

The Fidelity of Counseling Techniques Used in the Veterans Walk for Health Study

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Background

The Veterans Walk for Health Program (VWH) was a three-year study that promoted physical activity and diet change in overweight or obese veterans with cardiovascular risk factors or disease. Nutrition counseling was provided by a Registered Dietitian (RD) as part of the VWH. The purpose of this study was to determine the fidelity of nutrition counseling techniques and proficiency of the RDs using motivational interviewing (MI) skills during counseling.

Subjects

A sample of 28 taped sessions of RDs counseling subjects enrolled in the VWH study from the five sites were evaluated. Six sessions were evaluated from sites one, five, and six; two from site three; and eight from site four.

Design/Methodology

This study utilized a mixed method design of both qualitative and quantitative analyses. Overall findings were reported as frequency distributions, and examples of behaviors were described using direct quotes from the counseling sessions. Two raters independently evaluated the sessions, and inter-rater reliability was established between the raters using the Kappa statistic. The Motivational Interviewing Treatment Integrity (MITI) Code: Version 3.0 was used to assess proficiency of RDs in using MI techniques during nutrition counseling sessions. Supplemental questions developed by the researchers to assess the spirit of MI were analyzed as a check and balance to the information analyzed with the MITI 3.0. This information was reported as a frequency distribution and compared across the sites. Motivation of patients to make changes in both exercise and diet behavior was subjectively assessed by the raters.

Results

The lowest agreement between raters for items evaluated on the MITI 3.0 was for items reflecting percent complex reflections (0.402). The highest agreement was found for items considering the reflection to question ratio (0.818). The inter-rater agreement on seven items that evaluated use of more traditional counseling techniques ranged from 0.484 – 0.778. Inter-rater agreement for the raters' perception of patient motivation was 0.646 for diet change and 0.641 for exercise change. The RDs were generally not utilizing MI techniques. The RDs did not use reflective listening often, but when the RDs were using reflections, they were often complex reflections. A few reached competency levels for overall MI spirit score. No session met beginning levels of proficiency for reflection to question ratio. In comparing overall quality of MI across sites, site six had the best use of MI techniques, and site three did not do as well with using MI techniques. Sites one, four, and five were very similar in their ability to implement MI techniques. Most participating patients were somewhat motivated in both diet and exercise, and few were unmotivated. Site six had the highest percentage of patients who were highly motivated.

Conclusion

Overall, there was a fair level of fidelity in the types of counseling techniques used by the RDs in the VWH study. The majority of the RDs in the study did not demonstrate proficiency in MI as measured by the MITI 3.0. Most veterans participating in the VWH study were somewhat or highly motivated to change diet and exercise behavior.

Introduction

Nutrition counseling has been in practice by dietitians and other health care professionals for over a century, beginning in the early 1900s at a clinic in the New England Medical Center. This food clinic was started by Frances Stearn, and set in motion a practice of focusing on the counseling side of client interaction (Snetselaar, 1997). In 1945, Lowell Selling and Mary Anne Ferraro recommended the consideration of psychological factors when suggesting diet changes. Margaret Ohlson furthered the development of counseling techniques in the 1970s by emphasizing a style of interviewing between the counselor and client to allow deeper investigation into nutrition problems. Today, nutrition counseling involves a broad spectrum of theories and concepts, and employs a variety of techniques to initiate behavior change. The role of a dietitian as a counselor has changed from a strictly authoritarian role to fluctuating along a continuum from authoritarian roles (where the counselor acts as an expert and functions to disseminate information) to subordinate roles (where the counselor focuses more on learning from the client and empathizing with the client's problems) (Snetselaar, 1997).

While nutrition education is focused more on the delivery of nutrition information to an individual or group of individuals (a more authoritarian role), nutrition counseling combines the delivery of nutrition knowledge and information with the understanding of the psychological issues of the client as they relate to attitudes and behaviors about food and eating as well as their motivation and desire to change. Counseling involves more in-depth work with a client to teach and develop strategies and goals to facilitate this change. As a nutrition counselor, a dietitian works with the client to guide him/her to make changes for a healthier lifestyle, while helping the client overcome barriers to change. According to the Haney and Leibsohn model of counseling as cited in Bauer and Sokolik (2002), the three major goals in nutrition counseling are to:

1) facilitate lifestyle awareness with the client, 2) assist the client in developing the ability to use healthy lifestyle decision making, and 3) promote self-sufficiency with the client and support the necessary action to obtain the desired healthy lifestyle.

Although nutrition education alone can be beneficial in changing behaviors to promote healthy lifestyles or manage or prevent disease, individuals have more success with behavior change if they are counseled in a manner that is guided by a behavior theory. For example, Steptoe et al. (2003) conducted a parallel group randomized controlled trial to investigate the use of behavioral counseling vs. nutrition education to increase consumption of fruits and vegetables in adults. Both groups increased the average number of fruit and vegetable servings after 12 months, but those receiving brief counseling sessions increased by an average of 0.6 servings more than the education only group. In addition, the biomarkers used to evaluate diet change (specifically β -carotene and α -tocopherol) showed similar trends. The behavioral counseling was based on the social learning theory and the stage of change model, and each session was tailored to the individual. The nutrition education group received information on the importance of fruits and vegetables in the diet and following the “five a day” message. This study was adequately powered with relatively even demographics between the two samples, although 62% of the total sample was women, participants were recruited via letters targeted in a low-income area, and the researchers were not blind to group assignment. Even with these considerations, this study is a good example of the effectiveness of both education and counseling, with counseling showing slightly greater benefits.

