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# Motivational Interviewing to Enhance Weight Loss and Eating Self-Efficacy in Overweight and Obese Adults

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Motivational Interviewing to Enhance Weight Loss and Eating Self-Efficacy in Overweight and  
Obese Adults

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**Abstract**

Greater than six in ten adults in the United States are overweight or obese which can lead to cardiovascular disease, Type II Diabetes, joint injury and some forms of cancer, costing billions of healthcare dollars each year. Weight loss is difficult, as is maintaining weight loss. The purpose of this project is to investigate if use of the evidenced based (EB) intervention, motivational interviewing (MI), will enhance weight loss and eating self-efficacy (ESE) in overweight and obese adults seeking weight loss at a weight loss clinic over the course of eight weeks. Participants who received MI in addition to current weight loss strategies lost significantly more weight (-2.74 kg,  $p < .05$ ) between the four and eight week visits as compared patients who did not receive MI (-1.3222 kg). The overall weight change over the course of this eight week study in patients who received MI was -6.7733 kg as compared to patients who did not receive MI which was -4.5717 kg. ESE was significantly improved from the initial visit of 4.8733 ( $p < .05$ ) to the four week visit of 4.6733 ( $p < .05$ ) and 4.3267 ( $p < .05$ ) at eight weeks in participants who received monthly MI sessions.

*Keywords:* Weight Loss, Motivational Interviewing, Obesity, Self-efficacy

## **Chapter 1**

### **Motivational Interviewing to Enhance Weight Loss and Self-Efficacy in Overweight and Obese Adults**

Overweight and obesity rates in the United States continue to rise, according to the Centers for Disease Control and Prevention (CDC, 2012), contributing to increased health disparities such as Type II Diabetes, cardiovascular disease, joint disorders and some forms of cancer. According to Ogden, Carroll, Kit & Flegal (2014) in 2012 greater than 69% of adults residing in the United States were overweight or obese. Approximately 17 % of overweight and obese adults are successful losing and maintaining weight loss for one year (Kraschnewski, et al., 2010). The number of overweight and obese adults doubled between 1980 and 2004 (Ogden et al., 2014). The economic burden of obesity in 2008 was \$147 billion (CDC, 2012). According to LaRosa (2011), Americans spent over \$60 billion in 2010 on weight loss. The prevalence of obesity in 2012 in the state of Georgia was 29.1% (CDC, 2012). The risk of morbidity and mortality increases with a body mass index (BMI) over 35%, according to the Department of Health and Human Services (DHHS, 2010).

Motivational interviewing (MI) is an evidence-based communication style used by many healthcare providers (HCP) to assist patients with behavior changes to improve health, such as weight loss (Miller & Rollnick, 2002). It is important for the HCP to utilize reflective listening skills during the provision of MI, which is a patient centered approach to communication (Miller and Rollnick, 2002). The spirit of MI encourages a collaborative approach for the HCP and patient to explore past feelings and experiences related to behaviors that affect health. Discussing past failures and successes of behavior changes often leads the patient to discuss feelings related to behavioral changes that can improve health. Previous research indicates that MI has been used

successfully in multiple areas of healthcare requiring behavior change by patients (Armstrong, et al., 2011; Brown, 2010; Campbell et al., 2009; Thompson et al., 2011).

Body fat is often measured using body mass index (BMI), an inexpensive and convenient way to estimate body fat (CDC, 2010, Jensen et al., 2013, NGC, 2012). BMI is calculated by dividing the patient's body weight in kilograms (kg) by the patient's height in meters squared (CDC, 2010; Stubbs, Whybrow and Lavin, 2010). Patients with a BMI of 25.0-29.9 are classified as overweight, patients with a BMI of 30.0 or more are obese and a BMI of greater than 40.0 are classified as extremely obese (Fryer, Carroll and Ogden, 2012). Patients with a BMI of 18.5-24.9 are of normal weight (National Heart Lung and Blood Institute, 2006).

Eating self-efficacy (ESE) involves a person's perceived ability to control eating behavior, according to Berman (2006). A low perceived ESE is associated with difficulty in controlling eating behaviors, which can lead to overweight and obesity. Schwarzer and Fuchs (1995) write that improving perceived self-efficacy often leads to an increased sense of control over behaviors and the ability to affect outcomes. According to Miller and Rollnick (2002), the HCP can play a role in improving a patient's sense of self-efficacy with the use of MI. The ESE for this study was measured using Bandura's 25 item ESES questionnaire (Glynn and Ruderman, 1986).

The problem addressed by this descriptive, quality improvement project is the increasing rates of overweight and obese adults and the increased risk for morbidity and mortality. The emphasis of the project is to apply the evidence based best practices available to enhance weight loss outcomes and eating self-efficacy in two weight loss clinics owned and operated by an advanced practice registered nurse (APRN).

The two for-profit weight loss clinics utilized in this study are owned and operated by the same APRN. The weight loss clinics are located approximately 30 miles from a major metropolitan southeastern city. The weight loss clinics are located 27 miles apart. The current weight loss strategies utilized are physical assessment, long-term weight maintenance, pharmacotherapy as determined by the APRN, education concerning comprehensive lifestyle changes, as well as advice on diet and exercise. Patients are encouraged to follow up with non-APRN weight loss staff at the weight loss clinic weekly to weigh and receive supplemental vitamin therapy as ordered by the APRN. Patients are assessed by the APRN monthly to evaluate the effectiveness of the current treatment plan. The APRN may choose to continue or modify the treatment plan during monthly visits with overweight and obese patients.

The average weight change prior to the implementation of MI was determined by the review of fifty patient charts, twenty-five from each clinic. Demographic variables collected included the age of the patient at the initial visit, gender and race. The weights of the patient at the initial visit and the four and eight week visits were recorded to determine the effectiveness of weight loss therapy prior to the implementation of MI. The mean weight change of patients between the initial visit and the four week visit was -7.15 pounds (lbs.), (-3.25 kilograms [kg]). The mean weight change between the four and eight week visit was -2.904 lbs. (-1.32 kg). The total mean weight change from the initial visit to the eight week visit was -10.054 lbs. (-4.57 kg).

### **Problem**

In both clinics, APRNs have the opportunity to implement evidenced based best practices (EBBP) for weight loss in addition to the current weight loss strategies. The EBBPs for weight loss include comprehensive lifestyle interventions, behavioral counseling sessions once or twice per month, reduced energy intake, increased physical activity, a long term weight loss



maintenance program, frequent monitoring of body weight and pharmacological intervention (Jensen et al., 2013; Seger et al., 2013). Prior to the study weight loss therapy included patient education using an “advice only” communication method by an APRN untrained in the use MI. Patients received education on the importance of reducing energy intake, increasing physical activity and frequent monitoring of body weight to lose weight. Participants seeking weight loss received pharmacological intervention for weight loss as determined by the APRN. Prior to the implementation of MI, the EBBP of behavioral counseling, such as MI, was not part of the plan of care for weight loss for overweight and obese clients seeking weight loss. Improvement was desired in the treatment of overweight and obese adults seeking weight loss to enhance health by increasing short term and long-term weight loss, as well as to maintain the goal weight. Improvement in weight loss may be accomplished by utilizing the EBBPs for weight loss. The American Heart Association (AHA) recommended in 2010 that healthcare providers (HCPs) include the use of behavioral change therapy in combination with regular visits with HCPs to decrease cardiovascular risk factors such as overweight and obesity.

### **Purpose**

The purpose of this quality improvement project was to investigate if including the EBP intervention of MI to current weight loss practices enhances weight loss and ESE in overweight and obese patients seeking weight loss at two southeastern weight loss clinics. The inclusion of MI to current weight loss techniques will improve the quality of care by incorporating the EBBPs to assist overweight and obese adults lose weight (Jensen et al., 2013; Seger et al., 2013). Implementing MI for weight loss will also add to existing research.

### **Clinical Questions**

**Clinical Question 1.** In adults who are obese or overweight seeking weight loss therapy, what is the average weight change from the initial visit to the four week and eight week visits prior to implementation of MI?

**Clinical Question 2.** In adults who are obese or overweight seeking weight loss therapy, what is the average weight change from the initial visit, at four and eight week points when motivational interviewing is used?

**Clinical Question 3.** In adults who are obese or overweight seeking weight loss therapy, what is the change in ESES scores from baseline to points, four weeks and eight weeks? Perceived ESE was measured using Bandura's ESES (Glynn and Ruderman, 1986).

