss is a battle that many Americans face (Center for Disease Control and Prevention [CDC], 2014). Therefore, more aggressive and creative methods should be

used to help patients reach their desired goals. This project attempted to demonstrate how MI could be used to promote weight loss. Although there was no statistical significance, the experimental group did have substantial weight loss; 10 out of 17 experimental participants lost an average of at least 1 BMI unit (3-5 lbs.), the mean pre-/post-BMI difference of 1.13 units. By comparison, the control group had a mean BMI loss of 0.78 of a unit. Further study is recommended to assess the effectiveness of MI for weight loss and the effects of indirect motivation on weight loss.

Andrews University  
School of Health Professions

IMPACT OF MOTIVATIONAL INTERVIEWING  
ON BODY MASS INDEX

A Dissertation  
Presented in Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Nursing Practice

by  
Tajsier L. Thompson

May 2018

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ON BODY MASS INDEX

A dissertation  
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Tajsier L. Thompson

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Date Approved



## DEDICATION

This humble work is dedicated to all who struggle on their weight loss journey, but who continue to push forward toward their goals. Your battle is real. May this work and others to follow act as tools you can use in the battle.

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## LIST OF ABBREVIATIONS

BMI	Body mass index
CDC	Center for Disease Control
CMS	Center for Medicare and Medicaid Services
MASDAC	Michiana African Seventh-day Adventist Church
MI	Motivational interviewing
PDSA	Plan-Do-Study-Act
RD	Registered dietitian
REDS	Roll with resistance, Develop discrepancies, Express empathy, and Support self-efficacy
TTM	Trans-theoretical model

## ACKNOWLEDGMENTS

This project is dedicated to those who are willing to make lifestyle choices that will improve their quality of life and their life expectancy and to their supportive families and community.

I thank God for His simple, but effective organic interventions. I make mention of my family, for they have patiently supported me through encouraging words and loving acts. I am also extremely grateful to the faculty and staff at Andrews University who have given their support. A special thanks to my inspiration, Faith Thompson and Pastor Christopher Hughes. I would also like to include notable mention of Pastor Zebron Ncube, of the Michiana African Seventh-day Adventist Church, Mrs. Jeanine Kocsis, Dr. Susan Allen, Dr. Beverly Sedlacek, Sr. Chi, Dr. Grajales, Laura Carroll, and Dr. Ade-Oshifogun for their support and guidance.



## CHAPTER 1

### INTRODUCTION

#### **Background**

Obesity is a long-lasting condition which occurs as the body attempts to secure an equilibrium between energy intake and energy expenditure. When equilibrium through energy intake and energy expenditure is not achieved, dysfunction occurs. This dysfunction results in excess energy storage of triglycerides and glycerol in adipose tissue (fat cells); which are then converted into adipose tissue (fat; Buttaro, Trybulski, Bailey, & Sandberg-Cook, 2013; Hill, Wyatt, & Peters, 2012).

There are various factors that can affect energy intake, energy expenditure, and the balance between them. Energy intake is generally influenced by the patient's appetite, meal size, ability to become satiated, gut factors (ghrelin, glucagon peptide, and cholecystokinin), the number and size of adipocyte (fat cells), insulin, food availability, and the caloric density of foods. Energy expenditure is generally influenced by the amount of physical exercise (time invested and level of intensity), metabolic rate, and the thermic effect of ingested food (Buttaro et al., 2013)

Other factors that influence weight gain are agouti-related protein/neuropeptide Y which inhibit anorexic neurons (neurons that promote anorexia and energy-expendng), thus causing one to experience increased hunger, thus increasing energy intake and retention. The central nervous system affects energy intake through feedback from

various hormones including insulin and leptin. Insulin is a pancreatic hormone that is released to control glucose during food intake. Consuming too much food will cause more insulin to be secreted to aid glucose storage in tissue. Increased amounts of circulating insulin will increase the storage of fat in adipose tissue and inhibit the cells from releasing it for energy. Unused stores of glucose (due to inactivity) accumulate as fat stores in tissue. Leptin is a hormone secreted by the adipocytes and gastric mucosa in response to the amount of stored body fat. Increased body fat causes an increase in leptin secretion, which causes leptin receptor resistance in the hypothalamus. Leptin resistance inhibits anorexic neurons, resulting in decreased satiation and decreased portion control. Consumption of hedonic foods can also increase energy intake. Hedonic foods are neural mediated rewards (sensation of pleasure) received when foods such as sugary/fatty items are consumed. Hedonic hunger is a pleasure-seeking behavior that is driven by a desire to obtain pleasure from food in the absence of hunger (Buttaro et al., 2013).

Energy expenditures are divided into subcategories: basal metabolic rate, physical activity, and thermogenic effect of food. Energy expenditure is the use of energy by the body to perform various functions and activities. The basal metabolic rate is energy the body will use while at rest. This accounts for approximately 50%-75% of sedentary energy output. Physical activity, mild or extreme, can account for 7%-25% of energy output. The thermogenic effect of food is energy usage to digest, absorb, and metabolize foods consumed. The thermogenic effect accounts for approximately 10% of energy expenditures (Hall et al., 2012). Physical activity usage can range from 100-3,000 calories (units of heat energy) per day depending on a person's lifestyle (Buttaro et al., 2013).

In sum, an imbalance occurs when energy is consumed in excess and no effort is made to use the energy. The energy is then converted into stored fat. Energy expenditures in the form of basic metabolic rate and the thermogenic effect are not sufficient to utilize excessive energy; thus, physical activity is needed to burn fat stores and maintain a balance between energy input and energy output.

### **Statement of Problem**

Despite the awareness by primary care providers of the detrimental consequences of being overweight/obese, there is still a lack of patient counseling regarding outcomes and, what is more important, how to combat being overweight/obese. Primary care providers are usually the first and only providers who come in contact with patients and, therefore, play a crucial role in advocating healthy lifestyle changes. It has been shown that primary care providers are not convinced that offering weight advice and coaching is of value in the clinical office (Solovey, 2010). An awareness of the positive correlation between weight loss and Motivational Interviewing (MI) may change the minds and practices of health professionals to pursue weight loss counseling for overweight patients.

Primary care providers attribute the lack of weight loss counseling to inadequate time for proper counsel in a brief office visit, lack of provider training on weight loss counseling, and a lack of referral resources available to patients who need multidisciplinary services (Lewis & Gudzone, 2014).

## **Purpose of Project**

The purpose of the project was to examine the effects of MI on overweight or obese adults for the purpose of identifying its influence on body mass index (BMI) as measured over a 6-week period from the initiation of coaching.

## **Need for the Project**

Obesity contributes to outstanding national medical expenditures. Public and private sector payers are affected by these expenditures. The annual cost of obesity in the United States is approximately \$147 billion. Medicare finances 23% of the annual cost, while Medicaid finances 19%; the remaining annual expenditures for obesity are covered through private insurance. Annual medical expenditures nation-wide would be 7.0% - 11.0% lower if obesity were not a contributing factor. State level expenditures would be 6.7% -10.7% lower if obesity were not a contributing factor (Finkelstein, Trogon, Cohen, & Dietz, 2009).

Although there has been increased attention given to obesity, it still remains to be a problem in the United States. Obesity is non-discriminatory; it is present in people from differing socio-economic backgrounds, genders, race, and ethnicity. Over one-third of American adults are obese. Despite public efforts to address obesity, it persists and is likely to be one of the hardest health issues to eradicate (Mitchell, Catenacci, Wyatt, & Hill, 2011).

Nammi, Koka, Chinnala, and Boini (2004) called obesity the “New World Syndrome.” It is linked to premature death because it increases the risk of morbidity in comparison to individuals with an ideal body weight. Obesity is viewed as a chronic disease that requires successful strategies for its management.

The United States Preventive Services Task Force recommended that providers who have direct contact with patients should screen for obesity using the BMI calculator as a tool to measure BMI (Yao, 2013). This method identifies patients who are at risk and those who are obese. Second, United States Preventive services Task Force recommended that providers offer or refer patients with a BMI  $>30$  kg/m<sup>2</sup> to intensive, multi-component, behavioral interventions such as counsel therapy. Counsel therapy as an intervention for weight loss shows “participants lost an average of 6% of their baseline weight (4–7 kg) in the first year of interventions, meeting the World Health Organization defined primary goal of long-term weight loss maintenance (weight loss of 5–15%)” (Yao, 2013, p. 19).

The Center for Medicare and Medicaid Services (CMS, 2011) reported that obesity is primarily and secondarily related to many chronic diseases, namely cardiovascular disease, musculoskeletal conditions, and diabetes mellitus. As an intervention against obesity, CMS endorses behavioral therapy for obesity. To promote permanent weight loss, CMS advises the following: screening for obesity in adults using the measurement of BMI, a dietary assessment, and behavioral counseling.

The CDC (2016) stated that obesity and its related health complications have a significant economic impact on medical costs. Primarily, obesity is related to medical costs due to funds allocated for prevention, diagnosis, and intervention. Secondarily, obesity is related to medical costs due to its influence on productivity measures including absenteeism and presentism. Absenteeism results from missed-workdays due to obesity-related health problems. Presentism results from low work efficiency during the course of the work day.

## **Significance of Project**

The goal of this project is to test the efficacy of MI on decreasing BMI. Obesity has become epidemic. It increases the risk for and is a contributor to many chronic diseases namely cardiovascular disease, musculoskeletal conditions, and diabetes (CMS, 2011). It is a factor for absenteeism; the cost for nationwide non-productivity ranges from \$3.38 billion - \$6.38 billion annually (Trogon, Finkelstein, Hylands, Dellea, & Kamal, 2008). Motivational interviewing during a primary care visit is a way to fight the war on obesity through assessment, advising, collaboration with the patient, use of behavior-changing techniques to assist in reaching agreed upon goals, arrange follow-up visits as needed, and make a referral when necessary (Curry, Grossman, Whitlock, & Cantu, 2014).

Bishop and Jackson (2013) suggested that MI can be used by advanced practice nurses as an alternative to traditional educational methods for increasing the patient's motivation to change unhealthy lifestyle behaviors. Expert advice was traditionally given to patients with the expectation of change, but with limited success. Motivational interviewing could be an effective tool in brief clinical settings in order to effect change in decreasing the risk of chronic disease.

Motivational interviewing is an effective tool to use in reducing risky behavior. In a meta-analysis by Jackman (2012), random control trials in the mental healthcare setting were evaluated for effectiveness with adolescent patients. Advanced practice nurse practitioners were found to be well suited to involve their patients in MI. Psychiatric nurse practitioners use MI to encourage autonomy of care and overcome resistance to change.

## CHAPTER 2

### CONCEPTS/QUALITY IMPROVEMENT MODEL/ THEORETICAL MODEL

#### Concepts and Definition of Terms

*Motivational interviewing*: a patient-centered intervention that emphasizes the inclusion of patients in treatments that require behavior changes. This patient-centered approach fosters provider compassion, patient engagement, patient exploration of problems, and affirmation of the patient’s efforts to overcome ambivalence (see Figure 1; Barnes & Ivezaj, 2015).

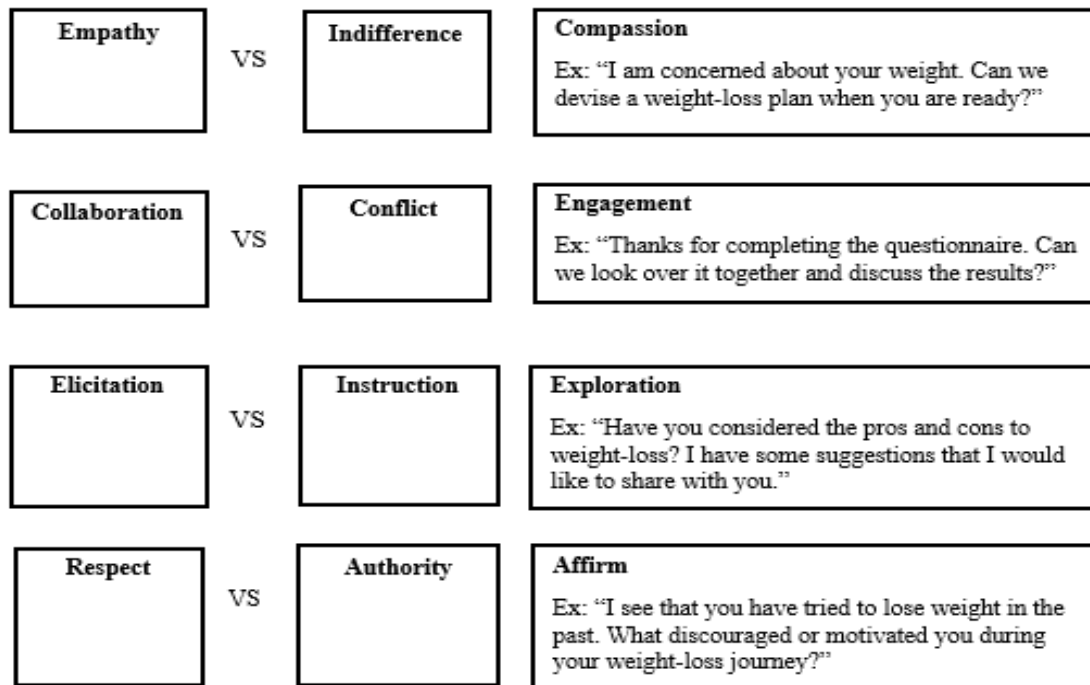


Figure 1. Motivational interviewing process. (Adapted from Miller & Rollnick, 2003).

Compassion is demonstrated when a provider shows empathy versus indifference to the patient's plight. Showing concern instead of ignoring the problem lets patients know that you are paying attention to their predicament, but will not pass judgement on them. Collaboration is notable when the provider seeks to include patients at every step of the process. This gives the patients a presence and a voice. Exploration of past and current information that has and will affect patient outcomes is a way to identify barriers to change and ambivalence toward change. Affirming patients' decisions for treatment is essential in promoting patient autonomy and respect for how they feel and choose to change a behavior.

Motivational interviewing refers to an interface between providers and patients for the purpose of moving the patient past ambivalence and motivating him/her to implement behavioral or lifestyle changes. This interaction fosters a therapeutic relationship between provider and patient. Facets of MI include provider recognition of the patient's personal values and goals, the provider's willingness to allow the patient to help develop and manage lifestyle changes that are appropriate to reaching those goals, having patient uncertainties be identified and clarified, and giving the patient the ability to recognize the possible benefits related to lifestyle modifications. This coaching skill focuses on helping patients investigate and determine their ambivalence, inconsistencies, and uncertainties about the problem. With MI, the provider can focus on helping patients explore their weaknesses, strengths, and preferences, which will facilitate behavior change (Buttaro et al., 2013).

Providers traditionally attempt to persuade the patient to stop an unhealthy behavior with statements that provoke negative reaction or push the patient away, such as



“It is very important that you *change*” or “Your health will not improve while you continue to *do* \_\_\_\_\_” (fill in the blank with a behavior). This method may increase the patient’s awareness of the apparent risk, but does not offer the patient options for aborting the behavior, nor does it take the patient’s thoughts and feelings into account (Resnicow & McMaster, 2012). Motivational interviewing seeks a different approach. Instead of trying to direct the patient or offer unwanted advice, MI utilizes an “elicit-provide-elicit” construct. This method stimulates discussion by first asking patients about their understanding of the topic in question and their desire to learn more about it. New information is then provided to them regarding the topic, followed by asking for their opinion of the information given. Patients should be given time to process the new information and decide for themselves what the most effective course to take should be (Resnicow & McMaster, 2012). Motivational interviewing is becoming an acceptable intervention by physicians because it provides answers to many healthcare problems. Motivational interviewing is a cost-effective intervention for chronic conditions caused or perpetuated by lifestyle choices. It is under the umbrella of value-based reimbursement which encourages provider-patient relationships and patient autonomy (Beaulieu-Volk, 2015).

