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Effects of brief motivational interviewing on motivation for weight loss

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EFFECTS OF BRIEF MOTIVATIONAL INTERVIEWING ON MOTIVATION FOR
WEIGHT LOSS

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
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Master of Arts

in

The Department of Psychology

by

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ABSTRACT

Obesity rates have continued to increase over the past decade with a current estimate of 35.7% of adults who are obese in the United States. Several behavioral weight loss programs are available to individuals, which typically lead to a 10% decrease in body weight; however, most individuals begin gaining weight after six months. Long-term weight maintenance interventions may be needed to help individuals keep the weight off and more cost-effective, and tailored weight-loss treatments need to be available. Motivation may play an important role in long-term weight maintenance. Self-determination theory (SDT; Deci & Ryan, 1995) states that it is important to distinguish between autonomous and controlled motivation when attempting long-term maintenance of behavior change. Motivational Interviewing (MI; Rollnick & Miller, 1995) is a directive, client-centered counseling style for eliciting behavior change by helping clients explore and resolve ambivalence and is seen as an autonomy-supportive atmosphere. The MI environment has been shown to support SDT and includes the components needed to increase integrated motivation for behavior change. The current study utilized a brief MI intervention on motivation for weight loss to determine changes in autonomy and competence ratings in individuals ($N = 65$). Participants were randomly assigned to either the MI intervention group or a control group. They were assessed at baseline and 4-week follow-up for autonomy and competence ratings. There were no significant differences in autonomy or competence ratings between the two groups from baseline to 4-week follow-up. Implications of these findings are discussed.

CHAPTER 1 INTRODUCTION

In the United States, 35.7% of adults are considered obese, with a body mass index (BMI)¹ greater than or equal to 30 and 34% of adults are overweight with a BMI of 25.0 to 29.9 (Centers for Disease Control and Prevention [CDC], 2012). Obesity is defined as having an excess of body fat and can cause an increased tendency to develop a number of medical conditions, such as coronary heart disease, hypertension, hypercholesterolemia, diabetes, sleep apnea.. The most successful weight loss programs tend to be those that are face-to-face and occur on a weekly basis (Kramer, Jeffrey, Forster, & Snell, 1989). People are typically able to lose a significant amount of weight in weight loss programs; however, most people gain back at least half the weight they initially lost (Wadden & Stunkard, 1986). The rate of initial weight loss is rapid and then slowly declines (Rodin, 1992), and individuals typically reach maximum weight loss at about 6 months. Researchers suggest that weight lost during dieting or weight loss programs is not maintained in the long term, typically defined as longer than two years (Williams, Grow, Freedman, Ryan, & Deci, 1996).

Most behavioral weight loss programs typically focus on helping participants change dietary and exercise skills that initially result in weight loss (West et al., 2011). In terms of maintaining these changes, participants typically remember what they learned from these behavioral weight loss programs, but struggle with motivation to continue behavior changes. Although the health and psychosocial benefits of sustained weight loss are well established in behavioral weight loss programs, the knowledge of those benefits is not sufficient by itself for long-term behavior change (Jeffery et al., 2000). Some researchers propose that motivation,

¹ Body Mass Index (BMI) is defined as the individual's body mass divided by the square of his or her height. The

defined as the reason or reasons for acting or behaving in a particular way, plays an important role in weight loss and weight loss maintenance (Pratt, 1989; Sobal & Stunkard, 1989)

SELF-DETERMINATION THEORY

Self-Determination Theory (SDT) was developed by Deci and Ryan (1985; 1995) and distinguishes between amotivation, extrinsic motivation, and intrinsic motivation. Amotivation is seen as lacking any intention to engage in the desired behavior. Extrinsic motivation is defined as engaging in a behavior in order to achieve outcomes that are separable from the behavior itself. For example, Deci and Ryan (1985) describe four different types of extrinsic motivation ranging from controlled to autonomous. Intrinsic motivation is engaging in the behavior for the enjoyment and satisfaction inherent in doing the behavior. According to Deci and Ryan (1985), when thinking about long-term maintenance of motivated behavior change, it is important to distinguish between two types of motivation, autonomous and controlled. Autonomous behaviors are those that are personally endorsed with a sense of choice or coming from one's self, with an internal perceived locus of causality (deCharms, 1968). Autonomous motivation is a person's internal or personal reasons for change, which can be intrinsic and sometimes extrinsic.

The source of change for motivated behaviors is referred to as the locus of causality (deCahrms, 1968; Deci & Ryan, 1985) and it varies based on the origin of the motivation. If the source is within one's self, this is referred to as having an internal locus of causality or autonomous. Conversely, if the motivation is outside one's self, this is referred to as an external locus of causality or controlled. Autonomous motivation is when the individual is making the choice themselves, not choosing based on pressures or influence from other people or things. In other words, it is a measure of a person's internal reasons for change, and controlled motivation is when people experience external pressures to change (Williams, Grow, Freedman, Ryan &

Deci, 1996). Teixeira (2012) described controlled behaviors as expressions of, “I should”, “I ought to”, or “I must.” Controlled behaviors can either be things that individuals have internalized themselves or by external contingencies, which could be incentives or negative consequences (Teixeira, Silva, Mata, Palmeira, & Markland, 2012). SDT proposes that behavior change is more likely to occur and persist if it is autonomously motivated and less likely to occur with high controlled motivation (Ryan & Deci, 2008). Distinguishing between these two types of motivation represents an important distinction between previous health relevant motivation theories, such as The Health Belief Model (Rosenstock, 1966), self-efficacy theory (Bandura, 1977) and the Health Locus of Control Model (Rotter, 1954).

Not all behavior must be intrinsically motivated to persist. Deci and Ryan (2000) describe a continuum of self-determination and depending on where the individual is on this continuum, lasting change can still be achieved through some types of extrinsic motivation. According to SDT, there are four stages of extrinsic motivation (external, introjected, identified, and integrated) and each stage reflects which requested behaviors have been internalized and integrated. According to SDT, extrinsically motivated behaviors can become self-determined as individuals progress down the continuum and identify with and fully assimilate their regulation (Ryan & Deci, 2000). Extrinsically motivated behaviors that are the least autonomous are seen as “external motivation,” which are typically controlled and have a purely external perceived locus of causality for the behavior change. People typically engage in these behavior changes to gain some type of reward, avoid a punishment or to comply with social pressures.

The second type of controlled motivation is “introjected motivation,” and involves taking in a behavior but not accepting it as one’s own. Therefore, it is a somewhat external and partially self-integrated form of extrinsic motivation because the person does not fully and freely endorse

this type of motivation (Deci & Ryan, 1995). People typically engage in these behaviors (i.e., taking in a behavior but not accepting it as one's own) in response to internal pressures and might seek behavior change to receive approval or praise from others or to avoid feelings of guilt, shame or anxiety (Ryan, Patrick, Deci, & Williams, 2008). The above-mentioned types of controlled motivation do not typically lead to maintenance of behavior change.