### **Opportunities and Challenges for this Study**

The proposed study allowed the opportunity to determine the effectiveness of weight loss strategies prior to implementation of MI. This study provided the opportunity to explore an additional evidenced based practice (EBP) strategy for enhanced weight loss in overweight and obese patients seeking weight loss at a weight loss clinic. The proposed study also provided the opportunity to determine if MI used in overweight and obese adults seeking weight loss improved perceived ESE. The information gained in this quality improvement study contributes to the current body of evidence related to MI, weight loss in overweight and obese adults and perceived ESE. The project added a behavioral component to the current weight loss methods to improve the quality healthcare by incorporating EBBP for weight loss. The project allowed the opportunity to create and implement a height and weight measurement protocol to improve the accurate collection of physiological information.

Challenges for the project included the provision of MI by the PI who is also an APRN. The provision of MI required temporary schedule changes for the APRNs for nine weeks. The PI managed the consent forms, ESE questionnaires, utilized the height/weight protocol when collecting the initial, four and eight week physiological measurements, then utilized MI during the APRN office visits with participants in phase two of the study. During the visits, the PI provided all care for each participant recruited into phase two requiring all employees involved in direct patient care to change health care delivery routines. The owner of the weight loss clinics, also an APRN provided care to all patients who were not involved in phase two of this study for nine weeks. The change in health care delivery routines was challenging at times due to space constraints in each office. A temporary exam room was set up in each clinic to improve patient flow. The additional paper work for the study required repackaging of patient forms for the initial visit. Additional time was required for participants in phase two to complete the ESE questionnaire in the waiting area. Consent, explanation of the study and time for question and answer to participate in the study also required additional time. The time for each APRN office visit with the PI was increased from 20 minutes to 30 minutes during this study.

### **Theoretical Framework**

Bonsaksen, Lerdal, and Fagersoem (2012) discussed the empowerment of obese clients through the improvement of the patient's sense of self-efficacy. Self-efficacy as explained by Bandura (1997) is a person's belief in their innate capabilities to achieve predetermined goals. Researchers completed a cross-sectional study to measure self-efficacy and variables affecting self-efficacy in participants with chronic obstructive pulmonary disease (COPD) and morbid obesity (Bonsaksen et al., 2012). Researchers studied bivariate relationships found that obese participants who identified having more social support and who reported higher levels of

physical activity had higher levels of self-efficacy ( $r = .2, p = .02, r = .27, p < .01$ ) respectively. Obese clients who reported higher emotional responses to illness had lower levels of self-efficacy ( $r = .26, p < .01$ ). People attempting weight loss who exercise tend to have higher levels of self-efficacy, which can lead to improved health related to weight loss (Bandura, 1997, Bonsaksen et al., 2012).

Bandura (1997) stated that self-efficacy improved when clients met preset goals and perceived the capability of achieved success. Albert Bandura developed the Social-Cognitive Theory of Self-Efficacy in 1986 (Bandura, 1996). The Social-Cognitive Theory of Self-Efficacy has been used in multiple domains including nursing according to Miller, Williams, Coombs and Fuqua (1999). Nurses can improve the self-efficacy of patients through assisting the patient to set achievable goals and providing motivational interviewing. An initial weight loss goal of 10% of body weight over a period of six months, which is approximately 1.67% of body weight per month, is recommended (Shay, Shobert, Seibert and Thomas, 2009, OS, 2013). Clinically significant health outcomes are associated with a sustained weight loss of 3-5% (NHLBI, 2006).

Miller and Rollnick (2012) explain that the transtheoretical model (TTM) has been utilized extensively to frame greater than 200 randomized clinical trials requiring behavioral change. The TTM, originally utilized in patients seeking healthcare related to alcohol abuse, expanded to substance abuse treatment and more recently in the treatment of many healthcare conditions such as diabetes mellitus and cardiovascular disease (Miller and Rollnick, 2012). Prochaska, Norcross, Fowler and Abrams (1992) describe the TTM as a comprehensive behavioral change model. Prochaska et al. (1994) completed a cross-sectional comparison of the constructs of the TTM, which are stages of change and decisional balance. Prochaska et al. (1994) found that the TTM and the constructs were generalizable in a wide variety of healthcare

issues, as they found similarities in the behavioral patterns of change. According to Prochaska et al. (1994), behavioral change patterns were similar in subjects who were attempting to improve health by changing “addictive and non-addictive behaviors” related to improvement of health (p. 40). Prochaska et al. (1994) found similarities in patterns of behavior change in patients attempting to discontinue the use of cocaine, discontinue cigarette smoking, increase exercise, control weight, and utilize condoms as well as seven other problem behaviors.

The TTM has five stages, which aid the caregiver in determining the client’s readiness for change (Miller and Rollnick, 2012). The five stages included in the TTM are pre-contemplation, contemplation, preparation, action and maintenance. Patients in the pre-contemplation stage are not planning to change their behavior and fail to realize the negative effects of their behavior on their current state of health, according to Armitage (2009). Patients who realize the negative effects of their behavior on their current state of health and begin to consider ways of behavior change are in the contemplation stage (Armitage, 2009). During the preparation stage, patients prepare themselves for upcoming change in behavior and during the engagement of these behaviors; patients are determined to be in the action phase (Armitage, 2009). Patients in the maintenance stage have changed their behavior for at least six months (Armitage, 2009). Patients often vacillate between stages and relapse is a common phenomenon (Armitage, 2009).

Constructs of the model include self-efficacy (Bandura, 1997) and decisional balance (Janis & Mann, 1977). Motivated patients have higher self-efficacy, which is a determining factor in a person’s beliefs and determination to reach goals (Bandura, 1997). Self-efficacy improves as people experience failure and learn to succeed by overcoming obstacles (Bandura, 1997). Self-efficacy may also improve by a patient seeing other people succeed, hearing

confidence-building statements and controlling reactions to physiological symptoms of stress (Bandura, 1996). Improving physical fitness and controlling for factors such as stress and depression to improve self-efficacy is important (Bandura, 1997). Motivational interviewing using the TTM to assist patients in achieving weight loss aims to improve the patient's sense of self-efficacy (Bandura, 1997). Decisional balance, according to Janis & Mann (1977) involves procedural tasks for the decision maker in order to make high quality decisions.

Prochaska et al. (1994, p.41) explains that the patient seeking behavioral change analyzes the "pros and cons" of a behavior which assists the healthcare provider to determine the current stage of change. If the pros outweigh the cons, the patient is determined to be in the pre-contemplation stage (Prochaska et al., 1994). The patient becomes more aware of the pros and cons as they move towards the contemplation stage. The patient may verbally vacillate in the decision to change behavior and express concerns of failure as they prepare for behavioral change (Prochaska et al., 1994). Behavioral change and movement through the stages of change does not often occur in a linear fashion and the patient is at risk to revert to previous behavior in each stage (Prochaska et al., 1994). In a cross sectional study of 3,858 participants, separated into 12 groups dependent on twelve identified problem behaviors, researchers found that using the decisional balance and stages of change was generalizable to multiple health care problems requiring behavioral change (Prochaska et al., 1994).

## Chapter 2

### Review of the Literature and Synthesis

Several studies were identified that examined MI and weight loss. One study was a systemic review and meta-analysis, while two were randomized control studies (RCT). A pilot randomized trial and a retrospective study evaluating weight loss using MI in specific populations is also included. A qualitative content analysis is included to present the experiences of nurses using MI for health promotion.

Armstrong, et al. (2011) conducted a systematic review of twelve RCTs and meta-analysis of eleven RCTs using MI for weight loss in adults published between 1995 and 2009. The aim of this study was to determine if the use of MI reduced BMI or body weight, referred to as “body mass” to encompass both terms, in patients who are obese or overweight, as compared to the control group in each RCT (Armstrong, et al., 2011, p. 711). Researchers determined after reviewing eleven RCTs including 1448 subjects with 801 receiving MI and 651 in the control group that participants receiving MI experienced a decrease in body mass of  $-0.51$  (95% CI,  $p=0.53$ ). Researchers controlled for publication bias using Begg and Mazumdar’s test ( $p = .30$ ) and funnel plots. The outcomes of the RCTs using weight loss outcomes measured in kilograms reveal that participants receiving MI experienced a standard mean difference (SMD) of  $-1.47$  kilograms ( $p > .01$ ). Studies measuring weight loss outcomes utilizing BMI experienced a weighted mean difference (WMD) of  $-0.25$  ( $p = .058$ ). Studies measuring the outcome of weight in kilograms had greater significance ( $p \leq .01$ ) than studies measuring the outcome of BMI ( $p = .053$ ). The results of this study were beneficial to the current research plan due to the similarities of the measurement outcome of weight loss in kilograms. This study is also similar to the current study, because both studies utilize MI as the independent variable.