Roll with resistance, Develop discrepancies, Express empathy, and Support self-efficacy (REDS) describe the characteristics of MI. The “R” represents Roll with resistance. Resistance in MI denotes patients’ reports of their struggle in opposition change, reports that cause patients to continue practicing their problematic behaviors. These reports can involve their reasons for the behaviors or the difficulties they experience when attempting to change the behaviors. It is important for practitioners to

discern resistance in their patients because this information gives them evidence of the patients’ struggle, thus giving practitioners the opportunity to speak to the struggles (see Table 1; Resnicow & McMaster, 2012).

Table 1

*Four General Principles of Motivational Interviewing*

<i>REDS (Adapted from Resnicow, &amp; McMaster, 2012)</i>	
R	Roll with resistance
E	Develop discrepancies
D	Express empathy
S	Support self-efficacy

The “E” represents Empathy. Practitioners endeavor to recognize their patients’ oppositions and struggles without drawing their own conclusion or criticizing their patients for the undesired behavior. The ability to listen carefully to the patients’ reasoning for the undesirable behavior and then offering reflective suggestions is a critical skill to MI. Patients are more likely to explore their motivations for change and speak candidly when they feel comfortable with and are understood by their practitioners (Resnicow & McMaster, 2012).

The direct method for evoking patient “change talk” centers on the provider’s ability to identify how patients talk about change. Providers should then look for clues in patient statements that suggest a desire for change (“*I don’t want to gain more weight*”); their ability to change (“*I can begin to monitor my portions at meal time*”); reasons for change (“*If I lose weight, I can increase the likelihood of getting off some of my medications for hypertension and Type 2 Diabetes Mellitus*”); a need to change (“*I want*

*to be a role model to my students who are overweight”*); and a commitment to change (“*I will begin an exercise program at my local gym*”; Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003).

Another way to elicit “change talk” would be to ask the patients to look to a future time and consider where their lives are headed if they continue undesirable health choices. Motivational interviewing uses various methods to provoke change statements with the purpose of acquiring a commitment to change when the patients are ready, willing, and able (Miller & Rose, 2009).

The “D” represents Discrepancy. Inconsistencies often exist between patients’ goals and current undesirable behaviors. The practitioner can use MI to reflect on these discrepancies and explore ways to overcome the undesirable behavior. It is important that practitioners not dwell on the negative by focusing on the undesirable behavior, but rather, compare the undesirable behavior to the patients’ goals. Suggestions can then be offered that will help the patients reach their desired goals. This technique will help them feel they are working in accordance with their chosen self-perceptions and aims (patient autonomy; Resnicow & McMaster, 2012).

The “S” represents Self-efficacy. When patients believe that they can have a positive effect on their health, they are more likely to be motivated for change. Conversely, when patients lack assurance, they can be discouraged about changing unwanted behaviors. With MI, practitioners can search for openings to encourage the patient’s self-efficacy by helping them understand their inner strengths. One way to accomplish this is to point out the patients’ past successes, as a platform to approach their current need to change (Resnicow & McMaster, 2012).

When the principles of REDS are incorporated into the brief clinical visit, provider- patient interaction will have a positive impact for change. These principles create collaboration between the patient and practitioner by establishing respect for the patients' ideas; demonstrates a genuine interest in the patients' well-being; evokes "change talk" by the patients, and offers a patient-centered focus that identifies strategies to arrange and meet goals. It accommodates the patients' autonomy by giving them the opportunity to make decisions and initiate change by controlling their own behavior and outcomes (Buttaro et al., 2013, p. 117; Resnicow & McMaster, 2012). As a result of the provider-patient interaction, patient autonomy is encouraged, patient-centered goals are created and respected, and thus, changes should result. Common questions asked during an MI based on a scale of 0-10 include the following: How willing are you to make lifestyle changes? Do you think it is important to make lifestyle changes at this time? What would be the benefits to change? Are there any disadvantages to avoiding such lifestyle changes? What kinds of changes have you made in the past to improve your lifestyle habits (eating, physical activity)? What strategies have worked for you in the past? What was your life like before you gained weight? What do you think will happen if your health behaviors do not change? What are your hopes for the future if you are able to become healthier? How would your life be different if you lost weight or adopted a healthier lifestyle? What kinds of healthy changes do you think you could make?

If the provider meets with opposition or rejection, he or she can change the approach, ask questions to clarify misunderstandings, or refer the patient to another professional. Motivational interviewing can be an effective tool for weight loss because it recognizes patient autonomy and thus seeks not to lecture the patient, but instead, to

incorporate active listening (empathetic), patient’s self-efficacy to build self-confidence, and to encourage patient involvement in weight-loss regimens. This shared decision-making approach will include tolerant patient feedback and decreased patient resistance to change (Barnes & Ivezaj, 2015). If patients can be stirred to create their own reasons for incorporating healthy lifestyle changes, they are more apt to be compliant with healthy behaviors.

*Change Talk*: statements by patients that indicate they are considering a behavioral change. Research suggests that there is a positive correlation between change talk and success in changing a behavior. In theory, the more patients affirm or confirm a change in conversation, the more likely they are to carry out a change in behavior (see Table 2; Rollnick, Heather, & Bell, 1992).

Table 2

*Change Talk*

Change Talk (Adapted from Lombardi, Button, & Westra, 2014)	
I ought to...	I ought to eat more fresh fruits & vegetables.
I could.....	I could eat fresh vegetables for dinner.
I want to...	I want to eat fresh vegetables or fruit at every meal.
I promise...	I promise myself that I’ll eat fresh fruits or vegetables at every meal.

*Body Mass Index*: Body Mass Index is an alternative way to measure adiposity. It is a metric calculation of weight in kilograms divided by height in meters squared ( $BMI = \text{kg/m}^2$ ). The American Standard (English) equivalent to the metric BMI is weight in

pounds divided by height in inches squared multiplied by 703 ( $BMI = [lbs./in.^2] \times 703$ ; CDC, 2014).

*Overweight:* A body mass index of 25 to 29.9 (CDC, 2014).

*Obese:* A body mass index of 30 or above (CDC, 2014).

### **Literature Review**

For my project, I evaluated the effectiveness of MI on weight loss, particularly, the patient's body mass index. Motivational interviewing has been used in the past as a tool for behavior changes for drug and alcohol addictions. There is little known about the effects of MI on behaviors associated with weight loss, but the literature does suggest that weight loss is a potential field for applying MI. Due to the dearth of knowledge of MI on weight loss, I saw a need to research this topic in order to ascertain whether it would have a positive impact on weight loss in the primary setting.

Motivational interviewing is an evidence-based coaching approach that addresses the treatment and management of chronic conditions in the primary care setting. Motivational interviewing has been shown to have a positive outcome when practitioners and organizations are committed to the training and use of MI. When providers and systems see the importance of fostering a trusting environment by educating and empathizing with the patient, breakthroughs are made in healthcare (Butterworth & Sharp, 2018).

#### **Motivational Interviewing and Behavior Modification**

Research attests to the fact that MI has a clinical-applicable effect across a range of behavioral areas. Whereas MI initially began with addiction counseling, it is now seen

in a number of areas that require behavioral changes. Research supports MI in areas such as “alcohol and drug use, smoking cessation, medication compliance, human immunodeficiency virus risk behaviors, and diet/exercise.” Clinical visits that only lasted 15 minutes or less showed a marked improvement 64 % of the time when compared to the traditional advice-giving approach (Hettema, Steele, & Miller, 2005; Rubak, Sandboek, Lauritzen, & Christensen, 2005).

Project MATCH Research Group (1998) reported comparable effects of MI with offending and non-offending clients. As a result, strategies were published for integrating MI with technical features of community corrections because they found a positive correlation between correctional officer empathy and parolee adherence. Other authors recognized that relationship in MI training also positively mended officer skills in the area of empathy as measured by standardized interactions between inmates and correctional officers (Walters, Clark, Gingerich, & Meltzer, 2007; Walters, Vader, Nguyen, & Eells, 2010)

In summary, research in the area of behavior modification through MI is beginning to emerge. Motivational interviewing counseling strategies are a practical tool for healthcare professionals because it provides a patient-centered, time effective, evidence-based practice approach to overcoming behavior barriers to change (Armstrong et al, 2011; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010). Motivational interviewing is being evaluated for its efficacy and has shown to be effective in areas such as improved dietary choices, weight loss, increased physical activity/fitness, increased the intake of fresh fruits and vegetables, and decreasing the intake of saturated fats (Puhl, 2011).

## Motivational Interviewing and Weight Loss

Motivational Interviewing is emerging as a useful tool for obesity management in middle-aged obese women. Motivational interviewing is proposed as a benefit for all those invested in the health of the patient such as medical providers, local clinics, and healthcare organizations (Armstrong et al., 2011; Low, Giasson, Connors, Freeman, & Weiss, 2013; Saffari, Pakpour, Mohammadi-Zeidi, Samadia, & Chen, 2014).

Motivational interviewing could be used as a tool to rouse patients' motivation to overcome behavioral barriers that retard the progression of their weight loss journey (Cushing, Jensen, Miller, & Leffingwell, 2014; Newnham-Kanas, Morrow, & Irwin, 2011).

A review of the literature has indicated the effectiveness of MI for weight loss. Nine studies related a significant weight loss at post-treatment assessment for the MI condition, as compared with the control group. Thirteen studies described MI patients achieving at least 5% loss of initial body weight. Therefore, it is conceivable for MI to be used by clinicians in the primary care setting as an intervention for weight loss (Barnes & Ivezaj, 2015).

Resnicow et al., (2015) sought to evaluate MI and dietary counseling for obesity in primary care. Forty-two practices from the Pediatric Research in Office Settings Network of the American Academy of Pediatrics were randomly selected. Motivational interviewing delivered by practitioners and registered dietitians (RDs) showed a statistically significant decrease in the BMI percentile. Further research is needed to ascertain how to train providers and RDs to use MI in the primary care setting. Small, Bonds-McClain, Melnyk, Vaughan, and Gannon's (2014) results suggest that patient-



centered interventions in the pediatric setting can improve health outcomes for children/youth in danger of chronic health comorbidities later in life due to being overweight and obese.

### Motivational Interviewing and Drugs/Alcohol

Motivational interviewing as a patient-centered approach to ambivalence is an effective therapeutic method within the area of addiction (Armstrong et al., 2011). Handmaker, Hester, and Delaney (1999) reported on the effectiveness of MI in an obstetric care setting by teaching providers to empathize with patients who are overcoming drug/alcohol abuse and by reducing anxieties associated with healthcare visits during periods of withdrawal or substance use.

A meta-analysis on the unique effects of MI was conducted by Lundahl et al. (2010). The research was comprised of 119 studies that showed clinical significance in outcomes for undesirable behaviors such as substances (nicotine, alcohol, illicit drugs, and cannabis) and health-related conduct (food intake habits, exercise, and safe sex).

### Motivational Interviewing and the Pediatric Population

In an effort to combat the prevalence of being overweight/obese during childhood, pediatricians used MI in pediatric health care centers. Results show that prevention protocols that utilized MI were significant between pre-/post-test BMI for the intervention group because they had *less* of an increase in BMI during the two-year period as compared with the control group (Van Grieken et al., 2013). More research suggests that while MI was effective in regulating body mass index in general, it had little

to no effect on boys or children whose mothers had a low educational level (Davoli et al., 2013).

### Motivational Interviewing and the Primary Care Setting

Motivational interviewing counseling strategies are practical tools for healthcare professionals because they are a patient-centered, time-effective, evidence-based approach to overcoming behavior barriers to change. Motivational Interviewing is an inexpensive intervention and could be used quickly during office visits when patient-provider interaction times are limited (Armstrong et al., 2011; Lundahl et al., 2010; Puhl, 2011).

Research suggest that MI is successful in brief, multi-focused medical consultations (Heather, RoUnick, Bell, & Richmond, 1996). Other authors have added to this finding by concluding that the integration of MI into settings such as a medical consultation is consistent with past efforts to adapt MI into healthcare and other brief settings such are primary care, while still keeping the overall style (patient-centered) approach (Resnicow et al., 2002; Rollnick et al., 1992).

Hettema et al. (2005) and Rubak et al. (2005) attested to the fact that there is a substantial and clinical-applicable effect of MI across a range of behavioral areas. Motivational interviewing initially began with addiction counseling, but it is now seen in a number of areas that require behavioral changes. Research soundly supports MI in areas such as alcoholism, illicit drug use, smoking cessation, medication compliance, human immunodeficiency virus risk behaviors, and diet/exercise. Motivational interviewing was proven to be significantly better than the traditional advice-giving approach for almost 80% of the time. Clinical visits that only lasted 15 minutes or less showed a marked

effect over 64% of the time when compared to the traditional advice-giving approach (Browning et al., 2016).

Medical encounters in the primary care setting for such things as weight-loss, management of Type 2 diabetes mellitus, and hypertension have been shown to improve with MI because of the patient-provider interaction and collaboration. Motivational interviewing has been shown to be effective in brief and multi-focused visits such as in medical consultations (Heather et al., 1996). Integration of MI into such settings is consistent with past efforts to adapt MI into healthcare and other brief settings such as primary care, while still keeping the overall style (patient-centered) approach (Resnicow et al., 2002; Rollnick et al., 1992).

A study conducted by Resnicow et al. (2015) sought to evaluate MI and dietary counseling for obesity in primary care. Forty-two practices randomly selected from the Pediatric Research in Office Settings Network of the American Academy of Pediatrics were chosen and divided into three groups. Usual care (group 1) calculated BMI percentile at baseline and one-time two-year follow-up. Provider-only (group 2) provided four MI counseling sessions to the parents of children over two years of age. Provider plus RD (group 3) provided four practitioner MI sessions plus six MI sessions from an RD. Results showed that at the two-year follow-up, the adjusted BMI percentiles for groups 1, 2, and 3 were 90.3, 88.1, and 87.1 respectively. The mean for group 3 was significantly lower ( $p = .02$ ) than for group 1. Mean changes from baseline in BMI percentile were 1.8, 3.8, and 4.9 respectively for groups 1, 2, and 3. Motivational interviewing delivered by practitioners and an RD showed a statistically significant decrease in BMI percentile.

A study conducted by Serdarevic and Lemke (2013) summarized the effects of motivational interviewing on the geriatric patient population. As an intervention to improve medical health behavior, MI's psychotherapeutic methods have a potential to change the way in which providers can engage patients who need to modify unhealthy behaviors. As a proven cost-effective treatment, MI can be used in primary care settings to meet the biomedical and psychological needs of older adults.

Health care systems and the resources used to deliver health care services for meeting health needs can be greatly enhanced by interventions to support chronic illness prevention and healthy lifestyle promotion (Bean, Biskobing, Francis, & Wickham, 2012). Motivational interviewing has demonstrated positive results to effect change in such areas such as mental health, endocrinology, weight loss management, and substance abuse. Because it encourages collaboration and trust between provider and patient, MI positively affects patient behavior (Armstrong et al., 2011; Barnes & Ivezag, 2015; Martino, 2011; Rubak et al., 2005). In opposition to traditional approaches in provider/patient relations, MI builds patient/provider rapport by involving the patient in the decision-making process. Patient involvement also increases the likelihood of treatment adherence, thus increasing the likelihood of permanent behavior modification. As healthcare systems progress in their efforts to evolve into a patient-centered, proactive culture, MI will increase in its value to both physicians and patients (Shondell, 2016).

#### Motivational Interviewing Certification Literature Review

Many who have used motivational interviewing as an intervention for behavior change possessed no formal training or certification. The following is a short list of

medical personnel who utilized MI without formal training or certification, but showed positive results from its usage:

Bennett et al. (2010) utilized MI in a web-based program for weight loss in the primary care setting. The researcher was a registered dietitian with no formal MI training. The results of the study yielded a 25.6% (+) change in weight loss. Again, Bennett et al. (2012) cited that a community health counselor, without formal training or certification, used MI as a weight loss intervention with a 20% (+) change in weight loss.