Studying nutrition counseling and the successes of particular styles and methods is important to the field of dietetics because one of the many roles of a dietitian is to assist clients with behavioral change and induce positive health outcomes. Understanding a variety of theories

and methods is advantageous to the dietitian providing counseling because a broad understanding allows for adapting techniques in response to individual needs. This counseling can range from anything from a bedside consultation in the hospital setting to an outpatient clinic to a specific program designed to change behaviors, such as the Veterans Walk for Health Program (VWH).

VWH was a three-year program developed as part of a research study that aimed to determine the outcomes of a weight loss program that promoted physical activity (walking) and diet change in overweight or obese veterans with cardiovascular risk factors or disease. Nutrition counseling involved five sessions with a Registered Dietitian (RD), and each participating dietitian was trained to follow the study protocol throughout the counseling sessions. The protocol was based on the American Dietetic Association's 6-session Medical Nutrition Therapy Protocol for Weight Management, and followed the concepts of motivational interviewing as a counseling technique (Richardson & Lowery).

Although dietitians conducting nutritional counseling for VWH were trained in motivational interviewing and informed of the study protocol, there may or may not have been 100% adherence to the form of counseling intended by the program throughout the study. The purpose of this study is to determine the fidelity of counseling techniques used by dietitians who participated in VWH and how proficient these dietitians were at motivational interviewing.

Review of the Literature

Approaches to Nutrition Counseling

There are several theories and therapy styles of nutrition counseling. Over time, the research and knowledge in the area of counseling has expanded and evolved such that many techniques have multiple names, and many of the concepts within each approach overlap. For purposes of this review, the focus will be on a discussion of four broad types of therapy:

client-centered therapy, behavioral therapy, cognitive behavioral therapy, and motivational interviewing.

Client-centered therapy/Person-centered therapy

Carl Rogers is widely recognized as the founder of client-centered therapy (also known as Rogerian therapy or person-centered therapy), established in the late 1940s and early 1950s. In this non-directive style, the counselor does not attempt to steer the counseling session, but rather listens to and understands the client's thoughts and perceptions of the situation and how these thoughts are influencing the current behavior. Proficient listening skills and the ability to interpret client's insights are important abilities in this type of therapy, as the focus is to use the client's responses to understand the perceptions of him/herself that may be impacting the ability to change behavior. This therapy is based on the following concepts: 1) physical, cognitive, and behavioral aspects are all intertwined in the overall individual, 2) altering any one component of the individual may impact the other aspects, and 3) individuals respond to the reality created by their own perceptions (Bauer & Sokolik, 2002).

In this client-directed style, the goals are to promote confidence in the client, enhance a positive attitude about the self, and promote a realistic self-impression (Rogers, 1951). The role of the dietitian in this type of therapy is to understand the client's current behaviors and negative attitudes and work with them to develop goals to progress to a more positive self-image and a plan to achieve behavior change (Snetselaar, 1997). Dietitians in the counseling role with this therapy must be accepting and open of clients' thoughts and behaviors without judging the client in any way. Client-centered therapy operates on the belief that people are basically rational, socialized, and realistic, and that they will naturally desire and work toward self-actualization and self-directions (Bauer & Sokolik, 2002).

Success with this type of therapy that focuses on unconditional openness and understanding of clients is well-documented in a variety of fields. More recently, the majority of counseling techniques are not labeled specifically as “client-centered” as the evolution and expansion of types of therapies within this realm over the past 50 years has been great. Franz et al. (1995) use some of the principles of client-centered therapy in the Medical Nutrition Therapy (MNT) used in the protocol of their study to examine the difference in outcome of MNT delivered in one nutrition intervention vs. MNT delivered in three counseling sessions. Specifically, two concepts of the MNT used in this study aligned to client-centered therapy. First, the specific recommendations for change were tailored to participants’ individual lifestyles, and second, recommendations and goals were modified for each individual as therapy progressed if the subject was not meeting goals (therefore the failure to meet goals was established as a failure of the therapy rather than failure of the client).

In this study primarily focused on improving outcomes for adults with non-insulin-dependent diabetes (n=179, 56% female), both treatment groups benefited and showed better blood glucose control, lower serum cholesterol, and lower weight after six months. The study was of adequate power and methods were well-controlled aside from a possibility of bias from the dietitians providing therapy. As they were required to provide therapy to both groups, the dietitians may have found it difficult to provide the basic care only (one session without follow up) to the group that required it.