Hardcastle, Taylor, Bailey, Harley and Hagger (2013) completed a double-blinded randomized controlled case study to determine the effectiveness of MI on cardiovascular risk factors, weight loss and physical activity. The sample contained 334 participants with at least one risk factor of cardiovascular disease randomly assigned to either an intervention group or a control group. The intervention group received five MI sessions while the control group received standard education on nutrition and physical activity. The subjects' biomedical and behavioral information were evaluated at baseline, six months, 12 months and again at 18 months. The control and the intervention groups were analyzed in their respectively assigned groups; the intervention group was also analyzed in various subgroups using ANCOVA. Patients in the intervention group reduced BMI by .13 ( $p < .05$ ) while the control group increased BMI by .06 ( $p < .05$ ) at six months. The BMI unfortunately increased in the intervention group by .02 above baseline at eighteen months, while patients in the control group increased BMI by .06 at six months and .67 at eighteen months respectively. Further research is necessary for weight maintenance. Patients in the intervention group with multiple risk factors for cardiovascular disease and a BMI at or above thirty had a reduction in BMI of .37 ( $p < .05$ ) at six months compared to baseline. Patients in the control group with multiple risk factors for cardiovascular disease and a BMI at or above thirty had an increase in BMI of .07 ( $p < .05$ ) at six months as compared to baseline. The demographics of intervention and control groups were similar and tested using MANOVA. Attrition bias was assessed by the researchers and deemed insignificant with the MANOVA ( $p = .06$ ). The results of the study support the use of MI for the reduction of BMI after six months in obese participants with multiple risk factors for cardiovascular disease. The research presented by Hardcastle et al. (2013) is beneficial to the current research plan, because the independent variable was MI; however, the dependent variable was BMI. In the



current project, the independent variable is MI, while the dependent variables are ESES scores and kilograms of body weight.

Carels et al. (2007) completed an RCT that involved fifty-five adult participants with a BMI > 30 who reported exercising less than twice per week. The study was conducted to determine if the addition MI would improve weight loss, increase self-reported exercise, improve cardiorespiratory fitness levels and improve self-reported dietary intake. Participants included in this study were determined to be resistant to less intensive behavioral weight loss therapy, as predetermined weight loss goals were unmet. Participants were randomly assigned to either a behavioral weight loss program (BWLP) with a stepped care (SC) approach involving MI, or a BWLP with a SC approach not involving MI. The researchers hypothesized that participants receiving BWLP involving MI would lose more weight as compared to participants receiving BWLP with a SC approach not involving MI. Researchers reported that participants assigned to the BWLP with a SC approach involving MI, lost 4.5 kgs (*SD* 3.0,  $p < .05$ ), while participants receiving BWLP with a SC approach not involving MI lost 2.1 kgs (*SD* 2.8,  $p < .05$ ). Participants assigned to the BWLP with a SC approach involving MI self-reported 68 minutes of weekly exercise, more than participants receiving BWLP with a SC approach not involving MI. The dependent variable of kilograms of body weight and the independent variable of MI used in this study is similar to the current study.

Berfort et al. (2008) completed a quantitative pilot randomized trial to determine if the addition of MI to a behavioral weight loss program targeted specifically for African American (AA) females would improve weight loss and weight loss behaviors. Participants included in this study were 44 obese AA adult females recruited from a primarily lower income community in or near Kansas City via convenience sampling. Participants were randomly assigned to the

intervention or control group. The intervention group received four sessions of MI, while the control group received four health education (HE) sessions. Members of both the control and intervention groups received culturally specific behavioral weight loss interventions over 16 weeks. Participants receiving MI lost a median of 2.6 kgs (*SD* 4.2) while participants receiving HE lost a median of 3.2 kgs (*SD* 5.7) with a Cohen's (*d* -0.12). The use of multiple counselors in the provision of MI may have weakened the study. Researchers report that 79% of participants in the study reported a recent major life stressor, which could influence the success of MI. Socioeconomic status, is not clearly reported in the study; it is noted that AA women generally report lower incomes, which may have contributed to the outcomes of people receiving MI. More research is needed related to the usefulness of MI in the AA population to improve health related to weight loss behaviors. The current study may add to the body of knowledge regarding the effectiveness of MI in a diverse ethnic group.

Karlsen, Humaidan, Sorensen, Alsbjerg, and Ravn (2013) conducted a retrospective study evaluating weight loss in kgs and BMI in 187 obese and overweight women using MI prior to fertility treatment. Patients with a BMI > 25 are at increased risk for infertility and pregnancy complications therefore; overweight and obese patients are advised to lose weight prior to conception. Participants in the intervention group received MI, while people in the control group received "motivational support" (Karlsen, Humaidan, Sorensen, Alsbjerg, and Ravn, 2013, p. 839). People in the intervention group received monthly face-to-face MI sessions, while the control group received "motivational support" via phone or email (Karlsen, Humaidan, Sorensen, Alsbjerg, & Ravn, 2013, p. 839). Motivational support is a counseling style similar to MI, however, motivational support utilizes communication techniques that are not face to face according to Karlsen et al. (2013). Patients receiving MI lost a median of 9.3 kgs ( $p < .01$ ), while

the patients receiving motivational support lost a median of 7.3 kgs over 28-32 weeks. The positive result of this study are similar to other studies utilizing MI for weight loss and is important to the current study as face-face MI sessions will be used while determining the amount of weight change in kilograms.

Brobeck, Bergh, Odencrants, and Hildingh (2011) conducted a descriptive qualitative study to analyze experiences of primary care nurses who utilize MI for patient health promotion. In Sweden, 20 primary care nurses, from a variety of healthcare backgrounds who used MI for health promotion were interviewed for this study. Nurses included in this study were chosen using a convenience sample and information was collected by personal interview at each nurse's place of employment. The interviewer asked five predetermined questions and the responses were recorded and transcribed verbatim. Nurses included in this study had at least three years of experience using MI and at least 12 years of nursing experience. Themes determined by a review of the interviews indicated that previous nursing experience improved the ability to apply MI in patient care. Nurses emphasized the importance of attending MI training versus self-study prior to implementing MI in the healthcare setting. Frequent use, continued learning and administrative support for MI were common themes included in this study. The researchers validated that nurses verbalized positive statements related to the use of MI for health promotion.

Other research studies have examined the use of MI to improve health. Thompson et al. (2011) conducted a systematic review and synthesis of five primary and eight secondary research studies using the intervention of MI to improve cardiovascular health. The results of the study indicate that MI is effective in changing patients' behaviors that affect cardiovascular health. Russell et al. (2011) completed a study showing improvement in dialysis attendance in patients with Chronic Kidney Disease using MI. Campbell et al. (2009) determined that MI increased the

consumption of fruits and vegetables to improve health in order to prevent and control cancer. Brown (2010) utilized MI to improve antiretroviral medication adherence in patients with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS). MI has improved the health of people with diabetes mellitus according to the Look AHEAD Research Group (2010) and the Diabetes Prevention Program Research Group (2002). MI has been used to help teenagers to stop smoking according to Myhre and Aldeman (2013).

### **Best Practices**

The best practices for the treatment of overweight and obesity according to current guidelines of treatment include behavioral therapy, nutritional counseling to decrease energy intake, education concerning exercise to increase energy expenditure, long term weight loss maintenance, frequent monitoring of body weight and pharmacotherapy (Jensen et al. 2013, Seger et al., 2013). A synthesis of previous research for the best practices for assisting overweight and obese adults with weight loss include the use of behavioral therapy such as motivational interviewing, along with nutritional and exercise education (AHA, 2010; Armstrong et al., 2011; Carels et al., 2007; Hardcastle et al., 2013, Karelson et al., 2013).

### **Chapter 3**

#### **Project Description**

The purpose of this quality improvement project was to investigate if including the EBP intervention of MI to current weight loss practices enhances weight loss and ESE in overweight and obese patients seeking weight loss at two southeastern weight loss clinics. The weight loss clinics are located in two separate suburban areas approximately 30 miles from a large southeastern metropolitan city. Both clinics utilized for this study are owned and operated by the same APRN. Weight loss is the primary focus of both clinics; however, other services are offered such as aesthetics, non-emergent acute health care and chronic health care. There are eight people employed at the weight loss clinics the owner, an additional part-time APRN who is the PI for this study, a medical director, licensed practical nurse (LPN), office manager, medical assistant and two assistive personnel.

#### **Method**

The data collection for this study was completed in two phases after gaining approval from the Georgia College & State University Institutional Review Board. The objectives of phase one were to collect demographic and weight change information utilizing a random selection chart review process. The information gathered from phase one identified the initial weight, as well as the weight at four and eight weeks. This information was used to determine the effectiveness of the weight loss methods prior to implementing MI. The average weight changes from the initial visit to the four week visit, the four to eight week visits and the total weight change over eight weeks was determined. The objectives of phase two were to recruit participants who consented to participate in the study then gather demographic, height, weight and ESES information while implementing the use of MI in addition to the current weight loss

methods. This information collected during phase two was used to determine if the addition of MI enhanced weight loss and ESE is overweight and obese adults seeking weight loss.