Practitioners of obstetric care were put to the challenge of watching a training video regarding MI. After the training, the practitioners were regarded as displaying greater “empathy, minimizing patient defensiveness, and supporting women’s beliefs in their ability to change” (Rosengren, 2018, p. 477). Thus, obstetric care practitioners changed their intervention skills through the use of a 20-minute videotaped instruction in motivational interviewing (Handmaker et al., 1999).

In summary, MI is an evidence-based technique aimed at moving individuals past the point of ambivalence in order to reach their goals. As an intervention strategy in the treatment of lifestyle problems and disease, MI has been shown to be effective in reducing BMI, total cholesterol, blood pressure, alcohol intake, as well as in smoking cessation.

### **Theoretical Framework**

A theoretical framework is used to guide a project by defining its variables, identifying the known relationships among variables, and providing a framework for examining outcomes. Theories help to explain or predict the relationships around the phenomenon of interest (Moran, Burson, & Conrad, 2017). The trans-theoretical model

(TTM) will be used to guide this scholarly project.

### Trans-Theoretical Model

The TTM was developed in 1977 by James Prochaska and Carlo Di Clemente and is the theoretical model that will guide this scholarly project. It is a framework designed for behavior change by utilizing individualized behavior modification strategies that one can inculcate and adapt as a personal lifestyle change (Noar, 2017). The TTM conceptualizes and measures behavior changes, as well as assisting with strategies that are personalized and easily adapted. In this model, humans are viewed as adaptive systems with the ability to cope with changes as they advance through six stages of change: pre-contemplation, contemplation, preparation, action, maintenance, and termination (Prochaska & Velicer, 1997).

In practice, one goal of the provider is to motivate patients to take an active role in their health. Patient autonomy can be promoted through educating patients about their condition, and then offering interventions they can choose from that best fit their lifestyle. Giving patients a voice in their care can increase their motivational level to adopt behavior changes. Patients experience a variety of challenges while struggling with being overweight/obese; thus, the provider can utilize the TTM to promote change and strengthen the patient's ability to navigate through change.

Brug et al. (2005) suggested that stage-targeted interventions such as the TTM are more likely to promote changes in personal motivational level, as well as promote short-term behavior changes. Johnson et al. (2008) proposed that the TTM was beneficial because of its appropriateness as an intervention to target multiple-behaviors, thus suggesting that it has potential for an increased public health impact. For illustration,

Johnson et al. (2008) conveyed that there was a significant improvement in such behaviors as healthy eating, exercise, emotional distress management, and weight management among overweight/obese adults.

The first stage, the pre-contemplation stage, suggests that a person is not ready for change. He/she does not intend to make behavior modifications in the near future. Those in the pre-contemplation stage are typically unconscious of their need for change. The second stage, the contemplation stage, suggests that a person has begun to recognize his/her need for change and begins to weigh the pros and cons of behavior modification. The third stage, the preparation stage, suggests that a person is intending to take action in the near future. He/She begins to take conscious steps toward behavior modification. The fourth stage, the action stage, suggests that a person is currently making deliberate, overt behavior modifications in an attempt to resolve the problem. The fifth stage, the maintenance stage, suggests that a person was able to maintain the behavior modification and is working to prevent a setback. The sixth stage, the termination stage, suggests that the problematic behavior has no appeal to the person. He/she is confident about not returning to his/her unhealthy practices (see Figure 2; Prochaska & Velicer, 1997). Stage progression is suggested to occur as the person weighs the pros and cons and begins to understand that the pros outweigh the cons. Self-efficacy has also been reported to increase with each advancing stage, as well as the motivational level for change.

#### Application of Theoretical Framework to Evidence-based Project

For this project, I utilized four of the six stages: pre-contemplation, contemplation, preparation, and action (see Figure 3). The maintenance and relapse were not addressed due to time constraints six-week-intervention period of this project.

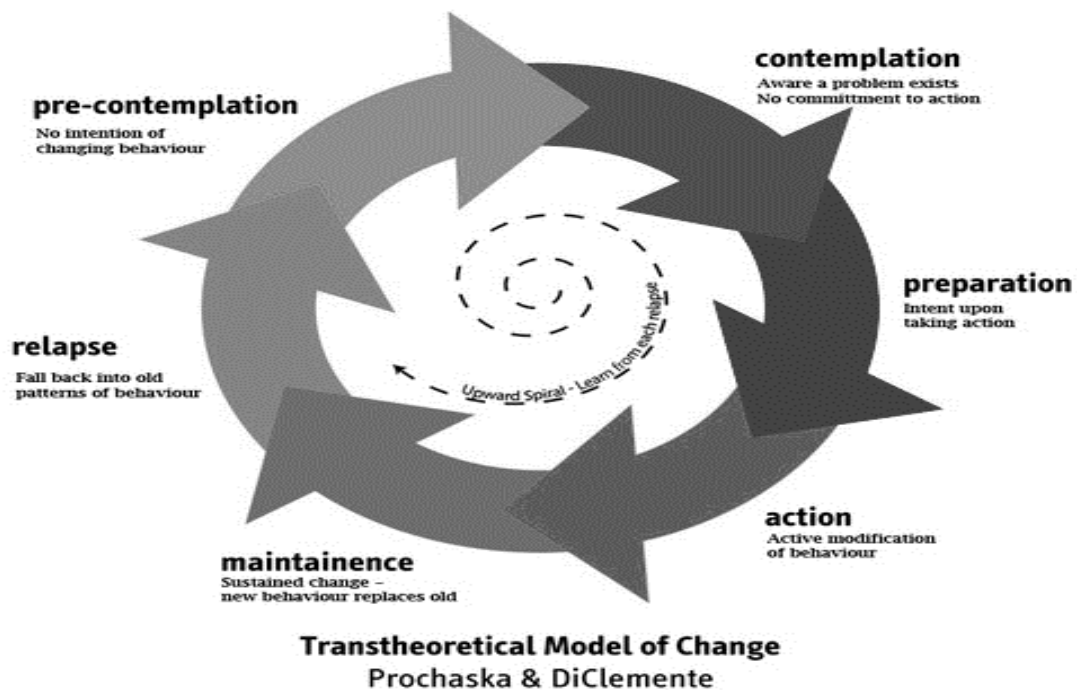


Figure 2. Prochaska & DiClemente trans-theoretical model. (Adapted from Prochaska & Velicer, 1997).

Participants in the pre-contemplation stage verbalized ambivalence toward behaviors that would promote weight loss. For example, they said, *“I don’t want to lose weight right now, although I need to.”* While a need to change was apparent, there was no desire on the participant’s part to alter behavior. During the contemplation stage, participants began to use change talk and considered the benefits to change. For example, they said, *“My doctor said that if I lose weight, my knee would stop hurting.”* The preparation stage was marked with participants demonstrating autonomy by formulating ways in which they could make changes. For example, they said, *“I enjoy walking, rather than running; walking will be my exercise of choice.”* By the time the participants had reached the active stage, there was no notable ambivalence toward change. Participants at



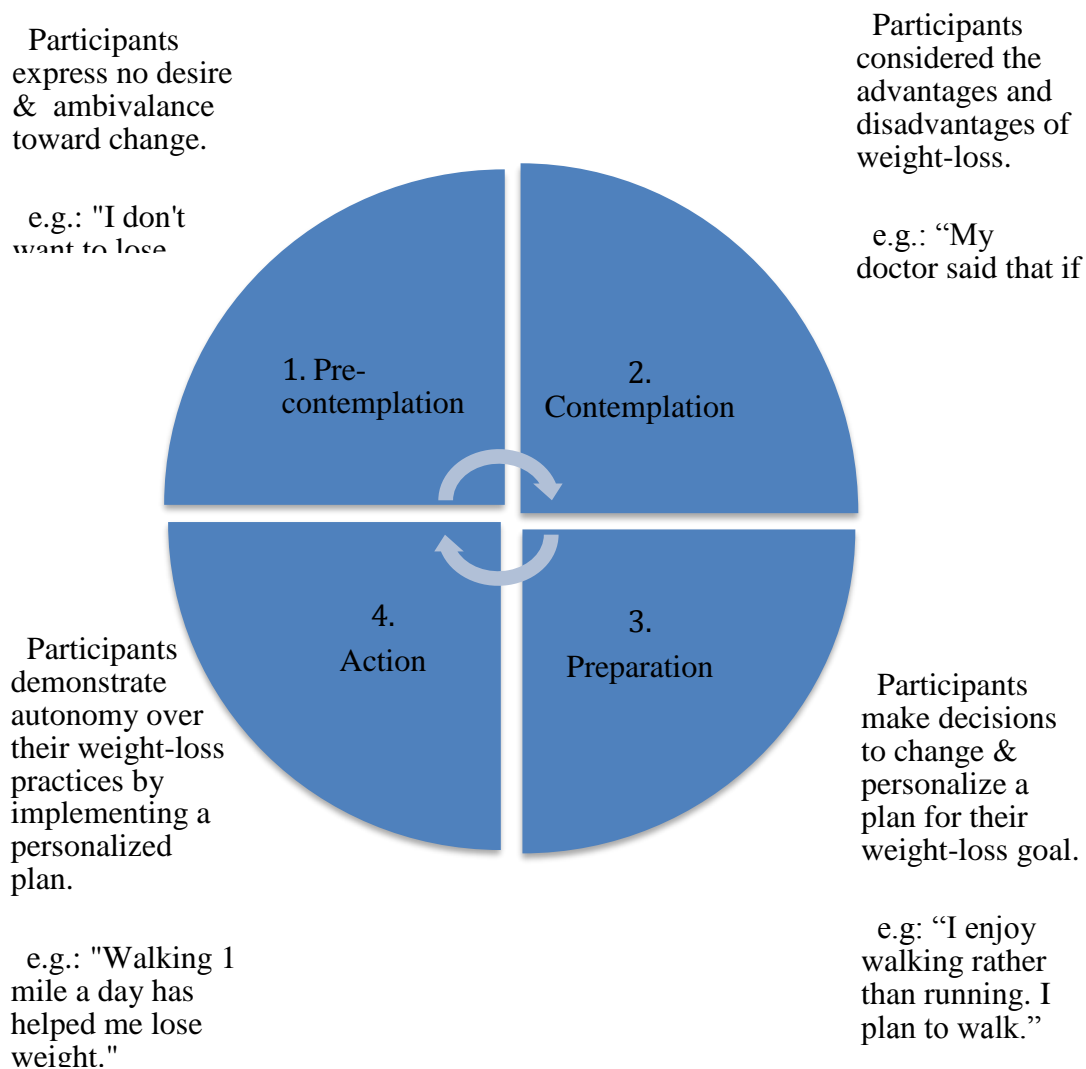


Figure 3. Adapted trans-theoretical model. (Adapted from Prochaska & DiClemente, 1997).

this stage had actively inculcated a change in behavior. For example, they said, *“Walking a mile a day has helped me lose weight.”*

### Strengths and Limitations of Theoretical Framework for Evidence-based Project

In a meta-analysis of the applications of the TTM on physical activity and exercise, Marshall and Biddle (2001) found that there was adequate data to confirm the

fact that stage interventions are associated with the patient's ability to weigh the pros and cons, and self-efficacy as they progress through change. Thus, helping the patient during a brief clinical visit, assessing problematic areas, rating their current stage of change, rating their motivational level, and examining barriers to weight loss and their possible solutions can strengthen their motivation for change. The TTM encourages an assessment of the patient's current condition and offers suggestions for setbacks. This results in developing interventions that are personalized and effective (Romas & Sharma, 2017).

A limitation to the TTM is how it does not take into account socioeconomic status and income. For this reason, it is important to assess the financial demand an intervention can have on patients and suggest alternatives to accomplishing their goals in lieu of these constraints (Romas & Sharma, 2017). For instance, in this project, a participant selected walking as his method for physical fitness. He chose to walk out-of-doors on warm days and inside a local mall on cold days. This was an inexpensive alternative to purchasing a gym membership or a treadmill to utilize at home.

### **Quality Improvement Model**

Quality improvement models according to Gawlinski and Rutledge (2008) were established to propel the nursing profession into an evidenced-based practice such those of other medical disciplines. The evidence-based practice model facilitates this advancement of the nursing profession by closing the gaps of incomplete implementation, and maximizing use of nursing time and resources.

Evidence-based practice is a tool for problem-solving within clinical decision-making that is present in a health care establishment. It incorporates the most current scientific evidence with the most currently available experiential (patient and provider)

evidence. The evidence-based practice model calls for critical thinking in the implementation of best practice measures in the care of patients, communities, and health care organizations (Newhouse, Dearholt, Poe, Pugh, & White, 2007).

The quality improvement model for this project, was the Plan-Do-Study-Act (PDSA) model (see Figure 4). This model is reflective of the positive changes that occur during the process of weight loss counseling (Shojania, McDonald, Wachter, & Owens, 2004). This project assessed the causal relationship between changes in processes (MI) and outcomes (weight loss). The PDSA model answered the following research questions.

What was the goal of the project? The goal of this project was to assess the causal relationship between changes in processes (MI) and outcomes (weight loss). How will it be known that the goal was reached? A BMI decrease of one unit (three to five pounds)

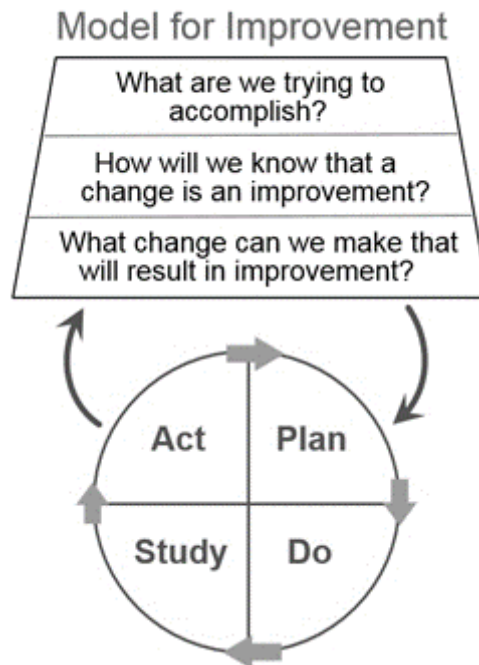


Figure 4. PDSA model. (Institute for Healthcare Improvement, 2018).

will be the deciding factor for statistical significance. What will be done to reach the goal? All participants had a pre-/post-test height and weight measurements taken to calculate BMI. Participants were randomly and systematically selected for the experimental group, received one MI session, and agreed to perform a behavior modification of their own choosing for six weeks (e.g., walking one mile a day for the next six weeks). The control group returned after six weeks of performing an intervention, after which the mean BMI losses for the control and experimental groups were assessed.

A case that can be made of the PDSA model is its ability to be utilized in large and small scale projects for change. The PDSA is a very adaptive method that can be modified to support the scale up of an intervention and can be used in conjunction with other quality improvement models to validate sustainability (Reed & Card, 2015).

Although this project tested the PDSA model on approximately 30-40 participants, it can be easily adapted to a clinical site that services a larger patient load.

Although the PDSA model offers a systematic experimental learning design for testing change, it has its limitations. There were apprehensions previously as to the fidelity of the PDSA method, and the suitability of its method to address the significant challenges of healthcare improvement. When changing the scale of a test, it is important to consider the following limitations: Will the amount of preparation required for the change exceed time and resources budgeted for the project? Will the evaluation maintain rigor with the increase in scale? (Reed & Card, 2015).

In conclusion, given the sample size ( $N = 33$ ) for this project, the PDSA model is more than adequate. For future, larger studies, it would be important to consider an

iterative design framework and budget resources accordingly for larger, more complex projects.

## CHAPTER 3

### METHODOLOGY

#### **Ethics: Protection of Human Subjects and Recruitment**

Ethics approval was obtained through the Institutional Review Board office at Andrews University on November 9, 2017 (see Appendix A). A PowerPoint presentation was given to the members of the Michiana African Seventh-day Adventist Church (MASDAC), describing the project's purpose and potential benefits. Site approval for the intervention and measurement of outcomes was obtained on October 5, 2017 from the pastor after church board approval. An approval letter in the form of an email from the MASDAC pastor was received on October 5, 2017 (see Appendix A). Recruitment fliers highlighting the project purpose, start date, and incentive were posted at the church and passed out to members (see Appendix C).