Behavioral therapy

The basics of behavioral therapy were derived from the work of several psychologists, namely Ivan Pavlov and B.F. Skinner, as well as Joseph Wolpe, Edward Thorndike, and Albert Bandura. The underlying tenet of behavioral therapy is that everything in an individual’s

surroundings, their experiences, environment, and interactions with others, influences their behavior. Many behaviors are learned behaviors, therefore learning new, healthier behaviors is possible. This type of therapy is grounded in the understanding of classical conditioning as described by Pavlov and operant conditioning as studied by Skinner (Bauer & Sokolik, 2002). Use of classical conditioning in nutrition counseling involves assisting the client with identifying situations that stimulate negative behavior out of pure conditioning (such as eating while watching television). Nutrition counseling can effectively use operant conditioning by recognizing rewards for obtaining goals (for example, a reward for losing extra weight is the ability to wear a favorite pair of jeans again). Behavioral therapy works based on the following modes of learning: 1) clients will continue a behavior if the behavior results in a positive outcome; 2) clients will imitate or mimic behaviors of those around them; and 3) purposeful modeling of behavior will initiate imitation by the client (Pietrofesa et al., as cited in Snetselaar, 1997).

Just as with client-centered therapy, behavioral therapy has morphed into a variety of specific therapy types. Many studies and counselors now refer to behavior therapy within the umbrella of “Lifestyle Modification”, such as in the article by Wadden, Butryn, and Wilson (2007). In this review, several randomized controlled studies using behavior therapy in diet and physical activity interventions for weight loss were evaluated. Overall results indicated that lifestyle modification (i.e., behavioral therapy that helps patients learn and embrace new habits related to eating and physical activity), is associated with clinically significant weight loss. A sample of studies conducted from 1974 through 2002 indicated the effectiveness of behavioral therapy in the short-term for weight loss, with documented results of an 11% weight loss, and 80% of participants followed through with treatment to the end. In the long-term, behavioral

therapy is often combined with pharmacotherapy for weight loss, and the combination of therapy and medication is more effective than the medication alone (Wadden, Butryn, & Wilson, 2007).

Cognitive behavioral therapy

Cognitive behavioral therapy (CBT) is similar to behavioral therapy, but focuses more on the individual's thoughts and feelings rather than changing the environment. The foundation for the effectiveness of this therapy is that the identification and elimination of negative self talk and a client's irrational ideas regarding him/herself will result in positive modification of behavior, especially once the client is able to replace the negative dialogues about the self with more positive affirmations (Bauer & Sokolik, 2002). The goal of this type of therapy is for the counselor to work with a client's cognition to modify emotion and affect and thereby influence behaviors. The counselor works to discover the thoughts that are negatively impacting behavior and substitute these thoughts with more positive and realistic views. By altering these thoughts, the client can begin changing behaviors to induce more positive outcomes. One difficulty that may arise is the fact that some of these cognitive issues may have been initiated in childhood and are deeply rooted in the client's thinking and way of life (Bauer & Sokolik, 2002).

Many types of therapies use these core elements as the basis of therapy and can therefore be classified as CBT. Some of these types of therapies include rational emotive behavior therapy, developed in the 1950s by Albert Ellis, cognitive therapy, developed in the 1960s by Aaron Beck, and cognitive behavior modification, developed by Donald Meichenbaum (Bauer & Sokolik, 2002). There are several other specific therapies beyond this short list that are types of CBT, but for purposes of this review, the term CBT will focus on the overall idea of the interaction of cognition, emotion, and behavior, and the goal of modifying negative self-image to positive thoughts and behaviors.

CBT has proven successful in a number of arenas, including nutrition and weight loss. A randomized control trial conducted by Ash et al. (2006) used the tenets of CBT as the basis for the lifestyle intervention in an eight-week group counseling session and compared the results to participants receiving an individualized treatment only and a control group (received information only). The intervention based on CBT was more effective than just receiving information, and equally as effective as receiving individualized counseling. Statistically significant results were found for the outcomes of weight loss at three and twelve months, and for increased self-efficacy over time. The 208 participants were randomly assigned to groups, and baseline characteristics between groups were similar, however, there were significant losses to follow up that created differences between the groups by the end of the study. Only 90 fully completed the study, and another 40 completed everything aside from 1 or 2 missing data points. Results were analyzed using an intent-to-treat basis. In light of these weaknesses in the study, it still gives insight into the benefits of CBT when used for weight management.

Motivational interviewing

One of the keys to successful behavior change is self-efficacy, or the client's belief that they have the ability to be successful with the change and the objectives required to achieve the change. Higher self-efficacy will induce greater positive behavior change, which is a theme that occurs throughout many of the studies discussed throughout this review. Another important tenet of successful change is the actual readiness to change, which is explored in the transtheoretical model of behavior change. In this type of model, a client's willingness and readiness to change can be categorized and the behavior change strategies can be directed specifically toward his or her stage of change (SOC) (Bauer & Sokolik, 2002).