### **Phase I**

A review of 50 randomly selected charts was completed during phase one to determine the effectiveness of weight loss therapy and to collect demographic information prior to implementation of MI for this descriptive, quality improvement study. The demographic information collected during the retrospective chart review included each participant's reported age in years rounded to the nearest whole number at the initial visit, gender and race, as reported by the participant.

### **Phase I Inclusion and Exclusion Criteria**

Patients 21 years or older, attending weight loss therapy for a minimum of eight consecutive weeks were included in the chart review. Patients with less than eight consecutive weeks of weight loss therapy, under the age of 21 years or those with illegible or missing information were excluded from this study.

### **Phase I Sample**

The demographic information and changes in body weight were determined in phase one by randomly selecting 25 charts from each clinic. The 50 charts selected during phase one of data collection was determined by placing the patient charts in alphabetical order by last name then first name at each clinic. A number was written on a piece of paper, which represented each patient's chart. Each piece of paper was folded so that the assigned number would not be visible. The folded papers were placed in large bowl and then shuffled by hand. One number was selected and documented, which represented a patient's chart. The paper was refolded and returned to bowl. Patient charts were selected by counting the alphabetized charts, according to

the number documented from the piece of paper. Charts were counted each time beginning with the first chart in alphabetical order. The demographic and weight information was documented and then the chart was returned to the appropriate area prior to each subsequent chart selection. This process of data collection for phase one was repeated until the researcher collected 25 sets of data at each clinic that met the inclusion and exclusion criteria.

### **Phase I Data Collection**

The PI collected the demographic and physiological data from the randomly selected charts at each weight loss clinic. The data was documented using the phase one data collection tool (see Appendix A). The phase one data collection tool, created by the PI for use in this study was used to ensure all information was gathered from each patient chart. The information collected from each chart included the patient's age at the initial visit, gender, race, initial weight, weight four weeks from the initial visit and weight eight weeks from the initial visit. Each entry on the phase one data collection tool was compared to the patient's chart three times to ensure accuracy of the information collected.

### **Phase II**

Phase two of this study was completed to determine if utilizing the EBBP for weight loss would enhance loss and ESE in participants seeking weight loss at a weight loss clinic. According to historical data from each weight loss clinic, it was presumed that approximately 20 participants would be recruited into phase two of this study from both weight loss clinics.

### **Phase II Sample**

Convenience sampling was used during phase two of this study. Each new patient seeking weight loss at the weight loss clinics during the first two weeks of the study, who met the inclusion criteria, was invited to participate in this study. The recruitment questionnaire was

created by the PI to ensure that each participant enrolled in phase two of this study met the inclusion criteria (see Appendix B). Each participant recruited into phase two of this study signed the consent form (see Appendix C).

### **Phase II Inclusion and Exclusion Criteria**

The inclusion criteria to participate in this study were patients with a body mass index (BMI)  $\geq 25$ . Participants included were aged 21 years or older, who self-reported that they had not received medically supervised weight loss treatment in the past three months. Participants included were able to read and speak English and stated that they were not currently pregnant or had the intention to become pregnant within six months of the intervention

. The exclusion criteria for this study include patients under the age of 21 years, who self-report pregnancy and/or lactation or who report the intention of pregnancy within six months of the intervention. Participants also excluded from the study include those who self-reported serious illness, utilization of a weight loss program or taking weight loss medications within the past three months. The PI determined if each participant met the inclusion criteria to participate in this study by reviewing the participant's reported medical history and completing a complete health history and physical examination. The health history form utilized by each weight loss clinic prior to this study met the information requirements for the current study. There were no participants dually enrolled in phase one and phase two of the study.

### **Phase II Data Collection**

The PI documented demographic, physiologic and ESES information using the data collection form for phase two (see Appendix D). The demographic information collected during phase two by the PI included the participant's age at the initial appointment for weight loss, patient reported gender and race. The PI obtained baseline measurements of weight in kilograms,



rounded to the nearest tenth of a kilogram, height rounded to the nearest tenth of a centimeter and BMI using the height and weight protocol (see Appendix E). The participant's BMI was collected at the initial visit to ensure that that the participant met the inclusion criteria of being overweight or obese to participate in the study. The patient's BMI was documented rounding to the nearest tenth on the data collection form for phase two. The participant's body weight was collected by the PI using the height and weight protocol at the four and eight week follows up appointments and documented on the data collection form for phase two. Base line ESE was determined by using Bandura's ESES questionnaire at the initial visit prior to receiving MI from the PI (see Appendix F). The participant using a paper and pen testing method completed the ESE questionnaire in the patient waiting area. The scoring information located at the bottom of page two of the ESE questionnaire was removed from the questionnaires supplied to participants in phase two of this study to decrease distractibility. Each participant completed a copy of same questionnaire at the four week and eight week visits prior to receiving MI. The PI calculated the score of each ESE questionnaire. To improve reliability, the PI rechecked each ESES score for accuracy prior to entering the data into the Statistical Packages for the Social Sciences (SPSS) for Windows, version 21.0.

### **Motivational Interviewing Training**

The PI attended 18 hours of Comprehensive Motivational Interviewing Training for Health Professionals (COMMIT) in 2013. The certificate for completing the MI training is located in Appendix G. Health professionals' completing the COMMIT training conducted multiple MI sessions under the leadership of a trained counselor and feedback was received to improve the technique of MI.

### **Protection of Human Subjects**

The institutional Review Board of Georgia College & State University approved this research proposal. All participants in phase two were provided with oral and written information related to the study and given a copy of the signed consent form containing contact information for the PI prior to data collection (see Appendix C). The length of time to complete the ESES questionnaire was approximately 10 minutes. The additional time to complete the EBBP for weight loss added approximately 15 minutes to the length of the office visit, which did not excessively burden the participants in phase two.

### **Intervention**

The intervention group received the EBBP for weight loss (Jensen et al. 2013, Seger et al., 2013). Prior to the intervention of MI, an advice-giving communication style was utilized by the APRN during communication with patients seeking weight loss. During phase two of this study, MI was used by the PI when communicating with participants seeking weight loss. The patients in phase one of this study received advice only information with an APRN who was not trained in MI.

The PI completed the collection of physiological measurements, MI, physical exam, health assessment and discussion related to the plan of care during the 30-minute block of time by the PI. To increase the validity of height, weight and BMI measurements the PI utilized the height/weight protocol throughout the study. The phase two data collection form was used throughout the study to ensure all necessary information was collected during each participant visit. The same person using a face-to-face method delivered MI sessions individually. Although there are multiple training prototypes, the spirit of MI encompasses the method of communication between the healthcare provider and the participant.

Each participant recruited during phase two received MI from the PI at the initial visit as well as the four and eight week visits. The PI utilized MI to communicate with the patient during each visit of phase two. Open ended questions were posed by the PI during the beginning of each MI session to identify areas in which the participant was concerned. In keeping with the spirit of MI, the participant then guided the conversation thus verbally exploring ambivalence related to weight change (Miller and Rollnick, 2002). The PI provided support to the participant during each MI session utilizing a collaborative style approach with the participant for weight loss (Miller and Rollnick, 2002). The PI provided information concerning weight loss, only when permission to do so was obtained from the participant (Miller and Rollnick, 2002).

### **Instruments**

Body weight in kilograms was measured to the nearest tenth of a kilogram using a calibrated Seca electronic column scale, model number 769 with attached Seca 220 stadiometer to measure height to the nearest tenth of a centimeter. The Seca 769 column scale has a maximum capacity of 200 kgs ("Seca 769," 2014). The Seca stadiometer has the ability to measure height to the nearest tenth of a centimeter and the scale measures body weight to the nearest tenth of a kilogram ("Seca 769," 2014). The Seca scale electronically calculates BMI to the nearest tenth using weight in kilograms divided by height in meters squared (CDC, 2011). The Seca scales utilized in this study were purchased new in January 2014 (L. Mullis, personal communication, March 31, 2014). Each scale was calibrated before each participant was measured in metric units (McGregor, 2012).

McGregor (2012) describes the importance of obtaining accurate measures of height and weight in order to document BMI precisely. The PI collected and documented height, weight using the Seca scale at each point during phase two of data collection for this study. The BMI

was collected at the initial visit using the Seca scale to ensure that each participant met the inclusion criteria to participate in the study. A written height/weight protocol was developed by the PI to increase the validity of this study. The PI obtained each participant's height, weight and BMI at baseline and documented the information to the nearest tenth in the patient's medical record in appendix E. Participants in phase two of this study were free of hairstyles or any decorative items such as a hat that could have interfered with the precise measurement of height (CDC, 2011). Each participant's height was measured to the nearest tenth of a centimeter using the stadiometer while in the standing position without shoes (McGregor, 2012). Each participant was positioned facing away from the stadiometer with the head in a neutral position, eyes forward and feet together as recommended by the CDC (2011). The PI measured the participant's height after ensuring the appropriate positioning of the participant. The participant was in the standing position with the heels, buttocks, shoulders and occipital area of the head touching or near touching the stadiometer (CDC, 2011). Depending on the participant's body composition, not all areas of the body indicated touched the stadiometer (CDC, 2011). A stool was available for use by the PI in order to read the stadiometer at eye level when obtaining each participant's height (CDC, 2011). Participants were weighed in light clothing, without shoes while standing in the center of the scale (CDC, 2011).