The third form of autonomous motivation is "identified motivation," where the individual values the behavioral goal and has accepted it as personally important. Practitioners promote this type of motivation by providing relevant information and rationales for change (Ryan, Patrick, Deci, & Williams, 2008). Finally, the last type is "integrated motivation," which is the most autonomous form of extrinsic motivation and is considered fully self-determined and integrated. The individual accepts and values the regulation of behavior and it is also adapts behaviors into their central values and lifestyle. Intrinsic motivation and integrated motivation are similar in that the client engages in the behavior freely, without any pressure from outside sources. However, integrated motivation is still engaged in for different outcomes than just for the satisfaction inherent in engaging in them, which is intrinsic motivation (Markland, Ryan, Tobin, & Rollnick, 2005). Practitioners help to promote this integration by supporting individuals as they explore resistance and barriers to change and by helping them determine ways to make these behavior changes fit into their lifestyle (Ryan, Patrick, Deci, & Williams, 2008).

Maintenance of behavior changes is typically seen more with identified and integrated forms of regulation and is characterized by an internal perceived locus of causality (Vansteenkiste & Sheldon, 2006). According to SDT, controlled motivation can be internalized by moving along the continuum and transformed into autonomous motivation (Silva et al., 2008). Many health related behaviors such as quitting smoking, weight loss, and physical activity are

not usually intrinsically motivated behaviors (Ryan, Patrick, Deci, & Williams, 2008) and thus, are not seen as inherently enjoyable activities. In order for these behaviors to be maintained, it is important for the behaviors to be valued by the individuals and for the individuals to see them as important (Ryan, Patrick, Deci, & Williams, 2008). Although some implemented behaviors can be extrinsically motivated, motivations vary greatly depending on the individual's relative autonomy.

According to Deci and Ryan (1985), individuals have three innate psychological needs that are the basis for their self-motivation and personality integration. These psychological needs include: relatedness, competence, and autonomy (Ryan & Deci, 2000; Ryan, 1995). Deci and Ryan (2000) propose that relatedness (the sense of being cared for, respected, understood, feeling connected with others) is important for internalization. People are more likely to adopt values and behaviors if they are modeled by those whom they feel connected to and trust (Ryan, Patrick, Deci, & Williams, 2008). Another important need for internalization to occur is competence. People are more likely to engage in and adopt behaviors when they feel confident and competent in making the changes. Practitioners help support competence by providing relevant inputs and feedback to individuals and support them when competence barriers come up (Ryan, Patrick, Deci, & Williams, 2008). According to Ryan, Patrick, Deci, and Williams (2008), gaining competence is promoted by autonomy; once people have autonomous motivation for behavior change, they are more likely to learn and try new things. Lastly, autonomy is a crucial part of facilitating internalization and integration of values and behavioral regulations that correspond with the individuals' beliefs. In order to have autonomous regulation, an individual needs to have an autonomy supportive environment in which they feel related, competent, and autonomous (Deci & Ryan, 2000). Edmunds, Ntoumanis, and Duda (2006) found that when examining

exercise adherence, fulfillment of these three basic needs was related to more self-determined motivational behaviors.

There is empirical support for the influence of SDT on treatments. Zuroff, Koestner, Moskowitz, Mcbride, Marshall, and Bagby (2007) conducted a study comparing three different treatments for depression: interpersonal therapy, cognitive-behavior therapy, or pharmacotherapy with clinical management. The authors found that autonomous motivation, as measured by The Autonomous and Controlled Motivations for Treatment Questionnaire (adapted from Williams et al.'s 1998 Treatment Self-Regulation Questionnaire (TSRQ)), was a stronger predictor of outcome than therapeutic alliance and predicted lower post-treatment depression severity across all treatments. Another study looking at smoking cessation found that when an intervention based on SDT was used, which included 4 meetings in 6 months, patients had more internalized autonomous behavior, higher perceived competence, increased use of cessation medication (i.e., a nicotine patch), and higher 6-month prolonged abstinence from tobacco compared control groups (Williams et al., 2006). Williams et al. (2004) compared patient activation (SDT focused) versus passive education in a study on glycemic control, and found that perceptions of autonomy and competence were increased by autonomy support. They also found that change in autonomous motivation and change in perceived competence were found to predict improvement in glycemic control over a 12-month period. Williams, Rodin, Ryan, Grolnick, and Deci (1998) conducted a study on SDT and medication adherence. Individuals that were prescribed to long-term medication participated in the study and adherence was assessed with both self-reports and pill counts. The authors found that patients' autonomous motivation of medication taking was a strong predictor of adherence, whereas controlled motivation was unrelated to medication adherence. Ultimately, across studies, more autonomously regulated behaviors seem to be more

stable and have more positive experiences (Ryan & Deci, 2000), and autonomous motivations for change result in greater treatment adherence and long-term maintenance of change (Markland, Ryan, Tobin, & Rollnick, 2000).

Williams et al. (2006) conducted a study on a self-determination theory intervention for motivating tobacco cessation. Individuals were randomly assigned to a community care control condition or an intensive intervention condition. Patients' met with a counselor four times within six months. The counselors were trained to support the participants in making a clear and autonomous decision about whether or not to make a quit attempt. The authors found that, as assessed by the Treatment Self-Regulation Questionnaire (TSRQ), the individuals in the intervention group perceived greater autonomy support and reported greater autonomous and competence motivations than did the control. Also, the intervention group had higher rates of cessation medication use and 6-month prolonged abstinence from tobacco, compared to controls. In another study looking at the role of autonomous motivation, Ryan, Plant, and O'Malley (1995) conducted a study with one-hundred individuals in an alcohol treatment program. The TSRQ was used to assess autonomous motivation for treatment. The authors found that at 8-weeks follow-up, those individuals whose reasons for entering treatment were more autonomous attended more regularly and stayed in the program longer than people with more controlled reasons. Overall, the previous articles support the influence of SDT on several different treatments.

Self Determination Theory and Weight Loss

Deci and Ryan (2008) describe approaches to behavior change derived from SDT as “informed guidelines and principles for motivating people to explore experiences and events, and from that reflective basis, to make adaptive changes in goals, behaviors, and relationships.” (p.

186). Ryan, Patrick, Deci, and Williams (2008) state that maintenance of behavior change requires individuals to internalize values and skills for change, and experience self-determination. In regard to weight-loss programs, difficulties in weight-loss maintenance may be attributed to a failure to address qualitative parts of motivation (such as perceived autonomy), which in turn may lead participants to lack the motivational connection between weight loss and weight-related behavior. If participants are able to feel autonomous about reaching weight-loss goals, lasting behavior change is more likely to occur.