#### **Motivational Interview Training**

I did the following to prepare myself to administer MI. I shadowed Jeanine Kocsis, FNP-BC, a certified motivation interviewer, for approximately three months from June to August 2017. I initially shadowed her and observed how she performed MI on patients in need of weight loss. Then I conducted 13 supervised and 21 unsupervised MI sessions. During the three months, I was able to perform MI on patients who needed help with weight loss, smoking cessation, insomnia, and depression. In addition, I viewed over 20 tutorials on how to perform MI (see Table 3).

Table 3

*Motivational Interviewing Training Modules*

<b>Training Module (Name)</b>	<b>Total Time</b>	<b>Source</b>
William R. Miller on Motivational Interviewing and Quantum Change	1 hour 36 minutes	Source: <a href="https://www.youtube.com/watch?v=2yvuem-QYCo">https://www.youtube.com/watch?v=2yvuem-QYCo</a>
Dr. Jonathan Fader Demonstrates Motivational Interviewing Skills	35 minutes	Source: <a href="https://www.youtube.com/watch?v=ZxKZaKFzgF8">https://www.youtube.com/watch?v=ZxKZaKFzgF8</a>
Motivational Interviewing: Core clinician skills	17 minutes	Source: <a href="https://www.youtube.com/watch?v=-zEpwxJIRQI">https://www.youtube.com/watch?v=-zEpwxJIRQI</a>
Five Essential Strategies in Motivating Clients to Change	56 minutes	Source: <a href="https://www.youtube.com/watch?v=k4ZCfUTr4FM">https://www.youtube.com/watch?v=k4ZCfUTr4FM</a>
Difficult Patient and Motivational Interviewing	19 minutes	Source: <a href="https://www.youtube.com/watch?v=YkKrNy_J_O4">https://www.youtube.com/watch?v=YkKrNy_J_O4</a>
Shaping Up Your Motivational Interviewing Skills	1 hour 17 minutes	Source: <a href="https://www.youtube.com/watch?v=2qgdj2oBfOs">https://www.youtube.com/watch?v=2qgdj2oBfOs</a>
Motivational Interviewing: Preparing People to Change	49 minutes	Source: <a href="https://www.youtube.com/watch?v=nwIFUEN99OM">https://www.youtube.com/watch?v=nwIFUEN99OM</a>
Motivational Interviewing	49 minutes	Source: <a href="https://www.youtube.com/watch?v=5N4HhNHljt4">https://www.youtube.com/watch?v=5N4HhNHljt4</a>
Dr. William Miller, "Motivational Interviewing: Facilitating Change Across Boundaries"	1 hour	Source: <a href="https://www.youtube.com/watch?v=6EeCirPyq2w">https://www.youtube.com/watch?v=6EeCirPyq2w</a>

## **Study Setting**

The project was conducted at MASDAC in Berrien Springs, Michigan 49103. Individual MIs were conducted in a private room located in the basement of the facility to ensure confidentiality and privacy. The setting was provided with the equipment necessary for measuring weight and height, as outlined (see “Tools” section).

This site was chosen because the likelihood of participant recruitment, participation, accountability and sustainability is increased in faith-based settings. In addition, a faith-based setting, like other sites, offers resources such as a kitchen, public restrooms, private meeting rooms, and a large room for public presentations.

A potential issue that would affect a project conducted in this setting could be the researchers’ lack of respect for religious differences and an insensitivity to church norms and customs. To avoid this potential issue, I became familiar with the religious beliefs and social norms of the church and adhered to them for the duration of the project (Campbell et al., 2007; Eng, Hatch, & Callan, 1985).

In general, understanding how religion influences behavior in a faith-based setting is important for all population groups. The phrase “body-temple connection” noted in Holt and McClure (2006) was cited by African American church members as a basis for participating in healthy behaviors. Core cultural values for African Americans typically include communalism, religion/spiritualism, expressiveness, respect for verbal communication skills, connection to ancestors and history, unity, cooperation, commitment to family, and intuition. All these are values that should be understood by the researcher seeking to understand this group (Campbell et al., 2007). In a qualitative study conducted by Holt and McClure (2006) of African Americans views of health and



religion, opened-ended questions were asked of members from varying African American churches to ascertain how they viewed health, and whether religious beliefs played a role in health outcomes. This was performed to elicit information that could be utilized when providing care to this population. The overall consensus was that the two are intricately related. Illnesses cause people to reflect upon life and evaluate their current course, and then make changes for the better, such as abstaining from harmful behaviors such as use of alcohol, tobacco, illegal drugs, and having sex out of wedlock (p. 274).

### **Population/Sample: Inclusion/Exclusion Criteria**

All the participants were members of MASDAC and were 18 years of age or older. The projected sample size was 30-48 participants. Participants were adults 18 years of age or older, with a BMI of 25.0 or greater. Participants were excluded if they were currently prescribed medications that would alter findings, and included, but were not limited to orlistat (Xenical), lorcaserin (Belviq), phentermine and topiramate (Qsymia), bupropion and naltrexone (Contrave), and liraglutide (Saxenda). Participants were also excluded if they had a health condition that would affect weight gain (hypothyroidism, [olycystic ovarian syndrome, depression, Type 2 diabetes mellitus, and cardiovascular disease) or weight loss (hyperthyroidism, gastroenteritis, depression, and parasite infections). This information was gathered from the Motivational Questionnaire and Demographic form.

### **Recruitment**

Permission was granted by the MASDAC board and the officiating pastor to conduct the project at their facility. I distributed flyers to the MASDAC church members

to announce the project. I also conducted a podium proposal PowerPoint presentation to inform the participants about the nature of the project and the benefits of MI.

## **Baseline Data and Screening**

### First Visit

#### **All Participants (Experimental & Control Groups)**

Interested MASDAC members met me in the basement after the church service. Each participant entered a private room between the hours of 2:00 p.m. and 7:00 p.m. because these times correlated with the church potluck and the evening meeting. These sessions were held for approximately five weeks, until every person who wanted to participate could do so.

Each person was asked to complete a Motivational Interview Questionnaire and Demographic form (that I had designed). The information in this form was used to assess the fitness of each participant taking part in the project. Those who met the inclusion criteria were systematically assigned to either the control or experimental group (odd number participants [1, 3, 5...] were selected for the experimental group, and even number participants [2, 4, 6...] were selected for the control group). Each participant read and signed an informed consent form. Each participant consented to have a pre-height and weight measurement using the tools listed in the “Tools” section. These measurements were used to calculate the BMI with the online CDC BMI calculator (CDC, 2014).

#### **Experimental Group**

Each person in the experimental group performed the steps mentioned above in

the “First Visit” section. In addition, each person in the experimental group was asked to complete the portion of the Motivational Interview Questionnaire entitled “Desire to Change.” Those who chose either (1) “no desire to change,” (2) “contemplating change,” or (3) “preparing/determination to change” were asked the following additional questions to encourage change and elicit change talk:

1. On a scale of 0-10, how willing are you to make lifestyle changes?
2. Do you think it is important to make lifestyle changes at this time?
3. What would be the advantages and disadvantages for lifestyle changes at this time?
4. What kinds of changes have you made in the past to improve your lifestyles habits (i.e. eating, physical activity)?
5. What are your hopes for the future if you are able to become healthier?
6. How would your life be different if you lost weight or adopted a healthier lifestyle?
7. What kinds of healthy changes do you think you could make at this time?

Participants who chose (4) “initiating change/action/willpower” were encouraged to follow through with their plan to change behaviors that would promote weight loss. Every participant constructed goals for him- or herself that would be carried out during the six week time allotment. The participants were instructed to return at the conclusion of the six week time period to MASDAC for post-test height and weight measurements. Each session lasted for 20-30 minutes.

After answering and discussing these questions, the participants were willing to make a modification to their current exercise regimen (if any) and their diet.

Example:

- A house wife who could not devote time to go to a gym promised to walk up and down her staircase 10 times four days a week. Her intent was to increase the number of repetitions as she could without sustaining injury.
- A gentlemen who stopped exercising because he sustained an injury to his knee promised to walk a mile every day with a knee brace.
- A young lady who found it hard to resist drinking soda agreed to reduce her consumption from 60 ounces a day to only 24 ounces per day, replacing most of her soda consumption with water.

During this time, it was important to recommend alternatives to participants who felt that they could not accomplish their goals due to financial constraints, inclement weather, or lack of fitness equipment in the home.

Example:

- A gentleman selected walking as his method for physical fitness. He chose to walk out-of-doors on warm days and inside a local mall on cold days. This was an inexpensive alternative to purchasing a gym membership or a treadmill to utilize at home.

### **Control Group**

Each person in the control group performed the steps mentioned in the “First Visit” section. They completed the Motivational Interview Questionnaire and Demographic form, read and signed an informed consent, and had their pre-test height and weight measurements taken to calculate their BMI. The participants were instructed

to return in six weeks to MASDAC for post-test height and weight measurements. Each session lasted for seven to 11 minutes.

### Second Visit

Each participant returned in six-weeks for a second set of height and weight measurements for the purpose of calculating their BMI. Every participant who completed the pre- and post-test height and weight measurements received a Walmart gift card (\$10) in appreciation for their participation.

Table 4 outlines the order of the project procedure and intervention by group (control and experimental).

Table 4

#### *Intervention of MI (Motivational Interviewing)*

	<b>N</b>	<b>Intervention</b>
<b>Experimental Group</b>	17	<ul style="list-style-type: none"> <li>● MI Questionnaire &amp; Demographic form</li> <li>● Random Systematic selection</li> <li>● Informed Consent</li> <li>● Pre-test height &amp; weight measurements</li> <li>● MI</li> <li>● 6-weeks for intervention</li> <li>● Post-test height &amp; weight measurements</li> </ul>
<b>Control Group</b>	16	<ul style="list-style-type: none"> <li>● MI Questionnaire &amp; Demographic form</li> <li>● Random systematic selection</li> <li>● Informed consent</li> <li>● Pre-test height &amp; weight measurements</li> <li>● Post-test height &amp; weight measurements</li> </ul>

## **Instrumentation**

The Motivational Interview Questionnaire and Demographic form (see Appendix B) was used to collect participant data. The questionnaire portion posed a question rating their “desire to change,” current exercise and dietary regimes, current weight and height measurements, and medications. The demographic portion posed questions regarding age, gender, race, and socioeconomic level.

## **Tools**

All the participants had pre- and post-test height and weight measurements taken for BMI calculation. The tools used to measure height and weight were as follows:

- The Hanging Growth Chart was used to measure participants’ height. The wall chart measured in feet and inches, ranging from zero feet through seven feet. No participants exceeded the wall chart height capacity. This chart was manufactured by Raleigh in 2018 (see Appendix F).
- The Digital BMI Body Fat Scale with Step-On Technology was used to measure weight with a 400 lbs. capacity. No participants exceeded the scale weight capacity. It was manufactured by Triumph in 2017 (see Appendix G).

The CDC BMI online calculator was used to convert height and weight into BMI units (CDC, 2014).

## **Analysis Design**

An independent sample t-test, pre- and post-test strategy was the experimental design for this project and was used to compare the means of the two populations (control group and experimental group). A t-test was used to compare the post-BMI means for the

control and experimental groups. The t-test was performed with the Statistical Package for Social Sciences (SPSS) Statistics Grad Pack 22.0. The level of significance was 0.05.

### **BMI Effect Size**

The following is a review of literature to determine the effect size for this project. Chen et al. (2015) reported a BMI effect size of  $d = -0.5$  from pre- and post-test treatment and an effect size of  $d = -1.12$  and  $-0.087$  at a post-treatment that was maintained at six- and twelve-month follow-ups. Walpole, Dettmer, Morrongiello, McCrindle, and Hamilton (2013) reported using an attributable effect size of  $d = 1.5$  for a regression model. A sample size of 16 participants per group would be necessary to achieve a power of 80% for this study. They increased the sample size to 20 participants per group (total  $n = 40$ ) to account for a 20% attrition rate. For this project, my effect size was 1.12, which called for 15 participants in the control and 15 participants in the experimental group, a total of 30 participants.

### **Null and Alternative Hypotheses**

H<sub>0</sub>: There is no significant difference between BMI outcomes on participants who received MI as an intervention and the control group (no MI) during a brief consultation.

H<sub>a</sub>: There is a significant difference between BMI outcomes on patients who received MI as an intervention and the control group (no MI) during a brief consultation.

In summary, this project presented MI as a viable tool for weight loss. Thirty-three members of a local church consented to participate in the project. They were from varied genders, ages, and educational backgrounds, but all met the inclusion and exclusion criteria. The questionnaire/survey used consisted of questions pertaining to

motivational level, dietary habits, and demographics information. The participants were systematically selected for either the experimental or control group. All, regardless of assigned group, filled out a consent form, Motivational Interview Questionnaire, and Demographic form, and had pre- and post-test height & weight measurements taken. The experimental group had six weeks to implement self-directed behavior modifications for weight loss. The control group had no intervention to implement during the six-week period. After the six-week period from the individual start dates, each participant returned for a second set of height and weight measurements that were used to calculate the second BMI.



## CHAPTER 4

### RESULTS

#### Demographic Data

The project sample consisted of 33 participants with a BMI of 25 or greater. Within the experimental group, 59% were female; within the control group, 57% were female. Figures 5-7 provide further data about the participants' demographics including gender, age, educational level, race, marital status, and work status (see Table 5).

There was not a notable difference in genders between groups. The number of males varied only by one number (seven vs. six) in the experimental group. Thus, an even distribution for gender was present.

The participants from both groups were predominantly of African descent with the exception of two participants (12%) in the experimental group who were Caucasian American. There was equality among the participants' marital status—59% were married

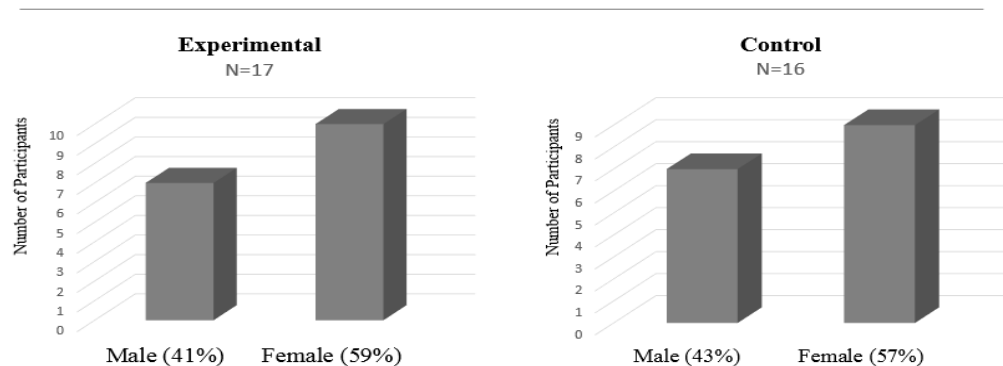


Figure 5. Gender distribution between experimental and control groups.

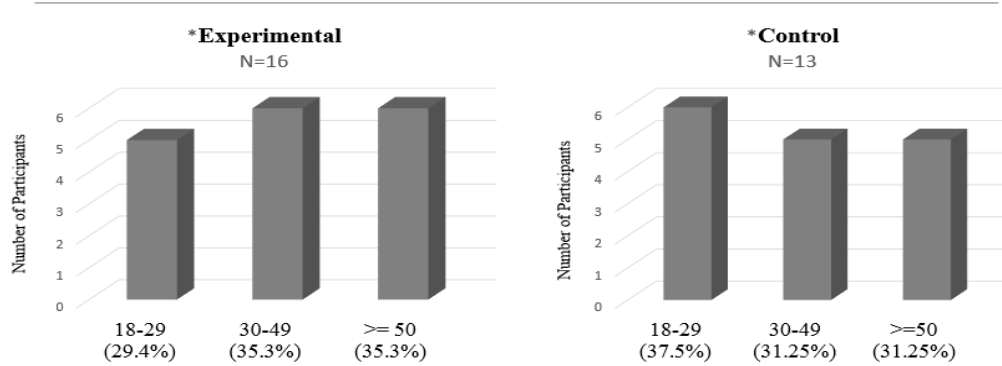


Figure 6. Age distribution between experimental and control groups.