The recruitment questionnaire and the data collection forms for phases one and two were developed by the PI to ensure necessary information pertinent to this study was gathered during each visit. The recruitment questionnaire was helpful in ensuring that the PI utilized a standard format with each participant when reviewing both inclusion and exclusion criteria.

The ESES is a 25 item questionnaire, using a seven point Likert Scale with one indicating control over eating and a seven indicating difficulty controlling eating (Bandura, 2005; Glynn

and Ruderman, 1986). A lower ESES score indicates greater control over eating in a variety of social and emotional situations (Glynn and Ruderman, 1986). The ESES is made up of two domains, determined by factor analysis, which are the Negative Affect (NA) and the Socially Acceptable Circumstances (SAC) subscales. The NA subscale contains 15 items, while the SAC subscale contains 10 items. To calculate the overall score of the ESES the responses of each question, according the Likert scale are added and the total is divided by the number of questions.

The Cronbach's alpha scores for the NA, SAC and ESES were (.94, .85 & .92) respectively, indicating good internal consistency (Glynn and Ruderman, 1986). The correlation coefficient ( $r = .7$ ,  $p < .001$ ) which shows a satisfactory test-retest reliability (Glynn and Ruderman, 1986). A correlation of one indicates a perfect test-retest correlation coefficient (Kellar and Kelvin, 2013). An advantage of the ESES is that it is available online for public use without cost or permission requirements (Bandura, 2005).

ESE was determined at base line and again at four and eight weeks for participants in phase two using Bandura's ESES. Each participant was asked to complete the ESES questionnaire using a paper and pencil testing method prior to receiving MI.

### **Variables**

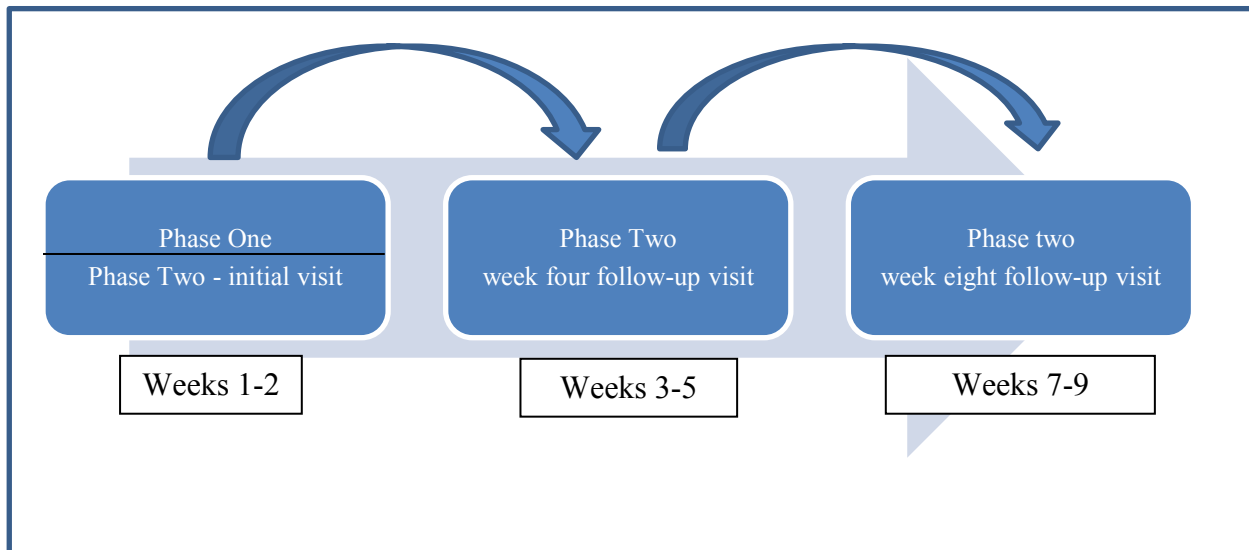
The parametric dependent variables are body weight measured in kilograms, weight change measured in kilograms and ESE. The nonparametric independent variable is MI (Kellar and Kelvin, 2013). The independent variable is considered nonparametric, because MI is measured at a nominal level of measurement (Kellar and Kelvin, 2013). The parametric dependent variable, body weight measured in kilograms is measured at the ratio level (Kellar and Kelvin, 2013).

### Hypotheses

It is hypothesized that the mean weight loss will be enhanced in patients receiving MI in addition to the current methods of weight loss therapy as compared to patients who received current weight loss methods without MI. It is hypothesized that ESE scores will decrease, indicating patients receiving MI have more control in their food intake after receiving MI at four and eight week visits.

### Time Line

The time period for this study was nine weeks as shown in *Figure 1*. Phase one consisted of the retrospective chart review of patients seen before the start of the MI intervention. Participants for phase two were recruited over a two week time period, which explains the two-week window to schedule each monthly follow-up visit with the PI.



*Figure 1.* Timeline for current study.

### **Budget**

The total budgeted monetary cost of this project is estimated at \$23.00 for printing supplies. The weight loss clinic sponsored the cost of this study by supplying the printer, paper and ink for the ESES questionnaires, consent forms, height and weight protocol and data collection tools. The APRN completing the intervention of MI donated time for all patient care during this study. There were no additional costs accrued during this study.

## Chapter 4

### Results

In order to answer the first clinical question, in adults who are obese or overweight seeking weight loss therapy, what is the average weight change from the initial visit to the four week and eight week visits prior to implementation of MI? A chart review was used to determine the average weight change of participants prior to implementation of the quality improvement in clinical practice of motivational interviewing. During phase one, the retrospective chart review, a total of 217 charts were reviewed in order to identify 50 that met inclusion criteria (see *Figure 2*). During phase two 35 participants were invited to participate in the study; each of the 35 participants signed the consent form and met the inclusion criteria to participate in the study. There were no participants who participated in both phase one and phase two of this study. Of the 35 participants who entered the study, 15 participants were lost to attrition during the first four weeks. Of the 20 participants who attended the four week visit, eight participants were lost to attrition during weeks five through nine. Of the 35 participants who were recruited into phase two, 12 participants completed eight weeks of weight loss therapy.