Snetselaar (1997) addresses six stages of change as presented by Prochaska and DiClemente. A client can fall into any of the stages, and the goal is to move the client forward through the stages of change, although moving backward is not uncommon. The first stage is precontemplation, and individuals in this stage show no intention of changing and may actively resist change. This stage is followed by contemplation, which involves the recognition that change needs to occur but an overall state of ambivalence about whether or not to change still exists, often due to the underlying idea that long-term benefits are not worth the short-term costs (whether real or perceived). In the third stage, preparation or determination, clients recognize the benefits of change and are willing to make changes within the next 30 days, and may be currently making small changes. In the action stage, change has been made that has lasted anywhere from one day to six months, and the client is continuing to stay on track with the change. The time frame between three to six months is when there is the highest likelihood for relapse, so change cannot be considered permanent until after six months, when the client reaches the maintenance phase. Should the client not stick with the change permanently, he or she can fall into a sixth stage of behavior change known as relapse (Prochaska and DiClemente's Six Stages of Change, as cited in Snetselaar, 1997).

Knowledge of client's SOC allows the counselor to proceed appropriately in suggesting the next goals and objectives to reach the goals and tailor counseling to the specific SOC. Greene and Rossi (1998) conducted a study involving 296 participants showing that advancing at least one stage in the SOC model resulted in a greater reduction in fat intake when compared to those who did not advance. Although the study population was fairly evenly divided in males and females, it was predominantly white, and cannot be generalized to the entire population. However, this study shows persuasive evidence that progression through the SOC is related to

achievement of desired outcome, and interventions targeted to participants' SOC can be effective to promote change.

Motivational interviewing (MI) encompasses both self-efficacy and transtheoretical models, but with a focus on exploring a client's ambivalence. While MI attempts to match the intervention to the client's SOC (just as in the transtheoretical model), it differs in that it accepts and assumes more fluidity between the stages, and adapts the therapy according to whether the client is stable, moving forward, or regressing in the SOC (Resnicow et al., 2002). MI has elements of many of the therapies listed above, and uses both directive and non-directive strategies. Defined by Miller and Rollnick, MI is a "client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence (2002)".

Miller and Rollnick describe four principles of MI in the 2nd edition of their book *Motivational Interviewing: Preparing People for Change* (2002). The first principle is to express empathy, which requires the counselor to understand the clients' perspective of a situation. The second principle, develop discrepancy, involves the role of the counselor in emphasizing for the client the difference between present behavior and the goal. The more this discrepancy is brought to the client's attention, through getting the client to discuss goals and reasons for change and the consequences of not changing, the more likely they are to move towards change. Rolling with resistance is the third component of MI, which can be described as the counselor's acknowledgement of a client's resistance to change as understandable behavior. This sets the tone for the counseling sessions as a comfortable environment without fear of judgment or pressure. Finally, the counselor needs to support self-efficacy of the client.

Miller and Rollnick (2002) also discuss particular strategies that are necessary aspects of MI. Reflective listening is a strategy that involves reflecting what is heard in a conversation back

to the client to ensure the client's meaning is understood. Another strategy is using open-ended questions to elicit self-motivational statements from the client. Eliciting self-motivational statements can be accomplished through various techniques, but the goal is always to resolve ambivalence by allowing the client to express the reasons change is desirable rather than having the counselor list the reasons. In this way, the client is more likely to take action because they have expressed reasons and need for change.

Although initially developed and studied as a tool for substance abuse counseling, the practice of MI has been adapted to counseling for many health behaviors, including nutrition, diet, and exercise-related behaviors. A randomized controlled trial by Bennett et al. (2007) studied the benefit of using MI to increase physical activity in 56 individuals age 37-85 who had finished cancer treatment. The intervention group received a one-on-one counseling session and two follow-up phone calls by counselors trained to implement the MI techniques. The target goal for each participant was 30 minutes of physical activity of a moderate intensity each day. The control group was encouraged (not required) to maintain current physical activity levels, and follow-up phone calls were made with the purpose of setting future appointments for follow up measurements. Measuring outcomes at baseline, three months and six months, those in the MI group increased physical activity more than the control group, and within the MI group, those with a higher self-efficacy for exercise at the onset of the treatment increased activity more than those with a lower self-efficacy. All results were controlled for time since finishing cancer treatment, and had a p-value of less than 0.05.

Details were provided by the authors regarding the amount of training received by the counselors, the process of choosing and randomizing participants and accounting for attrition. While the sample size was small, it was chosen with the assumption of a 10% loss to follow up,

and the ability to retain a 0.83 effect size with a power of 0.80 ($\alpha = 0.05$). One weakness to the study was homogeneity of the sample size, as most participants (89%) were women, 98% were white, and most were breast cancer survivors. In addition, the mean time since cancer diagnosis and time since ending cancer treatment was shorter for the intervention group, which could impact willingness to change exercise habits. Overall, the trial showed effectiveness for using MI as an intervention technique to increase physical activity with this population, and provided plausible evidence for the role of self-efficacy in behavior change. For individuals in the control group, behavior change was not impacted by self-efficacy, but in the MI group, individuals reporting a higher self-efficacy increased physical activity faster than those reporting low self-efficacy.

Several reviews on studies implementing MI techniques have been conducted. Burke, Arkowitz, and Menchola (2003) conducted a detailed meta-analysis of 30 controlled clinical trials that encompassed a variety of problem areas (alcohol problems (15), smoking (2), drug addiction (5), HIV-risk behaviors (2), diet and exercise (4), and eating disorders (1)). The distribution of these studies illustrates previous comments regarding the historical focus of MI on alcohol and drug abuse, with only a more recent exploration of the use of MI in other health behaviors. This comprehensive analysis investigated a variety of components of the studies, including the efficacy of the treatment and the sustained efficacy, as well as any influence of moderator variables.