Deci and Ryan (1995) propose that individual acceptance of behavior change is necessary for lasting weight loss maintenance. Specifically, behavior change should be autonomous and intrinsic, as opposed to behaviors motivated by external influence or controlling reasons. According to SDT (Deci & Ryan, 1985), lasting change and weight maintenance are possible when an individual has an internal perceived locus of control, and when the individual believes and accepts that weight loss is important to individual health. Maintenance is achieved when, “a behavior change continues in the absence of any external supports, reinforcements, or controls that originally brought it about”(p. 31). (Ryan & Deci, 1995).

When examining motivation for weight loss, Teixeira (2012) recommends looking at the participant’s nature and quality of motivation to lose weight to see if it is autonomous or controlled. According to Teixeira et al. (2012), many individuals in weight-loss programs expect to be told what to do and how to manage their weight, which in turn could be seen as controlled motivation and an external locus of causality from the beginning. However, for behavior change to last, one needs to accept the regulation of change as their own, as opposed to adhering to external demands for change from someone else (Teixeira et al., 2012).

Although there has not been a lot of research on SDT and weight loss, there has been some empirical support for the theory that SDT is positively related to weight loss. Williams, Grow, Freedman, Ryan, and Deci (1996) found that when looking at the effectiveness of a weight-loss program with obese patients, high autonomous motivation predicted weight loss, including maintenance of weight loss at the 23-month follow-up, as well as attendance of weekly meetings. When the reason for change is autonomous, the locus of causality is internal but when the reason for change is controlling, the locus of causality is external and the individual has not established a readiness to make changes (Williams, Grow, Freedman, Ryan, & Deci, 1996). While weight loss is an important outcome variable, it might be important to consider additional autonomous outcomes with weight-loss programs. Thus, in another study, Teixeira et al. (2010) found that during a 12-month weight loss program, exercise motivation variables (self-efficacy, perceived barriers, and intrinsic motivation) were associated with 2-year weight change. Gorin et al. (2008) looked at levels of autonomous and controlled regulations over a 6-month period in individuals in a weight-loss program and found that individuals with higher controlled regulation at baseline had less weight loss and individuals who increased autonomous regulation had more weight loss at 6-months. In another study Webber, Tate, and Quintiliani (2008) conducted an 8-week online weight-loss intervention using motivational interviewing and found that higher autonomous motivation at follow-up was associated with greater weight loss. Furthermore, Vansteenkiste, Simmons, Braet, Bachman, and Deci (2007), conducted a study with obese adolescents and found that greater initial weight loss and better 2-year maintenance resulted when participants reported their reason for behavior change was an intrinsic goal of health compared to an extrinsic goal of attractiveness. Overall, research has supported autonomous motivation as a consistent predictor of various weight loss outcomes.

SDT has also been investigated in other areas of health promotion. For example, Zeldman, Ryan, and Fiscella (2004) studied the role of motivation as a predictor of treatment success in a methadone maintenance program. They found high levels of external motivation combined with low levels of internal motivation predicted poor treatment outcomes. In a study examining chronic illnesses, more autonomous motives predicted greater adherence to medication regimens (Williams, Rodin, Ryan, Grolnick, & Deci, 1998). The regulation of health-related behaviors and behavior change is more likely to be internalized and maintained when autonomy, competence and relatedness are supported (Williams, Deci, & Ryan, 1998).

MOTIVATIONAL INTERVIEWING

Motivational Interviewing (MI) was first introduced by William Miller in 1983 and was later elaborated on by Miller and Rollnick in 1991 (Rollnick & Miller, 1995). Rollnick and Miller (1995) describe MI as “a directive, client-centered counseling style for eliciting behavior change by helping clients explore and resolve ambivalence. “ (p. 325). MI is a client-centered approach, rooted in client-centered therapy. MI is based on nondirective counseling skills such as reflective listening; however, it is directive in that the counselor directs the discussion to focus on ambivalence and its resolution. MI is intended to manage motivational struggles in which the client is ambivalent about change or not ready for change. MI was originally developed to prepare people to change substance abuse behaviors (Miller, 1983). Rollnick and Miller (2002) describe the “spirit” of MI as collaborative, focusing on eliciting change talk from the client and an importance on individual’s autonomy. MI has two phases: (1) increasing motivation for change and (2) consolidating commitment. Further, a client’s readiness for change is determined by two factors: the importance of the change for the client and the confidence the client has about successfully making the change.

MI focuses on four guiding principles: expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy. An empathetic counseling style is an important piece of MI, with an emphasis on reflective listening (Rogers, 1951), which is described as the foundation on which clinical skillfulness in MI is built (Miller & Rollnick, 2002). The counselor uses reflective listening to understand the client's feelings without judging or disapproving. The counselor refrains from advising the client how he or she may "have to be." Miller and Rollnick (1991; 2002) postulate that behavior change is only possible when the client feels personally accepted and valued. In order for this to happen, the counselor needs to show empathy, so that the client feels comfortable exploring potential behavior change .

Developing discrepancy is another key principle of MI, where the goal is to use a directive approach to help individuals continue past ambivalence toward positive behavior change (Miller & Rollnick, 2002). Bem's Self Perception theory (Bem, 1972) states that individuals are more committed to ideas they hear themselves defend, thus individuals come to know their motivations by hearing their own arguments for change. In MI, clients first hear their own motivations for and against change and then hear them again when these motivations are reflected by the therapist through reflective listening.

Another goal of MI is to bring to light discrepancies between the client's current behavior and the client's ultimate goals or desired outcomes. Ambivalence to change is seen as a normal part of MI and is what MI is intended to resolve. When the client realizes there is a discord and conflict between their current behavior and their personal goals (e.g., continuing to gain weight, while wanting a healthier lifestyle), they are more likely to make behavior changes. Miller and Rollnick (2002) recommend helping the client to see their discrepancies by amplifying these discrepancies until the client realizes what is preventing them from making behavior changes.

Rollnick and Miller (2005) posit that direct persuasion is not an effective method for resolving ambivalence and it is important to let the client come up with reasons for change. The counselor's role is to clarify their motivation for change and provide support.

Rolling with resistance is another MI principle, which involves avoidance of arguing and opposing the client's resistance to change on the part of the therapist and the therapist instead reframes resistance or responds differently. Rolling with resistance allows the client to be involved in problem solving and developing ways to change behavior (Miller & Rollnick, 2002). Resistance by the client is an opportunity to enhance motivation and promote behavior change. If the counselor argues with the client instead of rolling with resistance, the client is more likely to show greater resistance, which will reduce the likelihood of change (Miller & Rollnick, 2002). Ambivalence and resistance are seen as a normal part of the process and it is the counselor's job to encourage the client to problem solve and come up with alternative solutions to the problem.