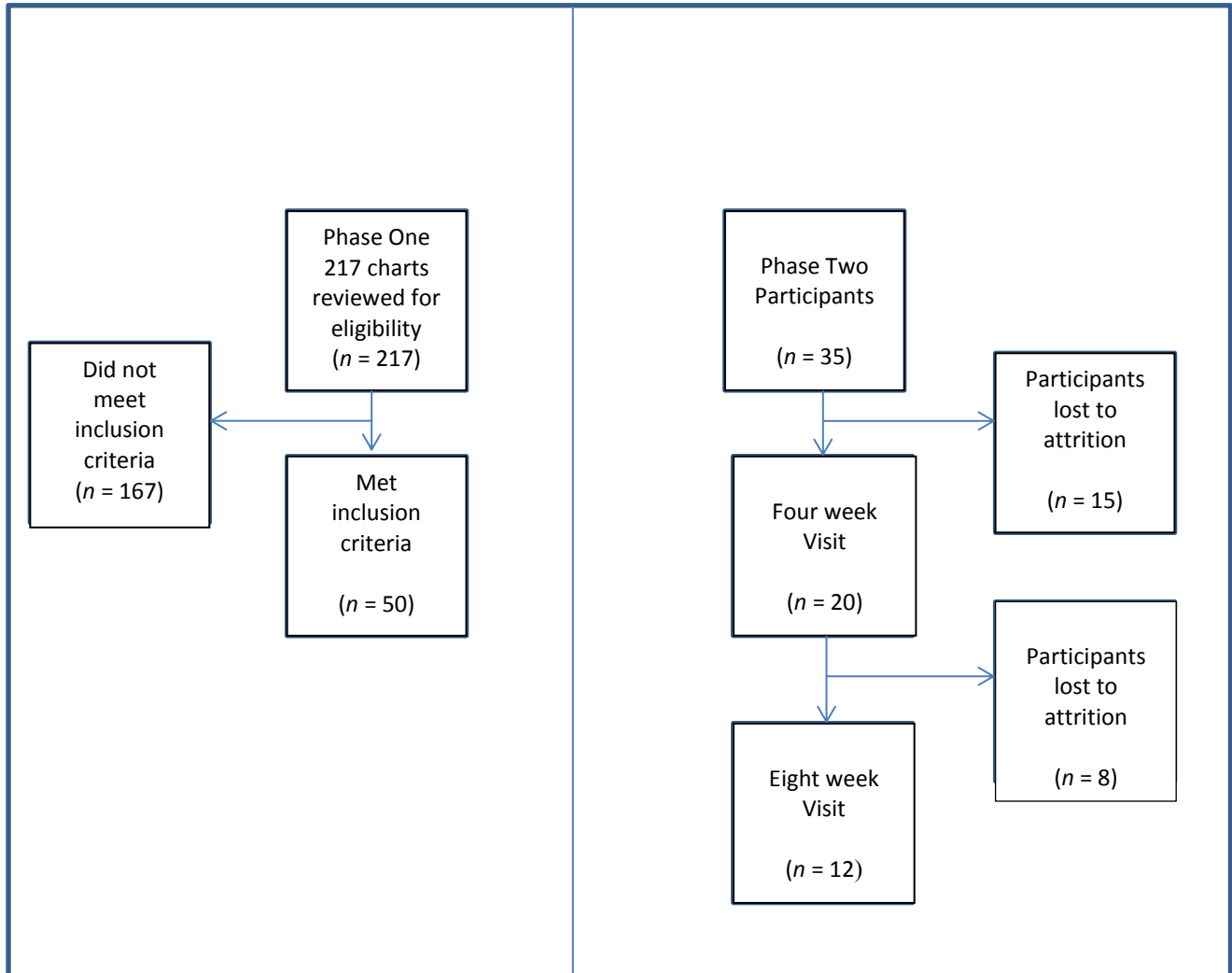


Figure 2. Participant flow in phase two.

Descriptive statistics were used to determine the mean, range, percentage and standard deviation of weight, weight changes, age, race, gender and ESES over eight weeks. Frequency statistics were used to determine the mode, median, distribution and dispersion of each variable of interest. An independent *t* test was used to compare the means of weight and ESE scores because the grouping variable of MI is dichotomous and weight and ESE was measured at the

ordinal and ratio levels respectively (Keller and Kelvin, 2013). Significant findings were noted for outcomes with a  $p \leq .05$ .

The participant demographics in phases one and two are shown in Table 1. The initial weights and ages of participants in phases, one and two are normally distributed and have a moderate effect size, indicating that the groups may be compared. The mean age of the patients included in phase one at the time of the initial visit was 42.08 years ( $SD \pm 11.72$ ), while the mean age of the participants in phase two was 43.667 years ( $SD \pm 8.0829$ ). The youngest participant in phase one was 23 years at the initial visit, while the oldest participant was 71 years. The youngest participant in phase two was 28 years at the initial visit, and the oldest participant was 53 years. The ages of the participants in phases one and two are evenly distributed. The age, race and gender of participants in this study are not generalizable to the population according to population data collected by the United States Census Bureau (2013). In 2013, the state of Georgia was 62.5% Caucasian, 31.4% African American, 9.2% Hispanic or Latino and 3.7% Asian (United States Census Bureau, 2013). Females made up 51.1% of the population in Georgia in 2013 (United States Census Bureau, 2013). In this study, over 83% of the participants in phases one and two were Caucasian and over 93% were female.

Table 1

*Demographic Information*

Characteristic	Phase 1	Phase 2
	<i>n</i> = 50 (100%)	<i>n</i> = 12 (100%)
Age in Years		
21-30	9 (18%)	1 (8.3%)
31-40	10 (20%)	3 (24.9%)
41-50	17 (34%)	4 (33.2%)
51 – 60	11 (22%)	4 (33.2%)
61 and older	3 (6%)	0 (0%)
Gender		
Female	50 (100%)	11 (91.7%)
Male	0 (0%)	1 (8.3%)
Ethnicity		
Caucasian	42 (84%)	10 (83.3%)
African American	5 (10%)	2 (16.7%)
Hispanic	3 (6%)	0 (0%)
Asian	0 (0%)	0 (0%)
Other	0 (0%)	0 (0%)

Descriptive statistics were used to answer clinical question one. Descriptive statistics were used to determine the mean, minimum, maximum and standard deviation of weight, over eight weeks. Frequency statistics were used to determine the mode, median and skewness of data in phase one. The participants in phase one had a lower mean initial body weight as compared to

the participants in phase two as shown in Table 2. The participants in phase one had a higher range of initial weights at 72.73 kg, as compared to the range in phase two of 45.5 kg, likely due to the difference in sample sizes. The distribution of initial weights in phase one was positively skewed (mode = 76.64, median = 83.33, mean = 86.5024) (Kellar and Kelvin, 2013). The distribution of initial weights in phase two was negatively skewed (mode = 73.6, mean = 94.208, median = 99.35). The mean weight of participants in phase one was lower at all measurement periods than the mean weight of participants in phase two throughout the eight weeks of this study.

Table 2

*Weight Information in Phases One and Two*

Characteristic	Phase 1 <i>n</i> = 50	Phase 2 <i>n</i> = 12
<b>Initial Weight</b>		
Mean ( <i>SD</i> )	86.5024 kg (17.0437)	94.2083 kg (16.79916)
Minimum	61.36 kg	70.90 kg
Maximum	134.09 kg	116.40 kg
<b>Weight at Four Week Visit</b>		
Mean ( <i>SD</i> )	83.2532 kg (16.79677)	90.3750 kg (15.28666)
Minimum	56.27 kg	69.60 kg
Maximum	129.18 kg	109.10 kg
<b>Weight at Eight Week Visit</b>		
Mean ( <i>SD</i> )	81.9310 kg (16.2602)	87.6350 kg (14.31362)
Minimum	55.73 kg	68.20 kg
Maximum	127.18 kg	104.10 kg

*Note.* SD = standard deviation, kg = Kilograms

An independent samples *t* test was used to answer clinical question two, in adults who are obese or overweight seeking weight loss therapy, what is the average weight change from the initial visit, at four and eight week points when motivational interviewing is used?. The independent samples *t* test was used to compare the mean weight changes in phases one and two.

The significance level is  $\alpha$  0.05 and a two-tailed test was used. The degrees of freedom (*df*) was determined by adding the number of participants from phase one, which was 50 to the number of participants who completed phase two which was  $12-2=10$ , indicating 60 *df*. The grouping variable of MI is dichotomous. Each participant was either in the retrospective chart review group that did not receive MI or in the intervention group who received MI. The outcome variables of interest, also known as dependent variables, are the kilograms of weight change. The dependent variables are measured at the ratio level, which is parametric. Levene's test indicates that equal variances are assumed from the initial visit to the four week visit, from the four to eight week visits, and the total weight change after eight weeks (Kellar and Kelvin, 2013). The mean weight change of the participants in phases one and two from the initial visit to the four week visit was -3.2492 kg and -3.833 kg respectfully, as noted in Table 3. The mean weight change for participants in phases one and two were -1.3222 kg and -2.74 kg respectively, from four to eight weeks was significantly different ( $p=.033$ ). The overall mean weight change over eight weeks in phases one and two was -4.57 kg and -6.5733 kg respectively.

Bandura's ESES was used to answer the third clinical question, in adults who are obese or overweight seeking weight loss therapy, what is the change in ESES scores from baseline to points, four weeks and eight weeks? A one-sample *t*-test was used to compare the means of ESES scores at three points, the initial visit, as well as the four and eight week visits of participants in phase two to the test value of 0. The mean ESES scores lowered significantly in participants who received MI at both four and eight weeks -4.6733 and -4.3267 respectively ( $p < .05$ , *df*=11).