This review showed evidence that while MI is effective when compared to no treatment, it is not significantly better when compared against other types of counseling treatments. In addition, the effectiveness of MI varied depending on the target measures and problem area, but showed an effect size of 0.53 in studies with diet and exercise with a no-treatment control.

Overall clinical impacts when all problem areas were included showed that 51% of participants receiving MI showed improvement, while only 37% receiving the control of no treatment or treatment as usual showed improvement. When compared with other active treatments, there were no significant improvements when using MI over other treatments. It should be noted, however, that the treatment time for MI compared to other therapies in this review was much shorter (by an average of 180 minutes), therefore extended time of therapy for the MI treatments to match the time of the other therapies could show increased effectiveness. Another significant finding of this review was that the effects of MI techniques across all groups did not diminish over time.

Another review and meta-analysis published by Rubak et al. in 2005 looked at 72 randomized controlled trials using MI as the treatment for the intervention and traditional advice as the control group. Some key findings of this meta-analysis include that MI showed an effect in 74% of the trials, and the probability of an effect increased with increased length and number of sessions and longer follow-up times. Eighty-one percent of sessions of 60 minutes showed an effect, while 64% of sessions of 20 minutes or less showed an effect. In trials with only one MI session, 40% showed an effect, but an effect was found in 87% of trials with more than five encounters. In studies with a three-month follow-up, 36% demonstrated an effect, while 81% of studies with a follow-up period of 12 months or more showed an effect. As this review illustrates, the study of MI as an intervention technique in behavioral modifications of health habits has not been fully explored. Only ten of the 72 studies addressed weight loss or physical activity. Although data is lacking to provide definitive judgments on the use of MI for diet-related change, this review and others like it provide clear results that MI is an effective intervention for behavior change, and this may be applied more broadly in the health care field.

Direct Comparison of Motivational Interviewing with other Counseling Methods

Several controlled studies have been conducted to specifically compare the effectiveness of MI to other methods of counseling. While studies on nutrition-related behaviors are somewhat limited in number, a variety of studies looking at the theories discussed in this paper are addressed below.

Client-centered therapy/Person-centered therapy

Studies comparing strict client-centered therapy to MI in the health behavior arena are the most difficult to locate, most likely because the idea of “client-centeredness”, as discussed above, is one of the principles of MI. However, a randomized controlled trial conducted by Sellman et al. (2001) compared motivational enhancement theory (MET) to nondirective reflective listening (which is a component of client-centered therapy) and a control group to measure the change in unequivocal heavy drinking at the follow up of six months. The study included 122 subjects (57.4% male and 42.6% female), with a mean age of 35.7 years old. Those providing counseling were trained per protocol and treatment verified with tape-recorded sessions. Results of this study indicated a significantly lower percent of unequivocal heavy drinking among those receiving MET treatment (42.9%) compared to the nondirective listening (62.5%) and to the no further counseling group (65%). An overall treatment effect of decreased drinking occurred for all groups, but the use of MET obtained the best results.

Behavioral therapy

A recent randomized, controlled clinical trial by Smith et al. (2007) investigated the use of adding MI to a basic behavioral treatment program for weight loss among 217 overweight women. Participants (volunteers) were randomized into one of two groups. The control group participated in a 42-session weight management program lasting 18 months and a placebo of

individual health education sessions. The intervention group also attended the weight loss program and received individual MI sessions with a trained counselor. These sessions were validated for adherence to protocol. The weight management program focused on the concepts of behavioral therapy, such as goal setting and overcoming problems to achieve dietary and physical activity changes.

Both groups lost weight, illustrating the effectiveness of both behavioral therapy presented in a group format as well as the inclusion of individual MI as a supplement to the program. Those in the intervention group, however, lost significantly more weight than those in the control group. In addition, the control group began to regain weight after the first six months of the program, while the intervention group only started to regain after 12 months, once the MI sessions had ended. Overall, the total weight loss for the MI intervention group was about twice as much as those in the control group at the end of the 18-month study. In addition, while glycemic control improved significantly in both groups, greater reductions in A1c were found in the intervention groups. It should be noted, however, that these results were mediated by greater adherence to treatment on the part of the intervention group.

Elliot et al. (2007) conducted a prospective trial using 599 firefighters to test two methods of promoting healthy lifestyle change: a team-centered curriculum taught by a trained peer leader and individual MI counseling provided by trained counselors. A third group receiving no education or counseling served as the control. The team program encompassed the ideas of the social cognitive theory, which is a derivation of behavior theory in that it considers behavior, cognition, and environmental influences. Both intervention groups were validated for adherence to protocol. Although this study is predominantly male (97%) and white (91%) and confined to a specific occupation and age group (20-60 years old, mean = 41), it still shows relevance in

illustrating the benefits of both MI and behavioral therapy in promoting positive nutrition behaviors and weight loss. Both groups increased fruit and vegetable consumption and had less weight gain over the 12-month follow up compared to the control group. It should be noted that the total time spent in the team curriculum group was greater than total time allotted for MI counseling sessions, and increasing MI time or sessions may have showed a greater result.