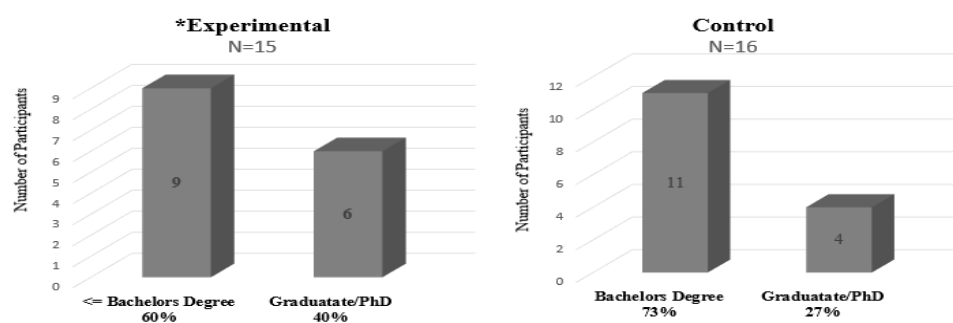


Figure 7. Education distribution between experimental and control groups.

in the experimental group and 57% in the control group. The other participants were single and none were divorced. All the participants were gainfully employed.

There was an equal distribution of education ( $t(31) = 0.47, p = 0.75$ ) between groups. There was no significant findings in regards to education among the participants. The results are as follows: the experimental group ( $M = 5.0, SD = 1.18$ ) and the control group ( $M = 4.7, SD = 1.12$ ), 95% CI. Sixty percent of the experimental group participants had a Bachelor's degree, and 40% had a graduate or PhD degree. In the control group, 73% of the participants had a Bachelor's degree, and 27% had a graduate or PhD degree. The control group had a greater percentage of participants with a Bachelor's degree or no

Table 5

*Sample Characteristics*

Variables	<i>N</i> = 33	No. of subjects	Percentage	Mean	SD
<b>Gender</b>					
	Experimental group				
	Male	7	41		
	Female	10	59		
	Control group				
	Male	6	43		
	Female	10	57		
<b>Age (yr.)</b>					
	Experimental group				
	18-25	5	29.4		
	30-49	6	35.3		
	>50	6	35.3		
	All	17		48.0	3.40
	Control group				
	18-25	6			
	30-49	5	37.5		
	>50	5	31.25		
	All	16	31.25	37.5	3.60
<b>Race</b>					
	Experimental group				
	White	2	12		
	African descent	15	88		
	Other	0	0		
	Control group				
	White	0	0		
	African descent	16	100		
	Other	0	0		
<b>Marital Status</b>					
	Experimental group				
	Married	10	59		
	Single	7	41		
	Divorced	0	0		
	Control group				
	Married	10	57		
	Single	6	43		
	Divorced	0	0		

Table 5—Continued.

Variables	<i>N</i> = 33	No. of subjects	Percentage	Mean	SD
Work status					
Experimental group					
Employed		17	100		
Unemployed		0	0		
Control group					
Employed		16	100		
Unemployed		0	0		
Education					
Experimental group					
<=Bachelor's Degree		9	60		
>Bachelor's Degree		6	40		
*No answer given		2	0		
Control group					
<=Bachelor's Degree		11	73		
>Bachelor's Degree		4	27		
*No answer given		1	0		

\*Participants chose not to answer this question.

degree. Thus, education was not a major factor and did not affect the outcomes for this project.

There was a significant difference in age between the control and experimental groups at baseline ( $t(31) = 2.02, p = 0.05$ ). The mean age in the experimental group was 48 years (35.3%); the mean control group age was 37.5 years (31.25%; noted in discussion section). While those in the experimental group on average were over 30 years of age (70.6%), the control group had more participants in the 18-25 years range (37.4%).

A mixed between-within subject analysis of variance was run to evaluate the impact of education level (less than college, college degree, and graduate degree) variables on participants' weight across two test periods (pre-/post-test). There was no significant interaction between condition types and education levels:  $F(2, 28) = .42, p =$

.66, partial eta squared = .03. There was no main effect for tests (pre-/post-test):  $F(1, 28) = 2.45, p = .13, \eta^2_p = .078$ . The main effect in comparing the education levels was also not significant:  $F(2, 28) = 2.38, p = .76, \eta^2_p = .02$ . This suggested no weight difference and the ineffectiveness of the education levels (see Figure 8).

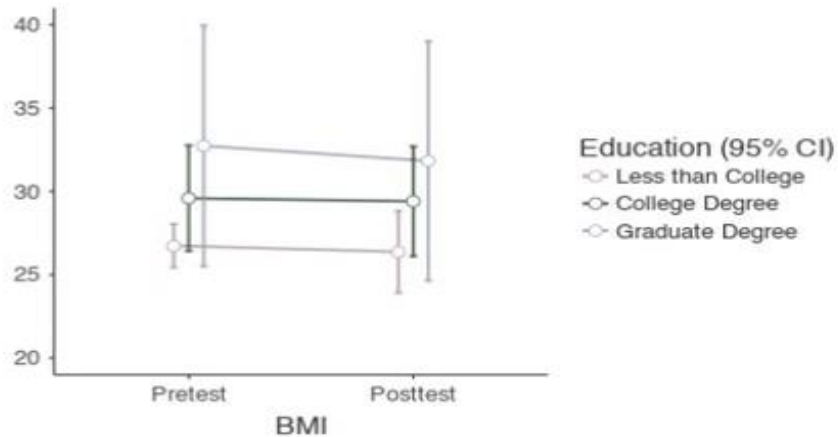


Figure 8. Descriptive plot: Evaluation of education and BMI.

A mixed between-within subject analysis of variance was run to evaluate the impact of two-gender variables (female and male) on participants' weight across two test periods (pre-test, post-test). There was no significant interaction between condition types and gender:  $F(1, 31) = 4.06, p = .053, \eta^2_p = .058$ . There was no main effect for tests (pre-test, post-test):  $F(1, 31) = 1.90, p = .18, \eta^2_p = .058$ , with females showing a slight decrease and males showing a slight increase in weight across two test periods (pre-post BMI measurements). The main effect in comparing gender variables was also not significant:  $F(1, 31) = .13, p = .72, \eta^2_p = .004$ , suggesting no weight difference and the ineffectiveness of the two-gender variables (see Figure 9).

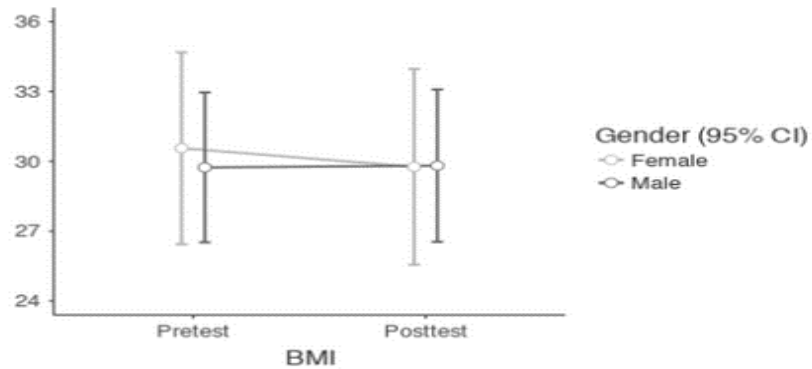


Figure 9. Descriptive plot: Evaluation of gender on BMI (pre-/post-test)

One participant in the experimental group (17 participants) had no change from pre- to post-weight measurements. Approximately one-third of the participants (six in the experimental group) gained weight. That is, 35.29% gained an average of 1.5 % of their baseline weight, an average weight increase of 2.7 pounds per person.

### Independent Sample *t*-Test

In answering the research question, Will implementing MI during one brief consultation visit result in a reduction in BMI for the overweight and obese? There were no statistical findings to support MI as a weight loss intervention during this study (see Table 6). An independent sample *t*-test resulted in no statistical significance ( $t(31) = 1.62$ ,  $p = 0.58$ ) for the mean BMI outcomes on participants who received MI as an intervention during a brief consultation. The BMI outcomes for the experimental group ( $M = 33.09$ ,  $SD = 6.5$ ) was not significantly different from the control group ( $M = 29.8$ ,  $SD = 5.05$ ), 95% CI.

Table 6

*Descriptive Statistics for Pre-/Post-BMI*

	Experimental Group (N=17)		Control Group (N=16)		Statistics
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Pre-BMI	33.66	7.50	30.15	4.97	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Post-BMI	33.09	6.53	29.78	5.05	
					t 1.62
					<i>df</i> 31
					<i>p</i> 0.58

**Evidence of BMI Reduction**

Although there were no significant statistical findings, there is evidence that speaks to the positive effects of MI as an intervention for BMI reduction. The significance marker for this project was a weight loss of three to five pounds (one BMI unit).

Participants in the intervention group did have a substantial weight loss; 10 out of 17 experimental participants lost an average of at least one BMI unit (three to five lbs.), as noted on the cross tabulation chart in Table 7.

A cross-tabulation was conducted to compare and evaluate the percentage of BMI units and weight lost among the participants of the two groups and to affirm that there was weight loss in light of the statistical findings. The results indicated that 10

Table 7

*Motivational Interviewing Effects on BMI Loss by Group*

Groups	Evidence of MI effects on BMI loss		
		No decrease in BMI units	Decrease in BMI units
Exp. Group ( <i>N</i> = 17)	# of participants %	7 41.1%	10 58.9%
Control group ( <i>N</i> = 16)	# of participants %	7 43.8%	9 56.3%
Total	Total count	14 42.4%	19 57.6%

participants in the experiment group (58.9%) and nine participants on the control group (56.3%) did have a decrease in BMI ranging from 0.1-5.3 BMI units.

Within the experimental group, there were ten participants who demonstrated a decrease in BMI and weight. When the pre-BMI was compared to the post-BMI, there was an average BMI decrease of 1.9 units. When the pre-weight was compared to the post-weight, there was an average weight loss of 7.02 pounds. Results for the measurements are seen in Table 8.

There were nine participants within the control group who demonstrated a decrease in BMI and weight. When the pre-BMI was compared against the post-BMI, there was a mean BMI loss of 0.78 units. When the pre-weight was compared against the post-weight, there was an average weight loss of 4.02 pounds. Results for the measurements are seen in Table 9.

Among the experimental participants who lost weight (*N* = 10), there was one noted outlier who lost 34.8 pounds. Without factoring in the weight loss of the outlier,



Table 8

*BMI and Weight Measurements (10 Participants with Decreased BMI in the Experimental Group)*

<b>Pre-BMI (units)</b>	<b>Post-BMI (units)</b>	<b>Pre-/Post- BMI loss (units)</b>	<b>Pre-Wt. (lbs.)</b>	<b>Post-Wt. (lbs.)</b>	<b>Pre-/Post-Wt. loss (lbs.)</b>
39.1	38.8	0.3	228	226	2
31.6	30.9	1.3	184	178.4	5.6
26.3	25.6	0.7	126	122.6	3.4
31.2	30.9	0.3	176.4	174.4	2
56.9	51.6	5.3	374	339.2	34.8
30.2	29.8	0.4	183.6	181	2.6
28.6	28.5	0.1	205	204.4	0.6
32.7	30.6	2.1	228	217.8	10.2
39.1	38.4	0.7	228	224	4
30.9	29.9	1	179	174	5
Mean Pre- BMI (units)	Mean Post- BMI (units)	Mean Pre- /Post-BMI Diff. (units)	Mean Pre-Wt. (lbs.)	Mean Post- Wt.(lbs.)	Mean Pre- /Post-Wt. Diff. (lbs.)
34.5	33.5	1.2	211.2	204.18	7.02

more than half of the participants (52.94%) lost a total of 30.6 pounds. Nine out of 10 participants who lost weight in the experimental group lost an average of 3.4 pounds or 2.65% of their baseline weight. The significance marker for this project is a weight loss of one BMI unit or three to five pounds, thus, MI did show clinical significance in the experimental group when the mean weight loss was not compared with the mean weight loss of the control group [experimental group ( $M = 33.15$ ,  $SD = 6.6$ ) and control group ( $M = 29.78$ ,  $SD = 5.04$ )  $t(31) = 1.64$ ,  $p = 0.54$ ].

One participant in the experimental group results was distant from the others. This participant lost a total of 34.8 pounds and 5.3 BMI units. The initial weight was 374

Table 9

*BMI and Weight Measurements (9 Participants with Decreased BMI in the Control Group)*

<b>Pre-BMI (units)</b>	<b>Post-BMI (units)</b>	<b>Pre-/Post- BMI loss (units)</b>	<b>Pre-Wt. (lbs.)</b>	<b>Post-Wt. (lbs.)</b>	<b>Pre-/Post-Wt. loss (lbs.)</b>
32.8	31.6	1.2	191	184	7
27.9	27.5	0.4	167.8	165	2.8
28.9	27.4	1.5	179	170	9
42.6	41.8	0.8	225.4	221.4	4
25.6	24	1.6	131	122.8	8.2
25.7	25.1	0.6	135.8	133	2.8
26.6	26.5	0.1	159.8	159.2	0.6
33	32.9	0.1	230.2	229.6	0.6
27.4	26.6	0.8	175	173.8	1.2
Mean Pre- BMI (units)	Mean Post- BMI (units)	Mean Pre- /Post-BMI Diff. (units)	Mean Pre-Wt. (lbs.)	Mean Post- Wt.(lbs.)	Mean Pre- /Post-Wt. Diff. (lbs.)
30.05	29.27	0.79	177.2	173.2	4.02

pounds and the initial BMI was 56.9. A *t*-test was performed to evaluate the effects of the outlier on the results. No significant findings were reported with the inclusion of the outlier on BMI,  $t(17) = 1.40$ ,  $p = 0.18$  or weight,  $t(17) = 1.41$ ,  $p = 0.18$  (see Table 10). No significant findings were reported with the exclusion of the outlier on BMI,  $t(17) = 0.97$ ,  $p = 0.35$  or weight,  $t(17) = 1.0$ ,  $p = 0.33$  (see Table 11).

Table 10

*Inclusion of Outlier*

	<b>Experimental Group (N = 10)</b>		<b>Control Group (N = 9)</b>		<b>Statistics</b>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Post-Wt.	204.3	56.7	173.2	35.4	<i>t</i> 1.41 <i>df</i> 17 <i>p</i> 0.176
Post-BMI	33.5	7.6	29.3	5.5	<i>t</i> 1.39 <i>df</i> 17 <i>p</i> 0.182

Table 11

*Exclusion of Outlier*

	<b>Experimental Group (N = 9)</b>		<b>Control Group (N = 9)</b>		<b>Statistics</b>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Post-Wt.	189.9	32.9	173.2	35.4	<i>t</i> 0.996 <i>df</i> 16 <i>p</i> 0.334
Post-BMI	31.5	4.4	29.3	5.5	<i>t</i> 0.965 <i>df</i> 16 <i>p</i> 0.349

Figure 10 gives a visual representation of the pre-/post-BMI units for the participants who lost weight in the experimental group with the outlier. The pre-/post-BMI units for the 10 participants including the outlier are close. The post-BMI units (noted with a dotted line) do indicate that there was a loss because the dotted line trails beneath the solid line (pre-BMI) for all the participants.