The last basic principle in MI is supporting self-efficacy. The therapist helps the client to increase their confidence that change is possible. Also, there is focus on their ability to succeed in making behavior changes and thus, the client starts to believe that successful change is possible (Miller & Rollnick, 2002). Even if the client is motivated to modify their behaviors, change is more likely to occur when the client believes (s)he is capable and has the means available to be able to make these behavior changes. The collaborative process of MI helps to bring out the intrinsic motivation that lies within the individual and is needed to make behavior changes. The goal of motivational interviewing is to increase intrinsic motivation, so that the change is intrinsic and developed from within the individual and the change is developed from an individual's own goals and values (Miller & Rollnick, 2002).

Empirical research has supported MI and the theories it is based on. For instance, Brown and Miller (1993) conducted a study to determine if adding a 2-session MI assessment would increase patient involvement in a residential alcoholism treatment program compared to a control group who received just the standard evaluation. They found that those who received the MI interview participated more in treatment and showed significantly lower alcohol consumption at a 3-month follow-up interview than those receiving the standard evaluation. Although MI was initially used in the field of substance use, it is now used in many different areas: dieting, medication adherence, tobacco dependence, diabetes, physical activity, heart disease risk reduction, and weight loss (Burke, Arkowitz, & Menchola, 2003). In a meta-analysis looking at adaptations of motivational interviewing (AMIs; Burke, Arkowitz, & Menchola, 2003), the authors reported that virtually all the empirical studies in this area were AMIs and that there were not any studies addressing the efficacy of MI in its relatively pure form.

Motivational Interviewing and Self-Determination Theory

Markland, Ryan, Tobin, and Rollnick (2005) propose that both SDT and MI are based on the assumption that humans have an innate tendency for personal growth and that MI helps facilitate and foster this tendency. Autonomy is seen as a basic psychological need and if interventions such as MI are set-up to increase these needs, then one would assume that individuals would really succeed in personal change beyond just behavior change.

MI can be seen as an autonomy-supportive atmosphere that emphasizes each of the three basic psychological needs: supports autonomy through nondirective inquiry and reflection and by encouraging the clients to choose their preferred courses of action, supports competence through providing information and helping the client set appropriate and realistic self-selected goals, and supports relatedness through a relationship of unconditional positive regard that

avoids criticism or blame (Markland, Ryan, Tobin, and Rollnick, 2005). Webber et al. (2008) conducted an 8-week internet-based intervention looking at autonomous motivation with MI and found that higher autonomous motivation at follow-up was associated with greater weight loss and the more 'change talk' by participants was correlated with an increase in autonomous motivation. Based on SDT, it is assumed that MI will help strengthen individuals' autonomous motivation for change. Due to the external demands and the emphasis on weight loss and thus possibly losing some autonomous motivation, it might be best to implement MI by itself as opposed to adding it on to behavioral weight loss treatments (Teixeira et al., 2012).

SDT's theoretical focus on the internalization of therapeutic change and on need satisfaction is compatible with key principles and clinical strategies within MI. Markland, Ryan, Tobin, and Rollnick (2005) described the theoretical framework SDT provides for understanding how change occurs in MI:

Motivational interviewing can foster self-motivated behavior change by promoting the internalization and integration of the regulation of a new behavior so that it is engaged in more willingly and more in accord with the person's broader goals, values, and sense of self. This process is facilitated by both the style of motivational interviewing and its specific strategies that provide ambient supports for the needs for competence, autonomy, and relatedness (p. 822).

Motivational Interviewing and Weight Loss

Individuals tend to experience ambivalence around making behavioral changes (i.e., losing weight). In this situation, it is common to weigh the pros and cons and experience difficulty breaking the cycle of ambivalence and making changes for weight loss (Jones, Burckhardt, & Bennett, 2004). MI helps resolve this ambivalence by developing discrepancy and helping the client view how their current behaviors may conflict with their own goals and values. MI helps empower patients and builds confidence, which then enables development of individual motivation towards weight loss.

MI has been shown to be effective in producing behavioral changes in many different health areas, including weight loss (West et al., 2011; Burke, Arkowitz, Dunn, 2002; West et al., 2007; Carels et al., 2007). For example, Smith, Kratt, Hecemeyer, and Mason (1997) conducted a study to see if adding a MI component to a behavioral weight-control program would increase adherence and glucose control in older obese women with non-insulin-dependent diabetes mellitus. The authors found that those individuals who attended the MI sessions attended more group meetings, completed more food diaries, recorded blood glucose more often, and had better glucose control post-treatment. The authors concluded that the addition of MI to behavioral weight loss treatments may improve program adherence and glucose levels for individuals with type 2 diabetes.

In a study examining the impact of MI on promoting physical activity for people with chronic heart failure, the researchers found that the MI group and the treatment group (standard care and MI) reported an increase in their level and types of activity. Conversely, the standard care group did not report such increases (Brodie & Inoue, 2005). In a study conducted by Harland et al. (1999), looking at the efficacy of MI in promoting physical activity, participants were randomized into five groups: two groups received a single 40-min MI session, and two received six 40-min MI sessions delivered over six weeks. Half of the participants in the MI groups also received vouchers for free aerobics classes. The last group was a control group that did not receive MI or vouchers. The author found a significant improvement in activity in the four MI groups and the control group but there was not a difference between the “high” and “low” MI conditions. These results suggest that both one and two MI sessions are enough to increase behavior change and adding additional sessions may not be necessary.

Rubak, Sandboek, Lauritzen, and Christensen (2005) conducted a meta-analysis of 72 randomized clinical trials published between 1991 to 2004 looking at the effect of MI in the treatment of several disease indicators and health behaviors including addiction, smoking cessation, weight loss, exercise, and diabetes. Results suggest that MI has produced a statistically and clinically significant effect in approximately 75% of published studies. Researchers have found that MI outperformed traditional advice giving in about 80% of the studies. They also found significant effects of MI for combined effect estimates of BMI, total blood cholesterol, systolic blood pressure, blood alcohol concentration, and standard ethanol content. In another meta-analysis of 72 clinical trials examining a range of target problems, the authors found the average short-term between-group effect size was 0.77, decreasing to 0.30 at follow-ups to one year (Hettema, Steele, & Miller, 2005). They found that MI generally shows small to medium effects in improving health outcomes. The authors also reported strong effect sizes for MI treatments for time periods up to 1 month, with a progressive decline of effect up to 12 months.

SUMMARY

Obesity rates in the United States continue to rise, creating a demand for cost-effective, tailored treatments to effectively manage the obesity epidemic (Haaga, 2000; NHLBI Obesity Education Initiative Task Force Members, 1998; Sobell & Sobell, 2000). According to SDT, behavior change is more likely to occur and be maintained if it is autonomously motivated and less likely if the motivation is controlled. MI is a communication style that may increase autonomous motivation for change, resulting in more positive behavior change. MI seeks to move clients into action by identifying discrepancies between their current behavior and desired goals and acknowledging their ambivalence about weight loss. Research is limited in motivation for weight loss and more is needed to see if brief interventions are helpful for weight loss

motivation. The primary aim of this study was to evaluate whether a single session of MI for motivation for weight loss would increase participants autonomous motivation and competence for weight loss.