Cognitive behavior therapy

Another important diet-related area where counseling is used to encourage change is in the treatment of eating disorders, and CBT has been used successfully as a therapy strategy for these cases. A study by Treasure, et al. (1999) examined the use of MET vs. CBT in the treatment of bulimia nervosa. The MET used in this randomized controlled trial is based on the SOC model and incorporates the tenets of MI in the counseling process. This trial intended to test the hypothesis that initial SOC predicts outcomes, and that MET would be more effective than CBT in moving participants into the action phase of the SOC model.

This trial involved 125 patients (all female) randomized into the MET (n=87) or CBT (n=38) groups and counseled for four weeks by trained counselors supervised by clinicians with expertise in the specific therapy. Outcomes were measured by clinicians and self-report. There were no differences in increased readiness to change or in bulimic outcomes when the two types of therapy were compared, however, the readiness to change was related to improvement regardless of the treatment group, with those in the action group showing better outcomes than those in the contemplation phase. Weaknesses to this study include short follow up time (four weeks), low power, homogenous participation (all female), unequal distribution between the intervention and control groups, and a very specific disease state. The results, however, are in alignment with the findings of other studies that demonstrate no significant differences existed in

the rates of clinically significant outcomes for the two treatment groups, but that SOC was highly related to positive outcomes.

Need for further research

Other areas of research that may be beneficial are more studies focusing on health behaviors, specifically in the realm of diet and exercise, as well as implications for specific populations, such as ethnic groups, age groups, disease state, and gender. Many of the studies found in preparation for this review were not conducted in diverse populations and noted that there may be factors of MI that would be more or less beneficial with specific population groups (Smith, et al., 2007). Some overall weaknesses should always be considered in studies regarding health behaviors. For example, many studies involving diet or physical activity changes depend on self-report measures to quantify change, which is not always an accurate measure of change. Amount and type of training received by counselors providing the intervention should also be investigated to ensure the training was sufficient and that counselors followed the principles established in the protocol of the study. In addition, validity of the treatment should be explored by researchers to ensure participants are provided the treatment as planned. As discussed, the evolution of nutrition counseling has resulted in a meshing of techniques that combines several aspects of a variety of theories. This not only makes adhering to one type of technique as recommended by protocol more difficult, it also makes deciphering and labeling which techniques are used more of a challenge when validating studies.

Research questions

Primary questions

1) What is the fidelity of counseling techniques used by dietitians involved in the VWH study?

Fidelity will be defined as the consistency in counseling techniques used by dietitians at each site. If all sites used the same techniques, this will be considered high fidelity.

Discrepancies between types of counseling offered will be identified as low fidelity.

2) How proficient were the dietitians in using motivational interviewing techniques to counsel patients? Proficiency in motivational interviewing techniques will be defined as expression of empathy and understanding, exhibiting the spirit of motivational interviewing (negotiating with the client during the session, drawing out the client's ideas, acceptance that the client might not change), asking more open ended questions than closed ended questions, asking permission before offering advice, affirming the client, emphasizing the client's freedom of choice, supporting the client, and reflective listening. Proficiency will be measured using the Motivational Interviewing Treatment Integrity code (MITI) Version 3.0 (Moyers, Martin, Manuel, Miller, & Ernst 2007) on 28 tape recorded sessions with accompanying transcripts from counseling sessions of the subjects with the dietitians.

Secondary question

3) How motivated were patients to make diet and exercise behavioral changes?

Motivation to change will be qualitatively defined as the patients' expression of interest in behavior change, the amount of importance they place on change, and the level of resistance to change as obtained from listening to recordings and reading the transcriptions.

Objectives

1) Establish inter-rater reliability between two investigators (one RD and one dietetic intern) who will be assessing the counseling sessions.

2) Listen to audio files and read the transcriptions of the recorded sessions from the counseling sessions used by RDs counseling subjects participating in the VWH study.

3) Code the information from the transcriptions to assess which types of counseling techniques were used most often and how proficient RDs were in using motivational interviewing during the counseling sessions.

4) Assess the content of the counseling sessions in terms of whether or not the patient was motivated to make dietary and physical activity change.

5) Make comparisons between sites involved in the VWH study regarding the types of counseling techniques used to assess fidelity between sites.

6) Compare ratings from both raters on the above.

Relevance to the VA Patient Care Mission

The VA patient care mission is to serve the healthcare needs of America's veterans. The VWH Study attempts to serve the healthcare needs of veterans by promoting weight loss in those with cardiovascular risk factors or disease. As part of the VWH study, the researchers will attempt to validate the adherence to the study protocol by assessing the counseling methods used by the participating dietitians.