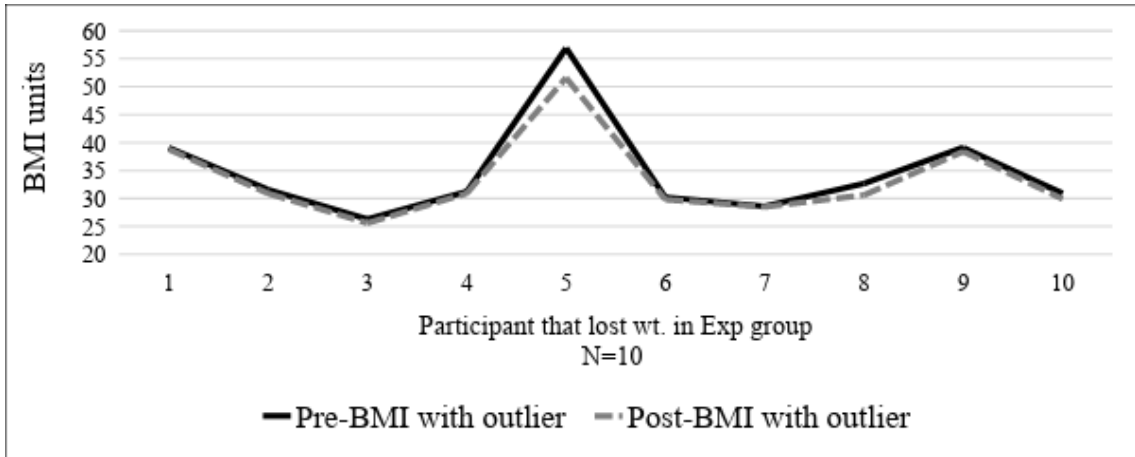


Figure 10. Pre-/post-BMI with outlier.

The chart below depicts the pre-/post-BMI units for the participants who lost weight in the experimental group without the outlier (see Figure 11). With the removal of the outlier (the spike in the center), there is still an indication of weight loss because the dotted line trails beneath the solid line (pre-BMI) for all participants. Therefore, weight loss was noted in absence of the outlier.

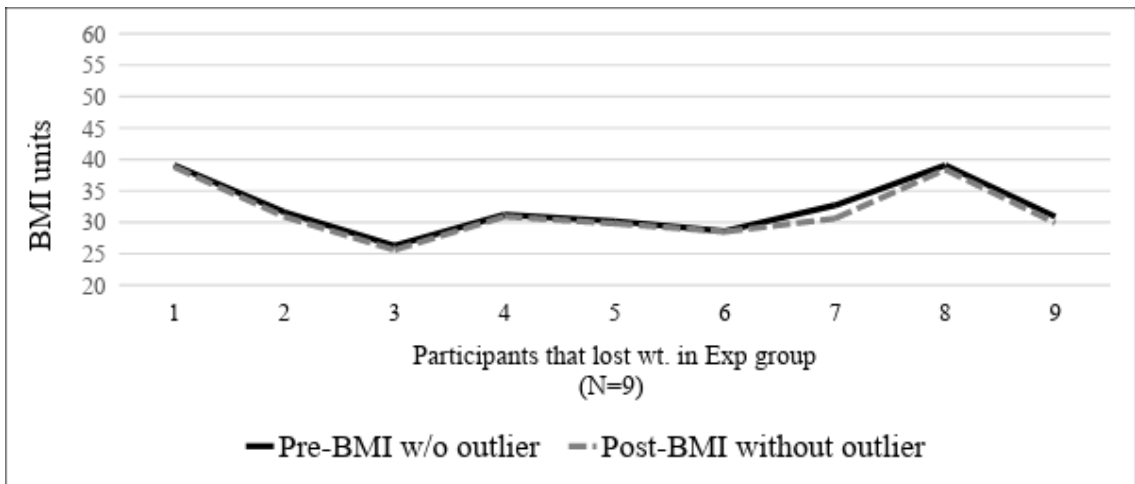


Figure 11. Pre-/post-BMI without outlier.

## Motivational Level

The TTM conceptualizes and measures behavior changes (Prochaska & Velicer, 1997). It was used to measure each participant's desire to make a change. It was also used to assist the participants to evaluate why they were at their level and what would motivate them to advance to the active level of change. A stage-targeted checklist was presented in the questionnaire (see Appendix B) to assess the motivational level of each participant at the beginning and at the end of a six-week period.

Within the motivational Interview Questionnaire and Demographic form (see Appendix B), participants chose from the following to rate their level of motivation: 1 = no desire to change; 2 = contemplating change; 3 = preparing/determination to change, 4 = initiating change, action, or willpower; 5 = maintain; and 6 = relapse. Figures 12 and 13 show each participant's desire to change. The gray columns represent the motivational level at the beginning of the six weeks. The black columns represent the motivational level at the end of the six weeks.

Over 47% of the participants in the experimental group were prepared to change unhealthy lifestyle habits that prohibited weight loss; one-third of them actively made changes over the six-week period. Nearly 59% of the experimental group were actively making changes at the onset of the six-week period; 40% of them relapsed, and 30% maintained their active status by the end of the sixth week.

Over 90% of the participants in the control group indicated that they were contemplating a change or that they had no desire to change unhealthy lifestyle habits that prohibited weight loss at the beginning of the six-week period. Over 50% of them initiated healthy lifestyle changes that promote weight loss.

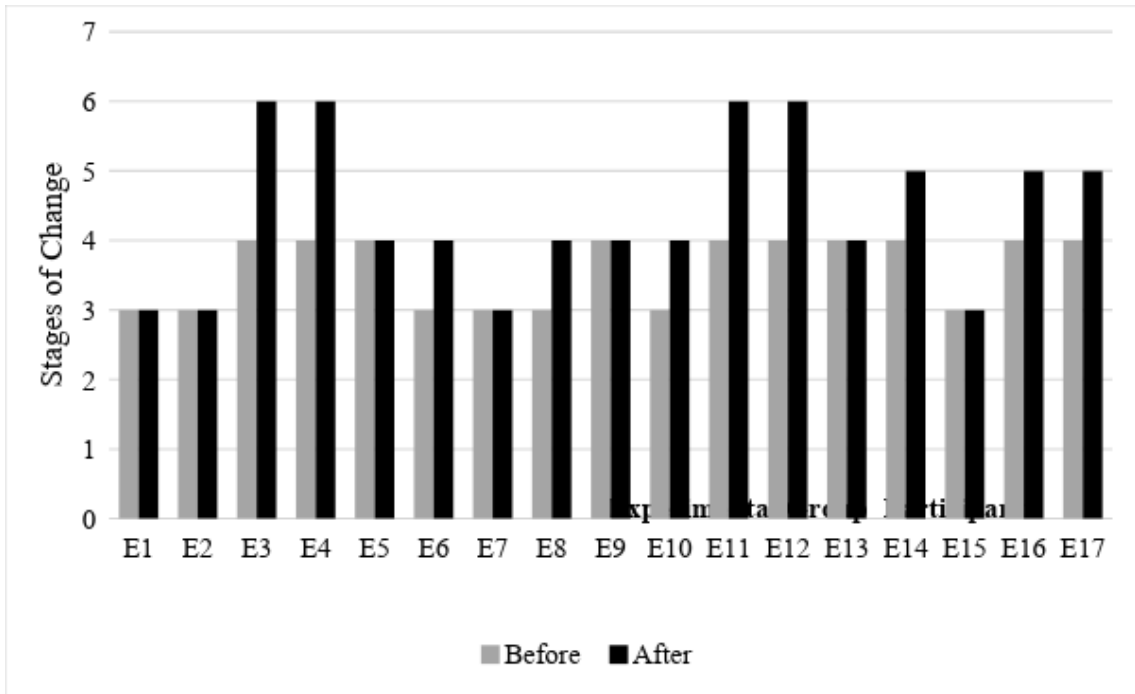


Figure 12. Motivational level (experimental group).

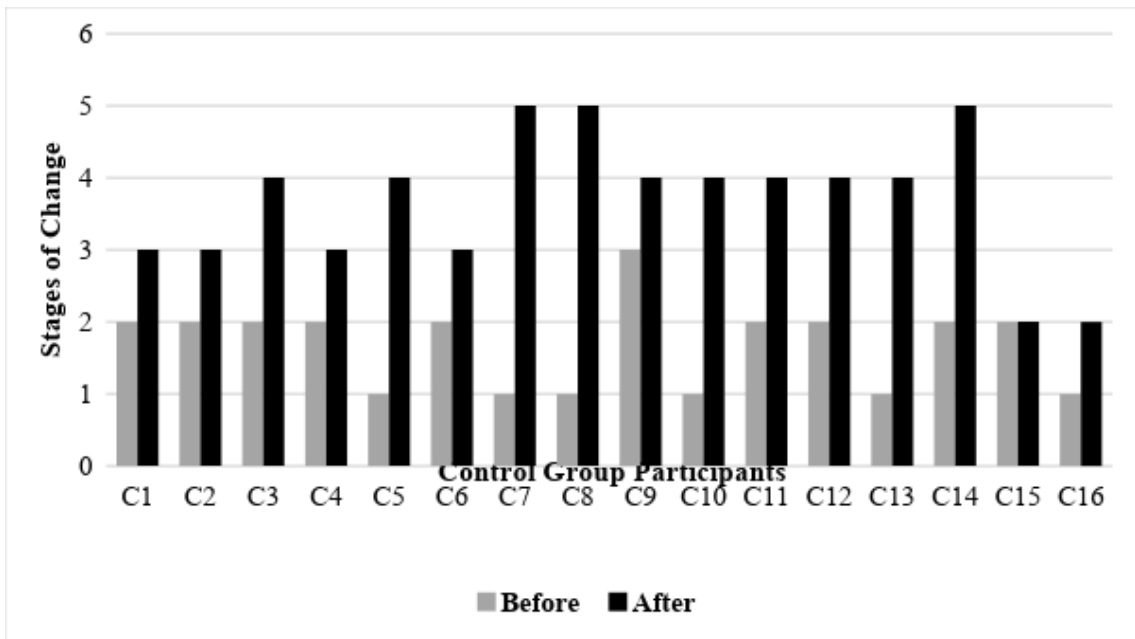


Figure 13. Motivational level (control group).

There were nine out of 16 participants in the control group that lost weight. More than three quarters of the control group (87.5%) lost an average 1% of their baseline weight, with a per participant average weight loss of 2.4%. This peculiar finding did alter the results of the study, for the post test result of the experimental group (received MI) were measured against those of the control group (no intervention). Of the sixteen participants in the control group nine were females; seven males. Six females lost an average of 5.33 pounds per participants and three males lost an average of 2.2 pounds each. One female gained one pound; five males gained an average of two pounds each. One female and one male maintained the same weight from pre-post measurements.

Motivational interviewing did not show significance for the mean weight loss in the experimental group when compared with the mean weight loss of the control group, due to the unexpected amount of weight lost amongst those in the control; experimental group ( $M = 33.15, SD = 6.6$ ) and control group ( $M = 29.78, SD = 5.04$ )  $t(31) = 1.64, p = 0.54$ . This project supports the null hypothesis due to the significant weight loss within the control group.

In conclusion, more than half of the experimental group (10 out of 17 participants) did lose an average weight of 7.02 pounds. Speaking to the demographics of this project, the educational level and genders were equally distributed between both groups. There was significance found in age. The mean age of the experimental group was significantly higher than the mean age of the control group. The outlier noted in the experimental group had no bearing on the outcomes. The statistical findings did not support the research question, therefore, the null hypothesis, “ $H_0$ : There is no significant

difference between BMI outcomes on participants who receive MI as an intervention as compared to the control group (no MI) during a brief consultation,” was accepted.



## CHAPTER 5

### DISCUSSION

#### **Baseline Demographic**

The data was analyzed to assess the equivalence of the experimental and control groups. There was an equal distribution between the experimental and control group on all counts (gender, education, work status, marital status, and race) with the exception of age ( $p = 0.05$ ). The control group had more participants in the 18-25 years range. However, the mean age for both groups was 33.

For older adults, health is the motivator for losing weight because it reduces the risk for cardiovascular disease and physical dysfunction brought on by impairment of the musculoskeletal system. Older adults are more likely to enroll in weight-loss programs. The predominant motivators for younger adults are physical appearance and social pressure. Although these factors are important, they are not associated with immediate health concerns linked to chronic or terminal diseases (Gill, Bartels, & Batsis, 2015; LaRose, Leahey, Hill, & Wing, 2013).

Greenhouse (1994) also agreed that older adults should be mindful of their weight, but for reasons dissimilar to those of younger adults. Older adults face more challenges with lifestyle diseases like cardiovascular disease, and Type 2 diabetes mellitus. Improvements in lifestyle, such as incorporating an exercise routine, can decrease the risk of falls in older adults. Poor lifestyle choices can aggravate and speed

up negative health outcomes in the older adult versus the young. Thus, older adults' motivational level to change could be life-changing and lifesaving (National Research Council Committee on Aging Frontiers in Social Psychology, Personality, and Adult Developmental Psychology, 2006).

Within the control group, weight loss was not affected by gender. However, females on average lost an average of 2.3 pounds per participant, whereas their male counterparts lost a total of 1.7 pounds each. Consequently, there was also a significant difference found between gender and a decrease in BMI. Females lost an average of 4.6 BMI units per participant, whereas their male counterparts lost an average of one BMI unit or less for both experimental and control groups. Thus, on average, as the literature supports, females took weight loss more seriously than males, even when not solicited to lose weight.

Craft, Carroll, and Lustyk (2014) reported that there are gender differences within weight-loss attempts. The sexes differ in regards to what stirs them toward weight loss and exercise. Females are motivated to exercise for weight loss and toning, while males report exercising for enjoyment. Other authors suggest that females try to lose weight more than their male counterparts, even when they are within a healthy, normal BMI range. Factors contributing to this occurrence are social norms that communicate to us the idea of "thinness" (Bhagal & Langford, 2014). Females are reported as being less satisfied with their body image and weight. They often see themselves as overweight even when it is not the case. For this cause, more females are more inclined to participate in weight-loss programs than their male counterparts (Furnham, Badmin, & Sneade, 2002).

Educational attainments within the control group showed that across educational variables (no college, undergraduate degree, or graduate degree), there was a trend of decreased weight and BMI for participants with less than a college education. In general, those with less than a college education lost more weight than those with a four-year degree through to a doctorate degree; this shows a direct relationship between weight loss and education attainment. This is sustained in a study conducted by Holowko, Jones, Tooth, Koupil, and Mishra (2014) that related how education level is pointedly related to increased weight. This information highlights how those with less college education had more time to dedicate to exercise (decrease in sedentary lifestyle) and healthy meal preparation (instead of fast food or processed food from grocery shelves), and they do not carry the stress and anxiety associated with school (increases cortisol level in the body, thus promoting weight gain; Haidar, de Vries, Karavetian, & El-Rassi, 2018).

The results suggest that while a higher educational level leads to a more economically satisfying life, the process of acquiring higher education leads to a sedentary lifestyle with time constraints that contribute to weight gain.

Several participants reported that although they wanted to incorporate healthier lifestyle choices, time to prepare healthy meals become a factor, along with the limitations of juggling family life and work. Single males and females engaged in more exercise activities than those of any other marital status category, whether always single, divorced/separated, married, or widowed (the table to support this can be seen in Nomaguchi, & Bianchi, 2004, p. 28). Males and females who are married get the least amount of exercise among the marital status categories: divorced/separated, married, and

widowed. Thus, marriage and family can be a potential obstacle to weight loss (Nomaguchi, & Bianchi, 2004).

Although those in the control group did not receive MI as an intervention, more females took the six-week period as an opportunity to lose weight, whereas their male counterparts took less of an initiative to do the same. The weight loss noted in the control group decreased the potential for statistically favorable outcomes.

### **Outcomes**

There was concern over the how the outlier in the experimental group would affect the results. Fortunately, the participant who had considerably more weight loss than the other participants did not affect the results negatively. As stated previously, a careful investigation of the data was conducted and it was determined that there was no significance with the inclusion of the outlier ( $p = 0.18$ ), nor with the exclusion of the outlier ( $p = 0.35$ ). Figure 14 below shows how close the values are with the inclusion and exclusion of the outlier. As can be seen, there was little difference between the pre-/post-BMI values with or without the outlier. Thus, the results are close in value either with the inclusion or exclusion of the outlier. From the pre-/post-BMI, the outlier did not significantly add to nor take away from the outcomes of this project.