PURPOSES AND HYPOTHESES

Specific Aim 1

To determine the effects of a brief MI intervention on autonomy ratings related to weight loss.

Hypothesis 1

Participants who received the MI intervention will have higher weight loss autonomy ratings from baseline to four weeks compared to controls.

Specific Aim 2

To determine the effects of a MI intervention on competence ratings related to weight loss.

Hypothesis 2

Participants who received the MI intervention will have higher weight loss competence ratings from baseline to four weeks compared to controls

CHAPTER 2 MATERIALS AND METHOD

PARTICIPANTS

Participants were recruited through fliers posted on the campus of Louisiana State University, newspaper ads, and the undergraduate participant pool. The fliers and newspaper ads were tailored to recruit participants interested in health behaviors. Participants included undergraduate students and members of the community. Inclusion criteria included participants who were 18 years and older and those who were considered to be overweight (defined as a body mass index $BMI \geq 25 \text{ kg/m}^2$). Exclusion criteria included scoring in the clinical range on a measure of eating disorder symptoms and scoring in the severe range on a measure of depression. Eligibility was determined through a secure online survey engine, SONA. Those eligible participants were invited to attend the intervention phase via email. Participants enrolled through the student participant pool were awarded research credits for their participation. For the present study, a total of 128 participants (64 in each group) were needed to be recruited in order to obtain an estimated medium effect size (based on Cohen's *d*) with a power of .80 and alpha level of .05 (calculated with G*power; Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007); effect size based on Dunn et al., 2001 and Burke et al., 2003).

MATERIALS

Demographic Questionnaire

This questionnaire was made by the experimenter and consisted of 8 items which assessed age, gender, ethnicity, relationship status, level of education, previous weight loss attempts, and height and weight (measured by the experimenter).

Treatment Self-Regulation Questionnaire

The Treatment Self-Regulation Questionnaire (TSRQ; Ryan & Connell, 1989) includes 15 questions assessing the degree to which an individual's motivation for a particular behavior is relatively autonomous or self-determined. There are three subscales for this measure: the autonomous regulatory style (intrinsic reasons for change); the controlled regulatory style (extrinsic reasons for change); and amotivation. Each statement is rated on a 7-point scale, from 1 (not at all true) to 7 (very true). The two subscales (autonomy and controlled) of the TSRQ for weight loss have been found to have acceptable internal consistency ($r = .73$) and acceptable validity (Levesque et al., 2007; Williams et al., 1996).

Perceived Competence Scale

The Perceived Competence Scale (PCS; Williams & Deci, 1996) includes four questions (rated on a scale from 1, "not at all true," to 7, "very true") that assess participants' feelings of competence in their ability to make treatment changes. For the current study, the PCS measure was adapted to assess participant's feelings of perceived competence for weight loss. This measure has been found to have favorable internal consistency and validity (Williams, Freedman, Deci., 1998; Williams et al., 2004; Williams et al., 2006) and good reliability at ($r = .90$) (Williams & Deci, 1996).

Eating Attitudes Test

The Eating Attitudes Test (EAT-26; Garner et al., 1982) is a 26-item self-report measure used to assess the presence of symptoms and concern characteristic of eating disorders. Questions (rated on a scale from "always" to "never") assess eating disorder risk. Individuals who score 20 or greater on the EAT-26 are at an increased risk for an eating disorder. The EAT-26 has been shown to have very good reliability ($r = .88$) and good validity (Garner et al., 1982).

Patient Health Questionnaire

The Patient Health Questionnaire (PHQ-8; Kroenke & Spitzer, 2002) is a self-report measure that is used to assess and monitor depression severity over the past two weeks. The PHQ-8 includes 8 questions, scored 0 to 3 (rated on a scale from “not at all” to “nearly every day”) providing a 0 to 24 depression severity score. The PHQ-8 has demonstrated excellent internal reliability ($r = .89$), excellent test-retest reliability ($r = .84$), and excellent construct validity ($r = .86$ to $.89$) (Kroenke, Spitzer, Williams, & Lowe, 2010).

Motivational Interviewing Protocol

Rollnick, Bulter, & Stott (1997) created a manualized method for use with a brief MI intervention for cigarette smoking that included the main components of MI. For the current study, the method was adapted and added upon to use for weight loss and this protocol was used with each participant in the MI condition. Therapist training for MI included 20-hour readings (Miller & Rollnick, 2012), videos (Miller, Rollnick, & Moyers, 1998 and Herrema, 2009), and role-play (based on similar studies MI training; Carels et al., 2007; Dunn, 2006; Cassin, 2008). Although therapists were given a general protocol to follow, they had flexibility in discussing those issues relevant to each individual participant.

Stress and Relaxation Explained

DVD on stress management and relaxation techniques. In order to control for time, participants in the control condition watched a 45-minute video on stress and relaxation (Domar, 2007).

PROCEDURE

Participants were recruited via advertisements around campus and through the psychology experiment participant pool for students. Participants were instructed from the

advertisements to email the experimenter if they were interested in participating in the study. Participants then completed a short 3-question survey, including: 1) Are you male or female? 2) What is your height? and 3) What is your weight? They also completed the EAT-26 and PHQ-8. To ensure confidentiality, the participants filled out the above information through a secure online survey engine, SONA. If it was determined that the participant was overweight according to their BMI and they did not score higher than a 20 on the EAT-26 or a 20 on the PHQ-8 they were eligible for the study and invited to participate. The participant was contacted by the experimenter via email and asked to come into the laboratory within two weeks.

When participants arrived for the second part of the study, they completed the demographic form, TSRQ, PCS, and PHQ-8. The experimenter also measured the participant's height and weight. Body weight was measured using a digital scale to the closest 0.1lb. and height was measured in inches to the closest 0.5-inch using a height rod. Participants in the MI group then participated in a one-session, 45-minute MI intervention about weight loss, which was guided by the therapist according to the MI protocol. All MI interventions were lead by the same therapist. To control for time, the control group watched a 45-minute video on stress and relaxation (Domar, 2007). At 4 weeks follow-up, all participants returned to the laboratory and completed the TSRQ, PCS, and PHQ-8. Participants also had their height and weight measured. At the 4-week follow-up, all participants were asked if they would like a list of referrals for weight loss programs and/or for psychological services.

CHAPTER 3 RESULTS AND DISCUSSION

RESULTS

A total of 603 participants were screened for the study and 153 were found to be eligible and invited to participate. Seventy-one of these participants responded to the invitation and participated in the first part of the study. Four participants did not complete the 4-week follow-up. The average age was 20.85 ($SD = 4.40$) and 73.2% of participants were women. Participants identified as 70.4% Caucasian, 14.1% African American, 8.5% Hispanic, 4.2% Asian, and 2.8% Mixed Race. Participants reported an average 13.28 ($SD = 1.08$) years of education and 94.4% of participants were single. Participants were randomly assigned to either the control group ($n = 39$) or MI group ($n = 32$).