Table 3

*Weight and Self-efficacy Changes*

Characteristic	Phase 1	Phase 2
	<i>n</i> = 50	<i>n</i> = 12
	Mean ( <i>SD</i> )	Mean ( <i>SD</i> )
Mean Wt in Kg		
Initial visit	86.50 (17.70)	94.21 (16.80)
Four wk visit	83.25 (16.80)	90.38 (15.29)
Eight wk visit	81.93 (16.26)	87.64 (14.31)
Mean Wt Change		
Initial visit to		
four wk visit	-3.2492 kg (2.5057)	-3.8333 kg (1.8661 )
Four wk visit to		
eight wk visit	-1.3222 kg (2.1299)	*-2.7400 kg (1.3932)
Total wt change		
over eight wks	-4.5714 kg (3.8994)	-6.5733kg (3.2243)
ESES Score		
Initial Visit	-----	*4.8733 (1.0597)
Four wk visit	-----	*4.6333 (1.0105)
Eight wk visit	-----	*4.3267 (.99421)

\**p* < .05, Wt = weight, Wk = week

## **Chapter 5**

### **Discussion**

Participants who received MI experienced a higher average weight loss as compared to patients who did not receive MI. The average ESE improved in participants who received MI. Participants who received the EBBP for weight loss, including MI, reduced energy intake, increased physical activity, frequent monitoring of body weight, pharmacological intervention as determined by the APRN and long term weight loss program lost an average of 6.5733 kg over eight weeks. Prior to the implementation of MI, patients received education via an advice giving communication style concerning reduced energy intake, increased physical activity, frequent monitoring of body weight, pharmacological intervention as determined by the APRN and long term weight loss program lost an average of 4.5714 kg over eight weeks. Participants who received MI lost an average of 2.74 kg ( $p < .05$ ), while participants who did not receive MI lost an average of 1.3222 kg between weeks four and eight. The increased amount of weight loss in those receiving MI in this study is similar to previous studies (Armstrong et al., 2011; Carels et al., 2007; Hardcastle et al., 2013).

### **Limitations**

The small sample size and the use of a non-random, convenience sampling method reduces the generalizability of the study (Kellar and Kelvin, 2013). The weight loss for this study was measured over a short period of eight weeks. The small sample number of potential participants prevented the use of a control group and an intervention group simultaneously in this study. The majority of the study participants were Caucasian females residing in the southeastern United States, who were able to afford medically supervised weight loss. The 62 participants in this study were from two southeastern weight loss clinics.



The scales measuring body weight in both clinics were upgraded in January 2014. A limitation in this study is that patients in phase one may have been weighed on two different scales, during the consecutive eight weeks of weight loss therapy decreasing the rigor of the study. The scales used prior to January 2014 were not available for comparison to the scales purchased in January 2014. Participants in phase one were not weighed using metric measurements or with the height/weight protocol, which limited the ability to compare the weights of participants in phases one and two.

The participants in phase two of this study had a higher mean initial body weight of 94.21 kg as compared to the initial mean body weight of those in phase one, which was 86.50 kg. The higher mean body weight of those in phase two may have contributed to larger amount of kilograms lost by participants in phase two.

Many participants were lost to attrition in this study, which is comparable to other weight loss studies (Brownell, 2004; Carels et al., 2007; DiLillo and West, 2011; Grave et al., 2005; Fabricatore et al., 2009). During phase one, 217 charts were reviewed in order to obtain 50 participants who met the inclusion criteria of consistent visits with the APRN over nine weeks. The retrospective chart review revealed that approximately 77% of patients were lost to attrition, which was an incidental finding. This incidental finding showed that approximately only 23% of patients seeking weight loss continue treatment as prescribed by the APRN for nine consecutive weeks. During phase two, 23 of the 36 participants who began the study were lost to attrition. Further research is needed on attrition in overweight and obese patients seeking weight loss at weight loss clinics.

### **Strengths**

The strengths of this study include the provision of MI by one trained interviewer, which increases the rigor of this study as compared to the provision of MI with multiple interviewers (Berfort et al., 2008). Interviewers, depending on their training, may deliver MI differently; however, the spirit of MI should remain the same across all MI training programs (Miller and Rollnick, 2002). In this study the PI delivered all MI to each participant throughout the nine weeks.

The implementation of the height/weight measurement protocol in the weight loss clinics after the completion of the study improves the validity of weight, height and BMI. The improved validity of physiological data gathered will improve patient care, enabling the APRN to select the appropriate treatment for patients seeking weight loss. The improved collection and recording of physiological data using the height/weight measurement protocol will help the APRN to track weight loss information accurately.

The APRN who is also the owner of the weight loss clinic plans to attend MI training since the completion of this study. By obtaining MI training for all APRNs employed by the weight loss clinics, all patients seeking weight loss at both weight loss clinics will receive the EBBPs for weight loss. Utilizing the EBBPs for weight loss will improve health care and likely improve weight loss outcomes (Jensen et al., 2013; Seger et al., 2013). Implementing the use of MI for patients seeking weight loss will likely improve weight loss outcomes (Armstrong, et al., 2011; Carels et al., 2007; Hardcastle, et al., 2013; Karlsen et al., 2013).

### **Future Research**

Future research is needed to examine the use of MI on weight loss and ESE using large randomly selected samples to improve rigor and generalizability (Kellar and Kelvin, 2013).

Research shows that further studies are needed to determine the usefulness of MI for weight loss (Armstrong et al., 2011; Berfort et al., 2008; Brobeck et al., 2011; Carels et al., 2007; Hardcastle et al., 2013; Karlsen et al., 2013). Further research may examine if weight loss is enhanced over a longer period of time in overweight and obese patients seeking weight loss. Future research may include the use of longitudinal studies to determine the ability to maintain weight and ESE after weight loss utilizing MI. Future research may be completed to determine the effects of MI and weight loss on the ESE subscales of Negative Affect (NA) and the Socially Acceptable Circumstances (SAC). Future researchers may consider the use incentives to increase long-term participation in this type of study.

### Summary

The mean weight change was significantly enhanced in participants who received MI from the four week visit to the eight week visit  $-2.74$  kg ( $p < .05$ ), as compared to participants who did not receive MI  $-1.3222$  kg. Participants receiving MI had a mean weight change of  $-3.8333$  kgs ( $SD$  1.8661) at four weeks, as compared to participants who did not receive MI  $-2.7400$  kgs. Participants receiving MI had a mean total weight change of  $-6.5733$  kgs ( $SD$  3.2243) over eight weeks. Participants who did not receive MI had a mean weight change of  $-3.2492$  kgs ( $SD$  2.5057) at four weeks and  $-1.3222$  kgs ( $SD$  2.1299) at eight weeks, with a mean total weight change of  $-4.5717$  kgs ( $SD$  3.2243) over the course of eight weeks. Mean ESE scores significantly increased in participants who received MI from  $4.8733$  ( $p < .05$ ,  $SD$  1.0597) at the initial visit, to  $4.6333$  ( $p < .05$ ,  $SD$  1.0105) at the four week visit to  $4.3267$  ( $p < .05$ ,  $SD$  .99421) at the eight week visit, indicating improved ESE over eight weeks.

### **Conclusion**

The inclusion of the EBP intervention, MI to current weight loss practices enhanced weight loss and ESE in overweight and obese patients seeking weight loss at two southeastern weight loss clinics. The EBBPs for weight loss include comprehensive lifestyle interventions, behavioral counseling sessions once or twice per month, reduced energy intake, increased physical activity, a long term weight loss maintenance program, frequent monitoring of body weight and pharmacological intervention (Jensen et al., 2013; Seger et al., 2013). Participants who received MI in addition to current weight loss strategies averaged more weight loss at both the four and eight week visits as compared patients who did not receive MI. The average perceived ESE was improved from the initial visit at both four and eight weeks in participants who received MI. An improved perceived ESE indicates a greater sense of control over eating behaviors in a variety of social situations (Bandura, 1997; Berman, 2006; Miller and Rollnick, 2002; Schwarzer and Fuchs, 1995).

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Appendix A

Phase One Data Collection Tool

Participant number \_\_\_

Age in years at initial weight loss visit \_\_\_\_\_

Gender M\_\_ F \_\_

Race \_\_\_

Initial weight \_\_\_\_\_ Kg

Weight at 4 weeks \_\_\_ Kg

Weight at 8 weeks \_\_\_ Kg

## Appendix B

## Recruitment Questionnaire

The PI will complete the flow sheet to determine if the patient seeking weight loss meets the criteria to participate in the research study: Motivational Interviewing to Enhance Weight Loss and Self-Efficacy in Overweight and Obese Adults.

PI Theresa Buchanan

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 Section A
 

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1. Does the participant state that he/she has received medically supervised weight loss within the past three months (90 days)?	YES	NO
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Medically supervised weight loss is defined as a weight loss program that is led by a health care professional such as a medical doctor, nurse practitioner or physician's assistant that often takes place in a clinical setting for the purpose of this study.

If the patient answered Yes to the question in section A, the patient is not eligible to participate in this study.

If the patient answered No to the question in section A, continue to the next section.

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 Section B
 

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2. Is the participant presently 21 years of age or older?	YES	NO
3. Is the participants' body mass index greater than 25?	YES	NO
4. Does the patient state he/she has the ability to speak and read the English language?	YES	NO

If the patient answered No to any questions in section B, the participant is not eligible to participate in this study.

Female patient – If the patient answered yes to all of the questions in section B, continue to the next section.

Male patient - If the patient answered yes to all of the questions in section B the patient is eligible to participate in this study.

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 Section C (females only)
 

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- |   |     |    |
|---|-----|----|
| 5. Does the participant state that she is currently pregnant?                                 | YES | NO |
| 6. Does the participant state that she is planning to become pregnant in the next six months? | YES | NO |

If the patient answered no to all questions in section C, the participant is eligible to participate in this study.