It was noted at the end of this project that several participants from the control group excitedly reported lifestyle modifications they had implemented during the six-week time span between pre-/post-height and weight measurements. They reported that because they knew they would be measured again at the end of six weeks, they were motivated to make changes to their diet and exercise routines in order to have favorable results at the post-height/weight check.

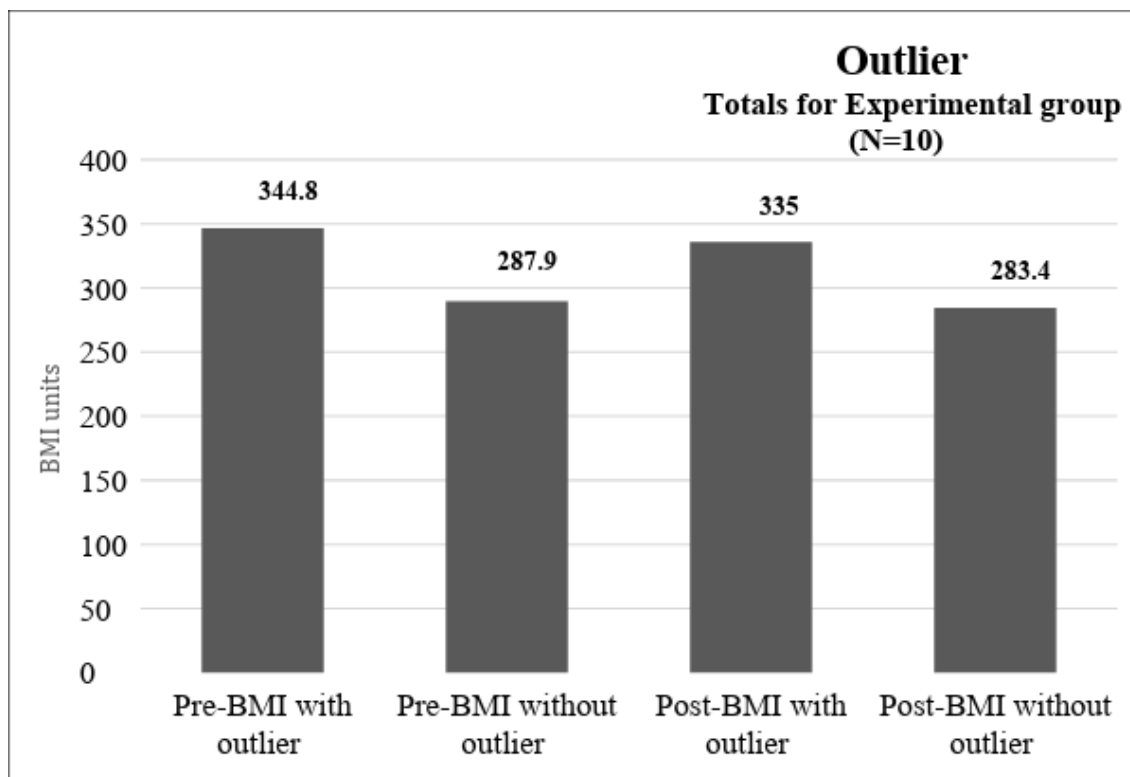


Figure 14. Difference with and without outlier.

A factor that may explain findings of indirect motivation prompting the desire of the participants to lose weight, even if they are part of the control group is the Hawthorne Effect. Participants in both groups were informed of the nature of the study during the podium presentation to the church as a whole and during the informed consent process. This could have motivated those in the control group to implement behavior changes for weight loss.

The Hawthorne effect is characterized by people's propensity to perform well and put more effort into the performance because they are participants in an experiment. This propensity is characteristic of the individuals' behavior modification because they are aware that they are being observed at a given time. Due to the attention given them, they

modify their behavior to shed a positive light on their performance (Merrett, 2006). It also implies that control group participants were consciously or unconsciously willing to lose weight when they were aware that they would be measured again for height and weight and compared with an intervention group at the end of a six-week period.

Some authors suggest that the participants' consciousness of being involved in a weight loss intervention study may alter findings. Control groups that receive no intervention or usual care have been shown to lose weight (McTigue et al., 2003). After researching possible explanations for this occurrence, the Hawthorne Effect was found to be the most feasible justification for the unintended outcome for the control group as a consequence of this groups' observation and study (McCambridge, Witton, & Elbourne, 2014).

In a study by De Amici, Klersy, Ramajoli, Brustia, and Politi (2000), patients in a post-surgical unit who were conscious that they were being observed reported less knee pain during post-op than those who were unconscious of the observations. Even among medical staff, there was a marked improvement in routine universal precautions such as hand-washing when staff were aware that they were being monitored (Guerrero et al., 2013).

The social and psychological reasoning behind the Hawthorne effect is that once participants know that they are being observed (even for non-performance), they produce the desired expectation of the researcher (McCambridge et al., 2014). For this research project, all the participants knew that the goal of the experiment was to find out whether weight loss was possible with MI as a motivator. The control group desired the same outcome that they anticipated the experimental group to have. This led to their

inculcating behaviors that would yield weight loss as their desired outcome (Chiesa & Hobbs, 2008).

Another limitation to the study was the fact that the control group was aware that they were not in the experimental group. In this design flaw, the control group understood that they would be expected to participate in a height and weight pre-post measurements. They were aware that they would not receive MI as an intervention, nor were they expected to lose weight. However, they were aware of the fact that those in the experimental group did receive MI as an intervention, and were expected to adhere to a regime of their own design, in an effort to lose weight.

The null hypothesis  $H_0$  was that there is no difference between BMI outcomes on participants who receive MI as an intervention as compared to the control group (no MI) during a brief consultation, was not rejected because the results nullified the assumption that MI has an impact on BMI. Although the literature review supported MI as an intervention for weight loss, factors such as the Hawthorne Effect, contributed to the null findings within this project.

It was noted at the end of this project that some participants who did not receive MI were self-motivated to lose weight because they believed they could reach a weight-loss goal despite not receiving the intervention. There were couples where either the husband or wife received MI, but the spouse did not. The spouses who did not receive MI reported to having challenged themselves to lose weight. They felt that they possessed the inward ability to succeed at weight loss along with their spouse.

Another factor that could have contributed to the control group weight gain is self-efficacy, one's belief in his or her ability and competence to self-regulate behavior to

reach goals such as weight loss (Strecher, De Vellis, Becker, & Rosenstock, 1986; Zimmerman, Bandura, & Martinez-Pons, 1992;). There are fluctuating levels of self-efficacy: the greater one's belief in his/her ability, the greater commitment to reach the desired goal and the greater the chance for success (Schwarzer, 1992). As seen in the project, when participants reached self-generated milestones for themselves, they were eager to continue the process and even maintain lifestyle modifications after the completion of this project (McAuley & Blissmer, 2000). Participants within the control group probably perceived that they could accomplish weight loss goals, which in turn influenced how they set goals, committed to the goals, and accomplished their goals.

### **Relationship of Results to Project Aims**

Does motivational interviewing in the adult population that is overweight influence a reduction in BMI as measured over a six-week period from the initiation of coaching? This was answered with *t*-test results.

During this research project, there was no significant weight loss noted in the experimental group. Significant weight loss was measured by a loss of one BMI unit (three to five pounds); (National Institute of Health, 2017) over a six-week period. On average, those in the experimental group lost 3.4 pounds or 2.65% of their baseline weight. However, when contrasted to those in the control group, whose average weight loss was 4.4 pounds per participant without MI, the experimental group failed in comparison: experimental group ( $M = 33.15$ ,  $SD = 6.6$ ) and control group ( $M = 29.78$ ,  $SD = 5.04$ );  $t(31) = 1.64$ ,  $p = 0.54$ .



## **Relationship of Results to Quality Improvement Model and Questions: Plan, Do, Study, Act Model**

Question: What was the goal of the project?

Answer: The goal of this project was to assess whether a difference existed between changes in processes (MI) and outcomes (weight loss).

*Plan:* To conduct a randomized trial of MI on local church members for the purpose of testing weight-loss intervention that could be used during brief clinical visits in a primary care setting. The members were interested in participating in the study.

Question: What will be done to reach the goal?

Answer: An invitation was extended to all church members via a flyer. Those interested were randomized to a control or experimental group; a consent form was signed by all who participated. All participants filled out a demographic questionnaire. Those in the experimental group were given a brief MI intervention after a pre-height and weight check. Those in the control group were measured for their pre-height and weight. All participants returned in six weeks for a post-height and weight check.

*Do:* A flyer inviting the congregants to participate in the project was passed out before and after church service (see Appendix C). All participants interested filled out a demographic questionnaire and were selectively randomized to either the control or experimental group. The study was conducted as described above. All the participants were asked to return in six weeks for a post- height and weight check. All the participants who completed the project received a 10-dollar Walmart gift card as a token of appreciation for their participation.

Question: How will it be known whether the goal was reached?

Answer: A BMI decrease of one unit (three to five pounds) will be the deciding factor for statistical significance.

*Study:* After six weeks, the data were collected and analyzed, and the results were studied. I observed that participants from the control group lost more weight than those from the experimental group. It is worth mentioning that the experimental group lost an average of 7.02 pounds per participant, 2.33% of their baseline weight.

*Act:* Based on these findings, the original project design should be altered in an effort to have more favorable outcomes. The redesigned project should include additional MI sessions with follow-up visits and it would be beneficial to assign the experimental group and control group to separate facilities to prevent the Hawthorne effect.

### **Implications for Clinical Practice and Future Considerations**

The main objective of this study was to evaluate the effectiveness of MI as a weight loss intervention in the primary care setting. While it was not expected that the control group would lose more BMI units than the experimental group, MI still remains a tool for providers to utilize for weight loss.

In practice, a goal of the nurse practitioner is to motivate patients to take an active role in their health. Patient autonomy can be promoted through educating the patient about their condition and then offering interventions they can choose from that best fit their lifestyle. Giving patients a voice in their care can increase their motivational level to adapt positive behavior changes. Patients experience a variety of challenges while struggling with being overweight/obese, and the nurse practitioner can utilize MI to promote change and strengthen the patients' ability to navigate through change.

It has been shown that primary care providers are not convinced that offering weight advice and coaching is of value in the clinical office (Solovey, 2010). An awareness of the positive correlation between weight loss and MI may change the minds and practices of health professionals to pursue weight loss counseling for overweight patients.

Miller, Sorensen, Selzer, and Brigham (2006) stated in a brief for the Center for Evidence-based Practice that MI was a principal element of evidence-based practice. It has been demonstrated as an effective tool to evoke change in clinical areas such as primary healthcare, substance abuse, nursing, mental health, and so on. They affirmed that it was an evidence-based intervention to move patients' past ambivalence to change. As seen in this study, more than half (58.82%) of the experimental group lost at least 1% of their baseline weight. The average weight loss per participant in the experimental group was 7.02 pounds, 2.33% of their baseline weight. Given this data, we can say that MI did have an impact on body mass index.

Primary care providers attribute the lack of weight loss counseling to the following concerns: inadequate time to spend properly counseling during a brief office visit, lack of provider training in regards to weight loss counseling, and lack of referral resources available to patients who need a multidisciplinary services (Lewis & Gudzone, 2014). In the literature, MI has proven to be an effective intervention for behavior change. The literature suggests that MI can be a tool to effect behavioral changes on weight loss. Within the past 20 years, MI has become a useful intervention to inspire patients to change unwanted health behavior and maintain healthy behaviors. Van

Dorsten (2007) reported that MI has been used to effect behavioral changes in diet, exercise, and long-term compliance with a healthy lifestyle.

The literature does suggest that MI has been successful in effecting behavioral changes in other arenas such as substance abuse, recidivism rates for prison, parolee compliance, and medication compliance. For future studies, redesigning the project to include additional MI sessions with follow-up visits would be beneficial to outcomes. It would also be advised that the assigning of the experimental and control group be restricted to separate facilities to prevent the Hawthorne effect.

A significant limitation to MI are the current restrictions for reimbursement of behavioral health counseling for chronic lifestyle illnesses. This restriction limits the practitioners' ability and willingness to perform MI (Resnicow et al., 2002). Most private insurers and Medicaid programs do not offer behavioral services for the treatment of lifestyle conditions such as obesity, but rather, prefer bariatric surgery to behavioral modification counseling. Recently, due to research that points to MI as an evidenced-based practice, the Centers for Medicare and Medicaid Services will reimburse behavioral treatments for obesity provided only by qualified primary care providers. This has opened the way to behavior modification counseling for obesity treatment as a role for the physicians, nurse practitioners, certified clinical nurse specialists, and physician assistants in primary care settings to take on (Sheesley, 2016).

### **Strengths of Project**

Weight loss was observed in both groups. Weight loss by both groups wasn't expected, however, it was a pleasant surprise to see individuals from both groups become motivated and make changes to promote weight loss. It should be noted that individuals

from both groups were not consumed with trying to reach an ideal “weight,” but rather, had a desire to improve their health. Those who were able to lose a mild to moderate amount of weight can potentially see an improvement in areas such as decreased cholesterol levels, reduction in blood pressure, improved sleep, decreased inflammation in blood vessels, and improved hemoglobin A1c levels. Mild to moderate weight loss can eventually have a significant outcome on health and decrease the chance of having a heart attack or stroke (Pietrzykowsk, 2018).

### **Limitations of Project**

Sample size is important for determining what is the smallest significance is and the degree to which the effect size is clinically relevant (Faber & Fonseca, 2014). The proper sample size makes the research study more useful and reliable while keeping in step with ethical principles. The disadvantages of a small sample size can range from variability to voluntary response biases (Altman, 1991).

In this project, my effect size was 1.12. There were a total of 33 participants. There were 17 participants in the experimental group and 16 participants in the control group. Despite meeting the minimum for effect size, having a larger sample size could have affected the outcomes significantly.

The project results showed that the research site selected is not uncommon to other sites that need weight loss interventions. In reflection, it would have been better to have had two sites for the project to remove bias results. For future projects, it would be better to have an independent group and control group from different sites (churches). This amendment to future studies would eliminate the potential for family members of the same household in both the control and experimental group (Flynn, 2009).

The site selected welcomed the MI research project. Performance bias occurred because there was a discrepancy in the delivery of the intervention. Due to the fact that the control and experimental groups were located at the same site, information about MI and personal plans for weight loss were liberally shared among participants from both groups. Although the control group did not receive MI as an intervention, it was freely discussed with them by other members of the church. As a result, those in the control group were motivated to change unhealthy behaviors. The Hawthorne effect occurred because participants in the control group behaved differently than expected. The control group was not expected to lose weight. Over 90% of the participants in the control group indicated that they were contemplating a change or they had no desire to change unhealthy lifestyle habits that prohibited weight loss at the beginning of the six-week period. Over 50% of them initiated healthy lifestyle changes that promoted weight loss.

## **DNP Essentials**

### Essential I

Essential I: Develops and evaluates new practice approaches based on nursing theories and theories from other disciplines.

While conducting my literature review of MI, overweight, and obesity in scholarly articles and journals, I was able to draw evidence from other disciplines about the prevalence of being overweight or obese in the U.S.A., the pathophysiology behind weight gain, and the benefits that coaching has had on behavior modification. There is a consortium of evidence that indicates various disciplines within the healthcare arena (nurse practitioners, medical doctors, psychologists, etc.) and the various behaviors (addiction, weight loss, managing chronic disease) were successfully modified using MI.

## Essential II

Essential II: Organizational and systems leadership for quality improvement and systems thinking.

During this project, I studied and implemented MI for a care delivery approach that could meet the current and future needs of patient populations. Based on my on review of literature from clinical science, MI was shown to be a novel and cost-effective intervention for weight loss. The skills and knowledge obtained through the project has equipped me to assist in expeditious and effective, society-wide changes in how care is delivered to the overweight population. I also plan to align my skills and knowledge to government projects that aim at reducing our epidemic of obesity, as well as shape initiatives in the health care arena.

## Essential VII

Essential VII: Clinical prevention and population health for improving the nation's health.