Overview of study design

This study utilizes a mixed method design in which both qualitative and quantitative analyses are used to examine and describe any differences between the counseling techniques used by RDs at the sites participating in the VWH program. The researchers intend to explore the fidelity of the counseling techniques used by dietitians participating in the VWH at each site. In addition, the sessions will be analyzed with respect to the researchers' interpretation of the patients' expression of motivation to make dietary and exercise changes. The evaluation tool used to assess counseling sessions (Appendix A) will be a combination of a validated tool (The Motivational Interviewing Treatment Integrity (MITI) Code: Version 3.0 (Moyers et al., 2007)

currently used to evaluate proficiency in motivational interviewing and a tool developed by the researchers using both inductive and deductive approaches. The segment of the tool created by the researchers attempts to capture the patient's level of motivation as well as the counseling techniques used by RDs when counseling patients in order to test the fidelity at each site. Inter-rater reliability will be established between the raters prior to analyzing the recorded sessions and transcripts.

Methodology

Population and selection criteria, method of sampling, and sample size

A sample of convenience will be used, as the researchers will be analyzing recorded sessions provided by the researchers involved in the VWH study. The sample size consists of 28 taped sessions from the dietitians counseling patients involved in the VWH study from San Diego, Memphis, Tucson, Oklahoma City, and Topeka. The researchers will not be informed of the location of the sessions, and sessions from each site will only be identified with a number.

Data collection instrument

The data collection tool aims to measure the proficiency of the RDs in using MI techniques, the similarity of techniques used by RDs in the counseling sessions (fidelity), and patient motivation. The instrument incorporates a validated tool as well as components developed by the researchers. The data collection tool was tested five times throughout development by evaluating 1-3 sessions using the tool, and each time adjustments and improvements were made. The final version was piloted using one session, and data collected was entered into an excel spreadsheet. Dummy data was also created to determine potential statistical analysis to be used in the results.

The MITI Version 3.0 and the thresholds established for the tool will be used to assess proficiency of RDs in using MI in each session. Moyers et al. (2007) state these thresholds are based on expert opinion, and lack validity data to support them, however, they can be used in conjunction with other data as a way to evaluate beginning proficiency or competency in MI technique.

The tool uses five global assessment scores measured on a five-point Likert scale (1=low, 5=high): evocation, collaboration, autonomy/support, direction, and empathy. Raters should assume a starting point of three and move up or down the scale from there.

Evocation assesses whether the RD elicits change talk, evokes the patient's reasons for change and ideas about how that may happen, recognizes and conveys that motivation for change comes from the patient, and works with the patient to expand on this motivation. Conversely, an RD low on the evocation scale may: miss opportunities to explore ambivalence, make assumptions about the patient's intention of changing/not changing, or provide the patients reasons for change rather than eliciting change talk from the patient (Moyers et al., 2007).

The global scale for collaboration assesses how well the RD works cooperatively with the patient to achieve goals and allows the patient to influence the flow and outcomes of the session. An RD low on this scale would be one who acts as an expert or takes an authoritarian role in the session, does not allow the patient to contribute ideas or goals and/or does not incorporate those that are contributed (Moyers et al., 2007).

The global scale for autonomy/support measures the RD's support of the patient's ability to make choices, specifically the choice of whether or not to change behavior. RDs who directly or implicitly raise the topic of choice and control, help the patients recognize choices, and express optimism about the patient's ability to change. An RD low on this global scale may:

detract from the patient's perception of choice, assume the patient will change behavior to fit what the RD thinks is best, express pessimism about the patient's ability to change, or state there is only one way to make a change (Moyers et al., 2007).

The global scale for direction is the one scale that does not necessarily indicate a better use of MI techniques by the RD. A dietitian may be high on the direction scale, but may not necessarily be practicing MI techniques. This scale is intended to measure the ability of the RD to maintain direction during the session, staying on topic and focused on the target behavior. An RD low on this scale would allow the course of the session to get off topic and not redirect the focus back to the appropriate topic and the goal of the session (Moyers et al., 2007).

Empathy assesses how well the dietitian understands and/or makes an effort to comprehend the perspective of the patient. Empathy includes showing an active interest in the patient, and expressing understanding of the patient's comments and concerns. RDs who are low in empathy show indifference toward the patient's experiences and do not make an effort to understand the patient's thoughts or emotions (Moyers et al., 2007).

These global scores consider the entire session and give an overall opinion or judgment. An overall global spirit rating is calculated by adding the scores of evocation, collaboration, autonomy/support and dividing the sum by three, with an average of 3.5 indicating beginning proficiency in MI, and four or above indicating competency in MI (Moyers et al., 2007).

Behavior counts tally the RDs statements into one of seven possible categories: giving information, MI adherent behavior, MI non-adherent behavior, open and closed questions, and simple and complex reflections. Giving information is defined as providing feedback to the patient, giving an opinion, explaining concepts or educating the patient.

The category of MI-adherent behavior counts statements that are consistent with the MI approach, such as asking permission before giving advice or information, affirming the patient by positive reinforcement and compliments about the patient's successes and efforts, emphasizing the patient's freedom of choice, supporting the patient with compassion and sympathy. On the other hand, MI non-adherent behaviors do not follow the MI technique, such as giving advice without asking permission, confronting the client (may include negative actions such as disagreeing, arguing, blaming, criticizing, ridiculing, questioning the patient's honesty), directing the client (giving orders, commands, or imperatives). Percent MI adherent behaviors will be calculated by total number of MI adherent behaviors/(MI adherent behaviors + MI non-adherent behaviors), and 90% will indicate beginning proficiency in MI technique, and 100% will indicate competency (Moyers et al., 2007).