If the patient answered yes to any questions in section C, the participant is not eligible to participate in this study.

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The participant is eligible to participate in this study	YES	NO
Participant number _____		

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 Theresa Buchanan principle investigator  
 Signature

---

 Date

## Appendix C

## Consent Form

I, \_\_\_\_\_, agree to be a participant in the Motivational Interviewing to Enhance Weight Loss and Self-efficacy in Overweight and Obese Adults, being conducted by Theresa Buchanan. Theresa Buchanan can be reached at (770) 468 - 8830. I understand my participation is voluntary. I can withdraw my consent at any time. The results of my participation will be returned to me upon request. My results will be removed from the experimental records or destroyed upon my request.

The following points have been explained to me:

1. The purpose of this study is to determine if adding motivational interviewing to current weight loss practice enhances weight loss. This research will be completed for overweight or obese patients. This research will be completed for patients who are seeking weight loss at a weight loss clinic.

2. The procedures are as follows:

Information asked of you on the first visit includes:

You will be asked your age, gender and race on your first visit. You will be asked if you have received assistance losing weight from a medical professional in the past. If you have received assistance with weight loss from a medical professional in the past, you will be asked when you received this help. Your name will not be listed on the data sheet. The information gathered will be completely anonymous. You will be asked to remove your shoes while your height or weight is measured at each visit. You may be asked to remove any heavy clothing while your height or weight is measured at each visit. You will be asked to remove any decorative items such as a hat to measure your height at the first visit. You will be asked to allow



the researcher to measure your height at your first visit. You will be asked to allow the researcher to measure your weight at each visit. You will be asked to allow the researcher to measure your body mass index on your first visit. You will be asked to answer 25 questions about your eating behaviors at each visit. You will be asked to return to the weight loss clinic in 4 weeks. You will be asked to return to the weight loss clinic in 8 weeks. You will be asked to sign two consent forms. Theresa Buchanan will keep one consent form. The other consent form will be given to you.

3. You may find some questions are invasive or personal. If you become uncomfortable answering any questions, you may stop participation at that time. No discomforts will be faced during this research.

4. No psychological risks exist in this study. No social risks exist in this study. No legal risks exist in this study. The physical risks associated with this study include elements of physical risk and possible serious injury related to aerobic activity. The participant understands, for aerobic exercise to be effective and safe, the intensity of the exercise should be controlled by the participant. The participant should work at the level of intensity appropriate for his or her physical condition.

## II. ACKNOWLEDGEMENTS.

5. The results of this participation will be anonymous. The results will not be released in any individually identifiable form without my prior consent unless required by law.

6. Theresa Buchanan will answer any further questions about the research (see above phone number).

7. Further information, including a full explanation of the purpose of this research is available. This information will be provided at the completion of the research project upon request.

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Signature of Investigator

Date

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Signature of Participant

Date

\*\*\*\*\*

Research at Georgia College & State University involving human participants is carried out under the oversight of the Institutional Review Board. Questions or problems regarding these activities should be addressed to Mr. Marc Cardinalli, Director of Legal Affairs, CBX 041, GCSU, (478) 445-2037.

Appendix D

Phase Two Data Collection Form

Participant number \_\_\_\_\_

Age in years at initial weight loss visit \_\_\_\_\_

Initial BMI \_\_\_\_\_ (validation of inclusion criteria)

Gender M\_\_ F \_\_

Race \_\_\_\_\_

Weight at the initial visit \_\_\_\_\_ Kg

Initial ESES score \_\_\_\_\_

Weight at 4 weeks \_\_\_\_\_ Kg

ESES score at 4 weeks \_\_\_\_\_

Weight at 8 weeks \_\_\_\_\_ Kg

ESES score at 8 weeks \_\_\_\_\_

## Appendix E

## Height/Weight Measurement Protocol

Assist patient to private area for collection of height and weight.  
Advise the participant to sit in the chair provided and direct the patient to place any non-clothing articles on the table provided.  
Turn scale to the on position by depressing the “power” button.  
Calibrate scale by depressing the “calibration” button.  
Ensure that the scale is collecting information using the metric system.  
Ask patient to remove shoes, the removal of socks/stockings is not necessary.  
Inspect head for decorative items that may impair/alter the measurement of height.  
Ask patient to remove decorative head items and place in the area provided.  
Inspect patient for heavy clothing items such as coats, jackets, or accessories that may alter weight.  
Ask the patient to remove heavy clothing items/accessories and place in the area provided.  
Gowns are offered to patients who are unable to remove heavy clothing items for collection of weight.  
Advise patient to step onto the scale platform.  
Position patient in a standing position, facing away from the stadiometer.  
Instruct the patient to hold the head in a neutral position with eyes forward and feet together.  
Instruct the patient to place both: heels, buttocks, shoulders and the occipital area of the head touching or near touching the stadiometer  
Lower the arm of the stadiometer until the arm gently touches the top of the head.  
Collect the patient’s height using the electronic stadiometer using the metric system.  
Document the patient’s height to the nearest centimeter on the patient’s medical record.  
Ensure the patient is in the standing position in the middle of the platform when obtaining weight.  
The patient should have both arms relaxed and positioned at the side of the body. No body parts should be touching any component of the scale other than the platform area.  
Document the patient’s body weight to the nearest tenth of a kilogram in the patient’s medical record.  
Depress the BMI button on the Seca 769 scale. Document the patient’s body mass index (BMI) in the patient’s medical record.  
Direct the patient to place shoes on, using the chair provided and to collect any personal items prior to leaving the weight/height collection area.

## Reference:

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Appendix F

Eating Self-Efficacy Scale

Eating Self-Efficacy Scale

For numbers 1-25 you should rate the likelihood that you would have difficulty controlling your overeating in each of the situations listed on the next pages, using this scales:

1	2	3	4	5	6	7
No difficulty controlling eating			Moderate difficulty controlling eating			Most difficulty controlling eating

For example, if you thought you had great difficulty controlling your eating when you are at parties, you might complete an item specifying parties this way:

Overeating at parties      1   2   3   4   5   6   7     

Please complete every item.  
How difficult is it to control your...

1. Overeating after work or school  
1      2      3      4      5      6      7
2. Overeating when you feel restless  
1      2      3      4      5      6      7
3. Overeating around holiday time  
1      2      3      4      5      6      7
4. Overeating when you feel upset  
1      2      3      4      5      6      7
5. Overeating when tense  
1      2      3      4      5      6      7
6. Overeating with friends  
1      2      3      4      5      6      7
7. Overeating when preparing food  
1      2      3      4      5      6      7
8. Overeating when irritable  
1      2      3      4      5      6      7
9. Overeating as part of a social occasion dealing with food—like at a restaurant or dinner party  
1      2      3      4      5      6      7
10. Overeating with family members  
1      2      3      4      5      6      7
11. Overeating when annoyed  
1      2      3      4      5      6      7
12. Overeating when angry  
1      2      3      4      5      6      7

- 13. Overeating when you are angry at yourself  
1            2            3            4            5            6            7
- 14. Overeating when depressed  
1            2            3            4            5            6            7
- 15. Overeating when you feel impatient  
1            2            3            4            5            6            7
- 16. Overeating when you want to sit back and enjoy some food  
1            2            3            4            5            6            7
- 17. Overeating after an argument  
1            2            3            4            5            6            7
- 18. Overeating when you feel frustrated  
1            2            3            4            5            6            7
- 19. Overeating when tempting food is in front of you  
1            2            3            4            5            6            7
- 20. Overeating when you want to cheer up  
1            2            3            4            5            6            7
- 21. Overeating when there is a lot of food available to you (refrigerator is full)  
1            2            3            4            5            6            7
- 22. Overeating when you feel overly sensitive  
1            2            3            4            5            6            7
- 23. Overeating when you feel nervous  
1            2            3            4            5            6            7
- 24. Overeating when hungry  
1            2            3            4            5            6            7
- 25. Overeating when anxious or worried  
1            2            3            4            5            6            7

SCORING:

**Eating Self-Efficacy Scale**

<u>Subscale</u>	<u>Item #</u>
Negative Affect (NA)	2,4,5,8,11,12,13,14,15,17,18,20,22,23,25
Socially Acceptable Circumstances (SAC)	1,3,6,7,9,10,16,19,21,24

To obtain a mean overall Eating Self-efficacy score, sum scores from all items and divide by 25.  
 To obtain mean scores for individual subscales, sum item scores for each subscale and divide by the number of items (15 for Negative Affect and 10 for Socially Acceptable Circumstances).  
 High scores on the ESES indicate less eating self-efficacy.

Appendix G

Commit Training Certificate