Table 1. Demographic Characteristics of Participants (N = 71).

	n (%)
Mean Age (SD)	20.85 (4.40)
Gender	
Men	19 (26.8)
Women	52 (73.2)
Race	
Caucasian	50 (70.4)
African American	10 (14.1)
Hispanic	6 (8.5)
Asian	3 (4.2)
Mixed Race	2 (2.8)
Years of Education (SD)	13.28 (1.08)
Relationship Status	
Single	67 (94.4)
Married	2 (2.8)
Divorced	2 (2.8)

One-way analyses of variance (ANOVAs) were conducted to determine if there were any baseline differences between the groups on age, BMI, or PHQ scores. Results indicated that the groups did not significantly differ on age, $F(1, 66) = 1.78, p = .194$, BMI, $F(1, 66) = 2.58, p = .113$, or PHQ scores, $F(1,66) = .445, p = .507$. Chi-square analyses were conducted to assess differences between groups on categorical variables of gender and race. Results revealed no significant differences between groups on gender, $X^2(1, N = 70) = 1.91, p < .17$ or race, $X^2(1, N = 70), = 1.98, p < .74$.

A repeated measures ANOVA was conducted to determine whether there were any differences in weight loss between the two groups from baseline to 4-week follow-up. Group (MI, Control) and Time (baseline and 4-week follow-up) were entered as the independent variables (IVs) and weight was entered as the dependent variable (DV). Results revealed that there was no main effect for Group, [$F(1,65) = .013, p = .909$, no main effect for Time, [$F(1,65) = .484, p = .489$, and no significant interaction for Group and Time, [$F, 1,65) = .021, p = .886$].

Table 2. Means and Standard Deviations for Weight (in lbs) from Baseline to 4-week Follow-up

	Baseline	4-week Follow-up
MI Group	137.40 (39.00)	140.00 (38.33)
Control Group	138.80 (32.98)	138.80 (33.59)

Table 3. Means and Standard Deviations for BMI from Baseline to 4-week Follow-up

	Baseline	4-week Follow-up
MI Group	30.57 (4.50)	30.63 (4.35)
Control Group	28.92 (4.17)	28.96 (4.17)

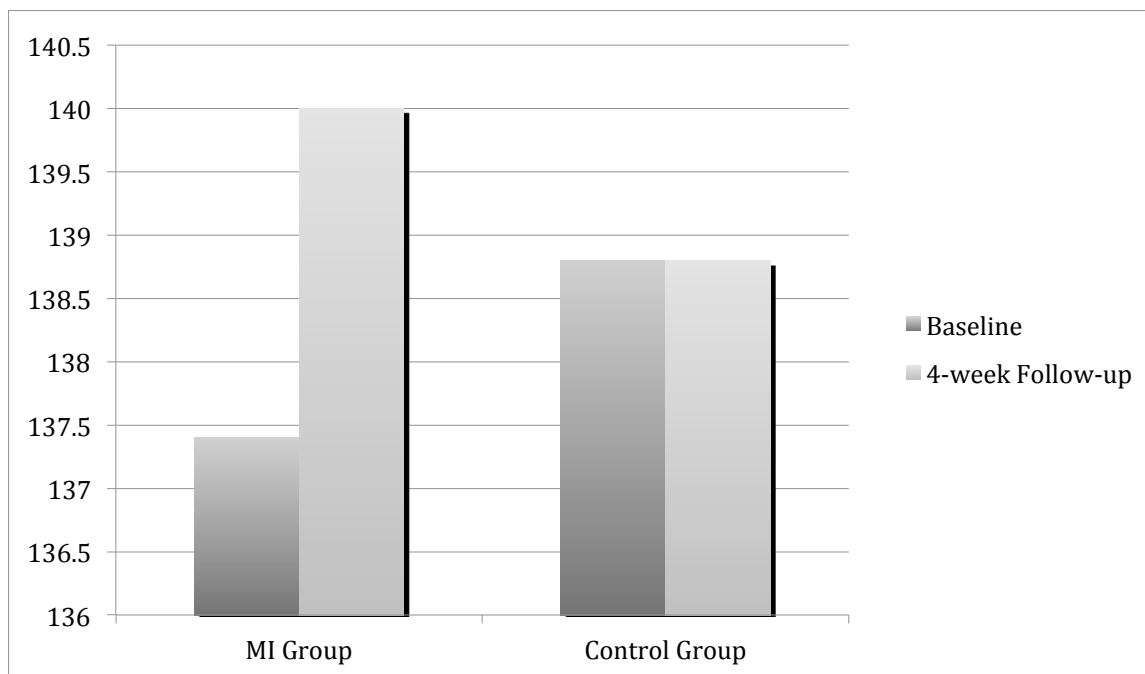


Figure 1. Weight at baseline and 4-week follow-up

Primar Analyses

A repeated measures multivariate analysis of variance (MANOVA) was conducted to determine if there was a significant difference in autonomy and perceived competence ratings between the two groups across time. Autonomy was assessed via the TSRQ and competence with the PCS. Group (control and MI) and Time (baseline and 4-week follow-up) were entered as the IVs and autonomy ratings and perceived competence ratings were entered as the DVs. Results indicated no main effect of Group, [$F(1, 65) = .453, p = .638$], no main effect for Time, [$F(1,65) = .733, p = .484$], and no significant interaction for Group and Time, [$F(1,65) = 1.67, p = .196$].

Table 4. Means, Mean Differences, and 95% Mean Difference Confidence Interval for changes in Autonomy Ratings from baseline to 4-week Follow-Up

	Mean at Baseline	Mean at 4-week Follow-up	Mean Difference	95% Confidence Interval for Mean Difference

MI Group	5.22	5.37	.146	-.093 to .384
Control Group	5.53	5.58	.047	-.181 to .276

Table 5. Means, Mean Differences, and 95% Mean Difference Confidence Interval for changes in Perceived Competence Ratings from baseline to 4-week Follow-Up

	Mean at Baseline	Mean at 4-week Follow-up	Mean Difference	95% Confidence Interval for Mean Difference
MI Group	4.88	5.13	.254	-.041 to .548
Control Group	5.20	5.08	-.121	-.403 to .160