The World Health Organization (2018) associated overweight and obesity to more deaths worldwide than underweight. Overweight and obesity are preventable, yet prevention interventions are underutilized in United States health-care settings. The Doctorate of Nursing Practice degree is a practice-focused terminal degree designed to equip advanced practice nurses with a knowledge of and a skill to implement evidence-based interventions that promote disease prevention and improve population health. The Doctorate of Nursing Practice VII was chosen because as a DNP graduate, I will be expected to endorse and incorporate evidence-based clinical prevention and population health services for patients (American Association of Colleges of Nursing, 2006).

Motivational interviewing is an evidence-based clinical intervention that can improve the health outcomes associated with being overweight and obese such as cardiovascular diseases, osteoarthritis, diabetes, and some cancers.

### Essential VIII

Motivational interviewing was investigated as a potential evidence-based therapeutic intervention that promotes patient autonomy over lifestyle behaviors that lead to weight reduction. The evidence to support MI as a tool for behavior modification was based on literature from 1992 to 2016. Simple, cost-effective interventions are needed to advance the art and science of nursing. Motivational interviewing can be used by nurse practitioners to deliver expert care by implementing this novel and developing intervention for weight loss.

### **Plan for Dissemination of Project**

To improve evidence-based practice and patient outcomes, this project will be initially forwarded to ProQuest for publication after it has received final approval from the Andrews University School of Graduate Studies, the Chair of the Andrews University Nursing Department, and the project committee. In addition to this deliverable type, the project will be presented in a verbal executive summary to the Michiana Seventh-day Adventist Church. A question and answer period will follow the verbal presentation.

### **Conclusion**

The dominant conclusion taken from all of the comparisons between the experimental and control groups is that the groups were similar in all observable counts except age. However, age did not change the outcomes of the project. Otherwise, all



differences between groups were quantitatively small and had very little effect on test statistics. Even though there was a small sample size, 33 participants did meet the required effect size for this project.

Providers daily treat consequences of being overweight and obese in their practices. Unfortunately, a patient's weight is either overlooked or is inconsequential. If providers were willing and trained to motivate their patients toward weight loss, they would see a decrease in associated risk factors of cases of cardiovascular diseases, osteoarthritis, diabetes, some cancers, and musculoskeletal disorders. Despite awareness by primary care providers of the detrimental consequences of being overweight/obese, there is still a lack of patient counseling regarding outcomes and more important, of how to combat being overweight/obese. Primary care providers are usually the first and only providers who come in contact with patients and therefore, play a crucial role in advocating healthy lifestyle changes.

Motivational interviewing has proven to be successful in other venues that call for behavior modification (e.g., medication compliance) and in the arena of weight loss. It is an inexpensive intervention can be used by the provider during brief office visits to elicit behavioral modification in the realm of weight loss. Personal barriers to weight loss such as ambivalence or failed past attempts to lose weight can be addressed and evaluated. Personal plans for weight loss can be developed by the patient and provider in an effort to combat the atypical and extreme fat accumulation that impairs our nations' health (World Health Organization, 2018). Additional research should be done to establish the effectiveness of MI on various ethnic groups, ages, and socio-demographic populations.

APPENDIX A  
APPROVAL LETTERS

November 09, 2017  
Tajsier Thompson  
Tel: 916-599-5959



Email: [tajsier@andrews.edu](mailto:tajsier@andrews.edu)

RE: APPLICATION FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

**IRB Protocol #:** 17-140 **Application Type:** Original **Dept.:** Nursing (DNP) **Review Category:** Expedited **Action Taken:** Approved **Advisor:** Susan Allen **Title:** The impact of motivational interviewing on Body Mass Index.

This letter is to advise you that the Institutional Review Board (IRB) has reviewed and approved your IRB application for research involving human subjects entitled: *"The impact of motivational interviewing on Body Mass Index"* IRB protocol number 17-140 under Expedited category. This approval is valid until November 09, 2018. If your research is not completed by the end of this period you must apply for an extension at least four weeks prior to the expiration date. We ask that you inform IRB whenever you complete your research. Please reference the protocol number in future correspondence regarding this study.

Any future changes (see IRB Handbook pages 10-11) made to the study design and/or consent form require prior approval from the IRB before such changes can be implemented. Please use the attached report form to request for modifications, extension and completion of your study.

While there appears to be no more than minimum risk with your study, should an incidence occur that results in a research-related adverse reaction and/or physical injury, (see IRB Handbook page 11) this must be reported immediately in writing to the IRB. Any project related physical injury must also be reported immediately to the University physician, Dr. Katherine, by calling (269) 473-2222. Please feel free to contact our office if you have questions.

Best wishes in your research.

Sincerely

A handwritten signature in black ink that reads "Mordekai".

Mordekai Ongo  
Research Integrity & Compliance Officer

**Institutional Review Board – 8488 E Campus Circle Dr Room 234 - Berrien Springs, MI 49104-0355**

Tel: (269) 471-6361 Fax: (269) 471-6543 E-mail: [irb@andrews.edu](mailto:irb@andrews.edu)



SEVENTH-DAY ADVENTIST CHURCH

October 5, 2017

Institutional Review Board

Andrews University

8488 E. Campus Circle Dr. Room BUL 234

Berrien Springs, MI 49104-0355

This is to inform you that permission has been granted to Tajsier Thompson, to collect data for her study titled "The Impact of Motivational Interviewing on Body Mass Index". The Michiana African Seventh-day Adventist Church is pleased to have her conduct her research project at our facility located at: 300 S Mechanic St, Berrien Springs, MI 49103. Individual motivational interviews will be conducted in a private room located in the basement of the facility to ensure confidentiality and privacy. Our office number is: (269) 471-5438

The permission has been granted to the extent of the procedures outlined in the IRB application, and to allow the researcher to recruit participants via a flyer. During project implementation, church members that consent to participate and who meet the study selection criteria, will complete a survey, motivational interview and a pre-post height/weight check, according to the research specifications for data collection.

As a church, we are invested in the health of our community of believers.

Sincerely,

A handwritten signature in black ink, appearing to read "Zebron Ncube".

Pr. Zebron Ncube

APPENDIX B  
MOTIVATIONAL INTERVIEW QUESTIONNAIRE  
WITH DEMOGRAPHICS

**Questionnaire:**

The Effects of Motivation Interviewing on body Mass Index

Descriptive Statistics

Investigator: Tajsier Thompson, RN

**Participant name:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **I.D.:** \_\_\_\_\_

**Age:** \_\_\_\_\_ **Gender:** Male ( ) Female ( )

**Rate your desire to change behaviors that prohibit weight loss: First visit**

( ) 1=no desire to change ( ) 2=contemplating change ( ) 3=preparing/determination to change ( ) 4=initiating change/action/willpower

**What is the highest school grade that you have completed?**

- |   |   |
|---|---|
| <b>1. Less than high school</b>                       | <b>5. Bachelor's degree</b>               |
| <b>2. High school graduate (includes equivalency)</b> | <b>6. Graduate or professional degree</b> |
| <b>3. Some college</b>                                | <b>7. PhD or Doctoral degree</b>          |
| <b>4. Associates degree</b>                           |   |

**Do you identify yourself as African, Black, or another race?**

1. American Indian/ Native Alaskan
2. African \_\_\_\_\_
3. Black \_\_\_\_\_
4. Caucasian \_\_\_\_\_
5. Other: \_\_\_\_\_
6. Refuse \_\_\_\_\_

<p><b>List common foods that you eat for breakfast:</b></p> <p>_____ <b>Time:</b> _____</p> <p><b>List common foods that you eat for lunch:</b></p> <p>_____ <b>Time:</b> _____</p> <p><b>List common foods that you eat for supper:</b></p> <p>_____ <b>Time:</b> _____</p>
--

**How many dependents are you responsible for?**

0 1 2 3 4 5 6 7 8 9 10 or \_

**What is your annual household income?**

1. Less than \$20,000
2. \$20,000 - \$29, 999
3. \$30,000 – \$50,000
4. More than \$50,000
5. Not sure
6. Refused

**Do you monitor the portion size of your meals? Yes ( ) No ( )**

**Type of exercise you perform:** Weight training ( ) Jogging ( ) Walking ( )

Swimming ( ) Cycling ( ) Combination ( ) None ( ) Refuse ( ) Other ( ) \_\_\_\_\_

**Type of exercise you enjoy:** Weight training ( ) Jogging ( ) Walking ( ) Swimming ( )

Cycling ( ) none ( ) Refuse ( ) Other ( ) \_\_\_\_\_

**How many days per week do you exercise?** 0 ( ) 2 ( ) 4 ( ) 6 or more ( )

**How many minutes per day do you exercise?** 0 ( ) 15 ( ) 30 ( ) 45 ( ) 60 or more ( )

**How many glass [es] of water do you drink every day?**

0 ( ) 2 ( ) 4 ( ) 6 ( ) 8 ( ) 10 or more ( )

**How many hours of sleep do you get every night?**

<4 hours ( ) 4 hours ( ) 6 ( ) 8 or more ( )

**Do you eat meals after 6' o'clock p.m.**

Yes ( ) No ( )

**Rate your desire to change behaviors that prohibit weight loss: Second visit**

( ) 1=no desire to change ( ) 2=contemplating change ( ) 3=preparing/determination to change ( ) 4=initiating change/action/willpower 5( ) maintain ( ) 6 relapse

**Pre-BMI check:**

**Weight:** \_\_\_\_\_ (lbs.) **Height:** \_\_\_\_\_ (in) **BMI:** \_\_\_\_\_ (SI units; English)

**Plan:**

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**Return date:** \_\_\_\_\_

**Post BMI check:**

**Weight:** \_\_\_\_\_ (lbs.) **Height:** \_\_\_\_\_ (in) **BMI:** \_\_\_\_\_ (SI units; English)



**Researcher use only**

Participant complete Pre-post height/weight check: Yes ( ) No ( )

Experimental Group Yes ( ) No ( )

Control group Yes ( ) NO ( )

Gift card received Yes ( ) No ( )

Participant signature \_\_\_\_\_

APPENDIX C  
RECRUITMENT FLYERS

LOSE WEIGHT!  
YOUR WAY, IS THE RIGHT WAY FOR YOU!  
WITH MOTIVATION INTERVIEWING.



(Faces & Voices of Recovery, 2017)

PARTICIPANTS WILL RECEIVE A  
\$10.00 WALMART GIFT CARD  
(GIVEN UPON COMPLETION OF THIS 6 WEEK  
STUDY)

FREE TO ALL

18 YEARS OR  
OLDER

Included:

- Coaching (Motivational Interview).
- BMI calculation
- Strategies for weight loss

APPENDIX D  
CONSENT FORM

## Andrews University

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**Informed Consent form for:** \_\_\_\_\_ **[Participants name]**

This Informed Consent Form is the men and women who attend the Michiana African Seventh-day Adventist Church. This letter invites participants to partake in research on *The Impact of Motivational Interviewing on Body Mass Index*.

**Principal Investigator:** Tajsier Thompson

**Sponsor:** Pastor Zebron Ncube

**Organization:** Michiana African Seventh-day Adventist Church. 300 South Mechanic Street, Berrien Springs, MI 49103

*Control group* Yes ( ) No ( )

*Experimental group* Yes ( ) No ( )

**Proposal:** The Impact of Motivational Interviewing on Body Mass Index.

### **Introduction**

I am Tajsier Thompson, a student of Andrews University. I am doing research on the possible impact Motivational Interviewing can have on obesity/overweight in the Michiana African community.

### **Purpose of the research**

This research project seeks to examine the relationship between motivational interviewing and a reduction in body mass index.

### **Type of Research Intervention**

This research will involve a pre height and weight measurement check, motivational counseling, and a post height and weight measurement check in a follow-up visit at the church after six weeks.

### **Participant selection**

We are inviting all adult with a body mass index greater than 25.0 to participate in research project: The Impact of Motivational Interviewing on Body Mass Index. Participants will be randomly chosen for the control group (no motivational interview) or the experimental group (will receive motivational interview).

### **Voluntary Participation**

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. You may change your mind later and stop participating even if you agreed earlier.

## **Procedures and Protocol**

During the pre-measurement check of height and weight: Your height will be measured with feet and inches. Your weight will be measured with pounds and ounces. During the Motivation Interview, we will discuss past failures of weight loss to learn about patterns and what to avoid in the future. During the post-measurement check after six weeks: Your height will be measured with feet and inches. Your weight will be measured with pounds and ounces. We will compare the data from the pre-post measurement check together and critic the differences, if any.

**Duration:** The research takes place over 6 (number of) weeks. During that time, it will be necessary for you to come to the Michiana African Seventh-day Adventist Church for an initial visit for 30 minutes. The initial visits will consist of answering a questionnaire, performing a height/weight measurements and motivational interview. I would like to meet with you 6 weeks after the initial visit for a second measurement of height and weight.

In total, you will be asked to come 2 times to the Michiana African Seventh-day Adventist Church in a 6 week period of time.

## **Potential Risks**

By participating in this research, it is possible that you will be at greater risk than you would otherwise be for emotional setbacks due to unmet goals. In the event that emotional setbacks occur, I will gladly reassess your situation and provide alternatives to the previously agreed upon behavior changes.

## **Benefits**

If you participate in this research, you will have the following benefits: a clearer understanding of past failures at weight loss, new methods and ideas to incorporate in your weight lose journey. Understanding of what may be effective tactic for your individual weight loss.

## **Confidentiality**

The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away and no-one but the researcher team will be able to see it. Any information about you will have a number on it instead of your name. Only the researcher team will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone except Jeanine Kocsis, FNP and Susan Allen, DNP, FNP.

**Sharing the Results**

The knowledge that we get from doing this research will be shared with you privately. Confidential information will not be shared.

**Right to Refuse or Withdraw**

You do not have to take part in this research if you do not wish to do so. You may also stop participating in the research at any time you choose. It is your choice and all of your rights will still be respected.

**Certificate of Consent**

**I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.**

**Participant (print) \_\_\_\_\_**

**Participant (sign) \_\_\_\_\_ Date \_\_\_\_\_**

**I, Tajsier Thompson, confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.**

**Researcher (print) \_\_\_\_\_**

**Researcher (sign) \_\_\_\_\_ Date \_\_\_\_\_**

APPENDIX E  
DNP PROJECT BUDGET

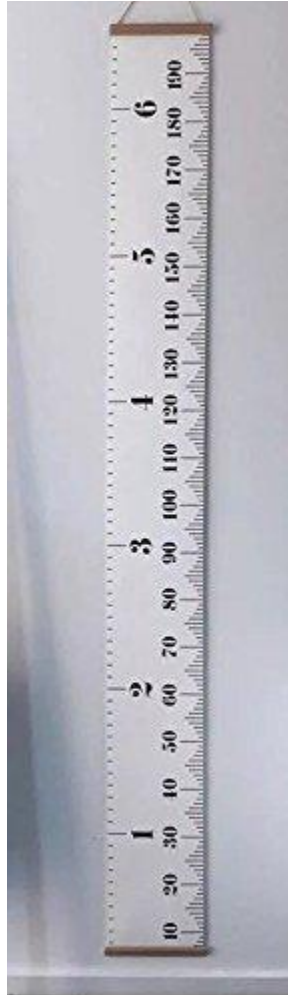


ITEMS	COST
Office supplies	23.00
Measurement tools:  Scale- weight Wall chart- Height	\$25.50 \$11.00
Printing Expenses	82.00
Editing	\$400.00
Participant Compensation	One \$10.00 Walmart gift card per participant. N=33 participants; \$330.00 total for gift cards

APPENDIX F  
WALL GROWTH CHART

Raleighsee hanging height measurement chart, measures from birth to adult. The wall chart measured in feet and inches, ranging from zero feet through seven feet.

Purchased from Amazon.com



APPENDIX G  
FLOOR SCALE

The Triumph digital BMI body fat scale with step-on technology. Precision body fat scale with backlit liquid crystal display. Digital bathroom scale for body weight, body fat, water, muscle, BMI, bone mass and calorie. A 10 user recognition. 400 lbs. Capacity.



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## REFERENCE LIST

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