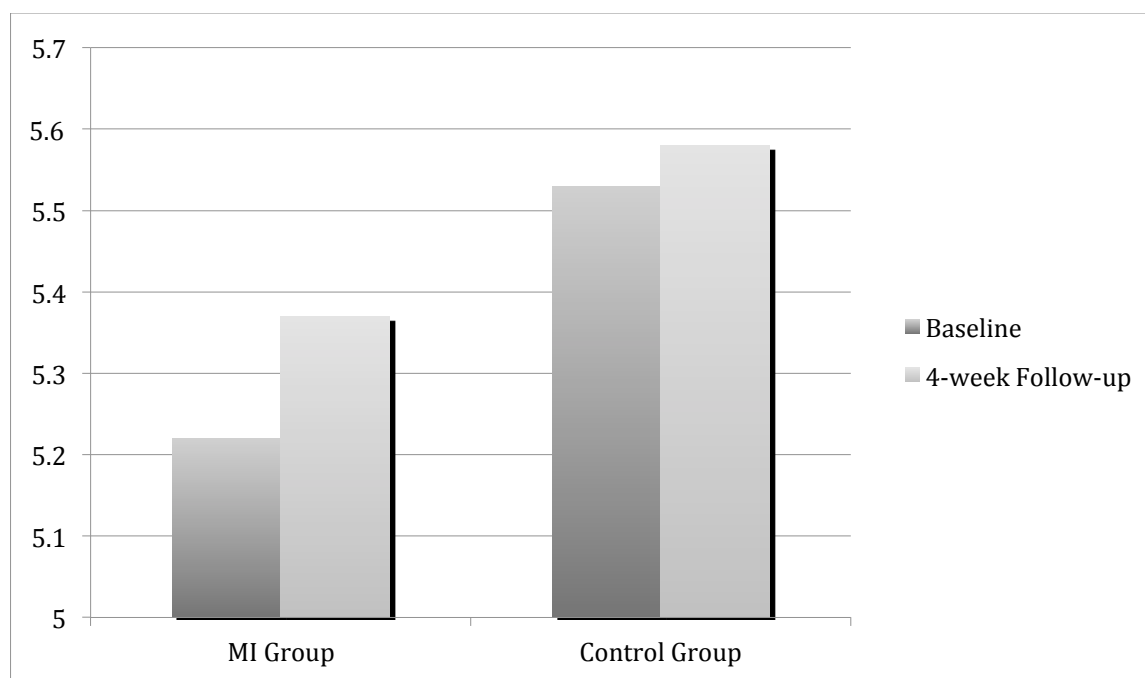


Figure 2. TSRQ autonomy ratings baseline and 4-week follow-up.

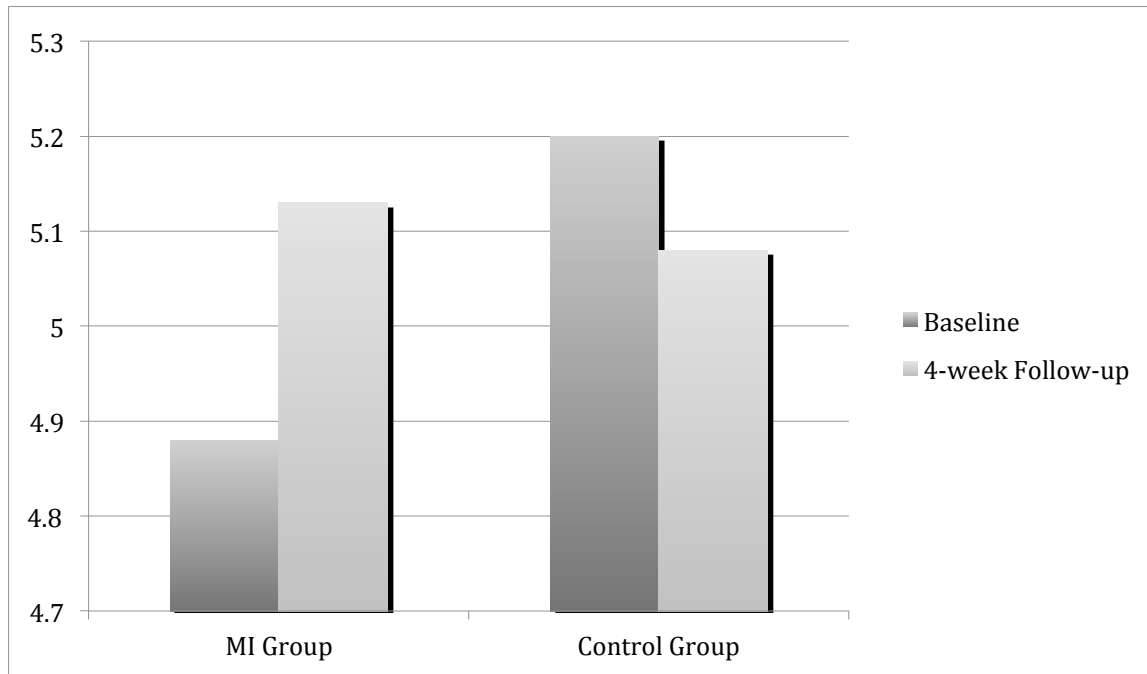


Figure 3. PCS perceived competence ratings baseline and 4-week follow-up.

Overall, these results do not support the hypotheses, proposing that autonomy and perceived competence ratings would increase for those in the MI group more so than those in the control group.

DISCUSSION

The present study was the first to examine the effect of a brief one-session MI intervention on motivation for weight loss, as evidenced by autonomy and competence scores at follow-up. This line of research is significant in that obesity rates within the U.S. are continuing to rise, thus creating a need for more research on enhancing motivation for weight loss amongst overweight and obese individuals (Haaga, 2000; NHLBI Obesity Education Initiative Task Force Members, 1998; Sobell & Sobell, 2000). In order to increase weight loss and weight loss maintenance, more cost-effective, and tailored weight-loss treatments need to be made available as there may be many individuals who cannot afford standard behavioral weight loss programs. Therefore, an effective brief intervention could also be especially important for maintenance of

weight loss, as individuals who have more autonomous motivation for behavior change are more likely to maintain behavior change because they do not rely on any external supports or reinforcements (Ryan & Deci, 1995; Williams, Grow, Freedman, Ryan, & Deci, 1996). This is the first study to examine whether a single session of MI for motivation for weight loss will increase participants autonomous motivation and competence for weight loss.

While a brief one-session MI intervention increased mean ratings of autonomy from baseline to 4-week follow-up for both the MI and control groups, this increase was not significant. When examining perceived competence ratings, the MI group's means increased from baseline to 4-week follow-up whereas the control group's scores decreased; however, these changes were also not significant. These results indicate that a brief MI intervention for motivation for weight loss was not effective at significantly increasing autonomy and competence ratings with this particular sample of non-treatment seeking undergraduate students.

Previous MI interventions have resulted in significant improvements in physical activity and increased adherence to a behavioral weight loss program, as evidenced by autonomy and competence scores (Harland et al., 1999; Smith, Kratt, Hecemer, & Mason, 1997). For the current study, it could be that there was not enough power to see this type of results with autonomy and competence ratings. For example, when examining perceived competence ratings, although it was not significant, the trend for the MI group is going in the right direction of increasing scores ($p = .070$) compared to the control group where the scores actually go down from baseline to 4-week follow-up ($p = .555$).

Although the perceived competence scale ratings were not significant, it is worth noting that there may be some clinical significance when examining the results of this scale. For the MI group, the competence scale increased by .254 with a confidence interval of -.041 to .548,

compared to the control group where the score decreased by .121 with a confidence interval of -.403 to .160. When examining the confidence interval of the MI group, the MI intervention could have up to a half a point increase, which one could argue could have clinical significance, especially for a brief cost-effective treatment (Brahman, 1991; Guyatt et al., 1995; Gardner & Altman, 1986). This could be particularly helpful in a setting such as primary care, where any increase in competence would be beneficial in changing health behaviors.

There are several limitations to the study. One major limitation is that it was underpowered with a power of .51 and an alpha of .05, with the current sample size of 65 participants (calculated with G*power; Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A., 2007). For the present study, a total of 68 more participants (34 in each group) would need to be recruited in order to obtain an estimated medium effect size (based on Cohen's *d*) with a power of .80 and alpha level of .05 (calculated with G*power; Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007); effect size based on Dunn et al., 2001 and Burke et al., 2003). Thus, more participants are needed to achieve adequate power. Additionally, this study was a non-treatment seeking population and although they were overweight (as classified by a BMI of 25.0 or higher), they were not necessarily seeking treatment or wanting to lose weight. This could potentially effect the autonomy and competence ratings if participants were not particularly interested in losing weight in the first place. Also, the sample consisted of only undergraduate college students, limiting the generalizability of the results.

Regarding strengths of the present study, this was the first study to examine MI as a brief, cost-effective intervention for weight loss as evidenced by autonomy and competence ratings. Although competence ratings were not shown to have a significant increase, the potential clinical significance of the noted increase could have some value. This intervention could be used in a

primary care setting with a physician who has limited time and whose patient has limited funds. One could argue that a half a point increase could be really beneficial in increasing motivation for weight loss if the client feels that are capable and competent in losing weight. This type of intervention could also be beneficial for use prior to weight loss interventions to motivate people to initiate the weight loss process and start making behavioral changes.

Future research should focus on using a more diverse sample population that includes more males. As the reader will recall, this study was predominately female. Second, using a treatment-seeking sample could be beneficial and add to the literature on using this brief, cost-effective MI intervention with individuals who are perhaps interested in losing weight. Third, future research should determine whether longer MI sessions or having more than one session would make a difference in ratings, as it is possible that it could take more time than just one session to develop autonomy and competence in wanting to lose weight. The present study utilized a 45-minute intervention, which may not be long enough to produce significant changes in autonomy and competence. Finally, looking at a longer follow-up period or several follow-up periods would be helpful in order to assess changes in autonomy or competence ratings over an extended period of time. It could be that four weeks was not enough time for one to change their autonomy and competence ratings toward losing weight and that changes may occur over a longer period of time. Other studies examining autonomy and competence that had longer follow up periods have found significant results up to two years (Williams, Grow, Freedman, Ryan, and Deci, 1996; Teixeira et al., 2010; Vansteenkiste, Simmons, Braet, Bachman, and Deci, 2007).

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APPENDIX A MOTIVATIONAL INTERVIEWING PROTOCOL

Phase I: Quick assessment

Rapport:

- “Tell me a bit about your weight loss attempts”
- “You may be a little fed up with people lecturing about losing weight. I’m not going to do that, but it would help me if I understood how you **really feel** about your weight loss”

Phase II: Participant identifies problems and solutions

Go over these questions that the participant filled out before the session.

Motivation

- “On a scale of 1 to 10, with 10 being very ready, where would you rank your readiness for weight loss? Why would you say that number and not something else?”
- If, on a scale of 1 to 10, 1 is not at all motivated to lose weight and 10 is 100% motivated to lose weight, what number would you give yourself at the moment?

Useful strategies:

- “Why are you at (chosen number) and not at 1?”
- “What would need to happen for you to get from (chosen number) to (higher number)?”

Confidence

- On a scale of 1 to 10, with 10 being very confident, where would you rank your confidence in succeeding at losing weight this time? Why did you say that number and not something lower?
- If you were to decide to lose weight now, how confident are you that you would succeed? If, on a scale of 1 to 10, 1 means that you are not at all confident and 10 means that you are 100% confident you could lose weight, what number would you give yourself now?

Useful strategies:

- “Why are you at (chosen number) and not at 1?”
- “What would need to happen for you to get from (chosen number) to (higher number)?”

Brainstorming solutions

- Help patient select **general** problem area first.
- Don’t immediately offer a single, simple solution.
- Encourage patient to say what could work
- Supplement with your ideas
- Patient chooses best option

Other areas to discuss

- Tell me what might be some benefits of losing weight.

- Tell me what some cons of staying at your current weight are.
- Tell me about any difficulty you have had with your weight (or weight-related health concerns).
- You mentioned you're concerned about your health. Tell me about some of those worries.
- Discussion of previous attempts to lose weight. What makes this time different?
- Tell me how your day-to-day life would be different if you were successful in losing weight.

Overall Goals

- Explore and elicit participants personal goals, examine the discrepancy between these goals and the participants current behavior
- Elicit self-motivational statements from the participants and problem-solve barriers to change
- Help participants formulate personal goals in behavioral terms
- Acknowledge the ambivalence the participants might feel about behavior change

**APPENDIX B
IRB APPROVAL**

ACTION ON PROTOCOL APPROVAL REQUEST



Institutional Review Board
Dr. Robert Mathews, Chair
131 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.6792
irb@lsu.edu | lsu.edu/irb

TO: Amy Copeland
Psychology

FROM: Robert C. Mathews
Chair, Institutional Review Board

DATE: March 12, 2013
RE: IRB# 3366

TITLE: Effects of Brief Motivational Interviewing on Motivation for Weight Loss

New Protocol/Modification/Continuation: New Protocol

Review type: Full Expedited **Review date:** 3/13/2013

Risk Factor: Minimal Uncertain Greater Than Minimal

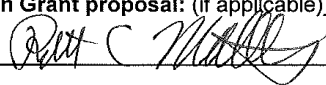
Approved **Disapproved**

Approval Date: 3/13/2013 **Approval Expiration Date:** 3/12/2014

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 128

Protocol Matches Scope of Work in Grant proposal: (if applicable)

By: Robert C. Mathews, Chairman 

**PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:**

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*

VITA

Krystal Waldo, a native of Chicago, Illinois, received her bachelor's degree in psychology at DePaul University in 2006 and her master's degree in clinical psychology from Roosevelt University. She has an interest in clinical psychology with particular emphasis on health psychology and behavioral medicine. After finishing her master's degree, she made the decision to continue her studies toward her doctorate in clinical psychology at Louisiana State University. She will receive her master's degree in May 2014 and plans to continue working on her doctorate degree.