Closed questions are defined as a question that can be answered with "yes" or "no", while open questions require more in-depth elaboration in response. If 50% of the total questions asked by the RD are open questions (number of open questions/total number of questions), this will be considered beginning proficiency; if 70% are open questions, this will be considered competency (Moyers et al., 2007).

Reflections are categorized as simple or complex, and intend to count reflective listening statements made by the RD in response to statements made by the patient. Simple reflections convey understanding of the RD, but add little or no emphasis or additional information to what the patient has said. Complex reflections serve to add more meaning or emphasis to what the patient has said by adding more information to the statement, taking the conversation to another level or in another direction, or convey a deeper meaning. If a rater cannot decide whether a reflection is simple or complex, the default designation is the simple reflection. Forty percent

complex reflections (number of complex reflections/total reflections) will indicate beginning proficiency, and 50% will indicate proficiency (Moyers et al., 2007). A reflection to question ratio (total number of reflections /total number of questions) of 1 will indicate beginning proficiency, and 2 will indicate competency.

The MITI tool for assessing competency in MI has been validated with several research studies. Bennett et al. (2007) conducted a study of 43 interviews using the MITI version 2.0 to assess levels of agreement between two raters as well as the usefulness of the tool in evaluating competency of the individual using MI techniques. The difference in the MITI version 2.0 used in the Bennett study and the version 3.0 that will be used in this research study is that the global rating for MI Spirit in version 2.0 has been divided into three global ratings in version 3.0 (evocation, collaboration, and autonomy/support). There is also an additional global rating (direction) in version 3.0. Finally, a seven-point Likert scale is used in version 2.0, but a five-point Likert scale is used for global scales in version 3.0.

Bennett et al. (2007) used intra-class correlations to analyze inter-rater reliability, and the scores were: MI Spirit = 0.93, empathy = 0.93, giving information = 0.81, MI adherent behavior = 0.78, MI non-adherent behavior = 0.96, closed questions = 0.97, open questions = 0.93, simple reflections = 0.92, complex reflections = 0.92. In addition, the summary scores, those that are used to evaluate beginning proficiency or competency in MI technique, had inter-class correlations scores of: 0.94 for percent MI adherent behavior, 0.91 for percent open questions, 0.80 for percent complex reflections, and 0.93 for question to reflection ratio (Bennett et al., 2007). Intra-class correlations above 0.75 indicates excellent reliability (Cicchetti, 1994), and each item achieved a score higher than 0.75. There were statistically significant differences between the two raters in overall spirit of MI ($p=0.04$), empathy ($p=0.012$), giving information

($p < 0.001$), closed questions ($p < 0.001$) and open questions ($p = 0.033$), and complex reflections ($p = 0.003$), as well as all the summary scores except percent complex reflections. As discussed, however, the intra-class correlations indicate a high level of consistency, and the differences in the means of the scores on each of these items were very small.

The study found the MITI ratings were stable over a period of one month, with no significant differences on any code between the first and second interviews conducted 28 days apart. Finally, the study compared interviews conducted by those professionally trained in MI against those who had not been trained. Those trained had significantly higher scores in MI spirit, empathy, MI adherent behavior ($p = 0.016$), complex reflections ($p = 0.001$), and lower scores in MI non-adherent behavior ($p = 0.002$) and closed questions ($p = 0.002$). For the summary scores, trained interviewers had statistically significant higher scores for percent MI adherent behavior ($p = 0.022$), percent open questions ($p = 0.010$), reflection to question ratio ($p < 0.001$), and percent complex reflection ($p = 0.003$). Overall, Bennett et al. (2007) show that the MITI can be an effective and reliable method to measure proficiency in MI techniques.

A study by Moyers, Martin, Manuel, Hendrickson, & Miller (2005) measured reliability and sensitivity of the MITI using three independent raters. The raters independently coded 50 randomly selected tapes to assess inter-rater reliability. The intra-class correlation coefficient was used to determine agreement, and 70% of the codes were in the excellent (above 0.75) category established by Cicchetti (1994). Those not reaching the excellent standard were: the global ratings for empathy/understanding ($ICC = 0.5184$) and spirit ($ICC = 0.5846$), and complex reflections ($ICC = 0.5764$).

Sensitivity of the MITI in identifying improvement of MI technique after training was evaluated using 20 pairs (baseline and post-training) of tapes. Paired sample t-tests were used to

assess differences and revealed that the therapists after training had improved significantly in empathy ($t(18)=5.99$, $p<0.0005$), and spirit ($t(19)=4.94$, $p<0.0005$), and used more complex reflections ($t(19)=3.73$, $p=0.001$). For the summary scores, there were increases in: total reflections ($t(19)=2.60$, $p=0.018$), percentage of complex reflections ($t(19)=2.35$, $p=0.03$), reflection to question ratio ($t(19)=3.01$, $p=0.007$) (Moyers et al., 2005). The overall results indicated the MITI is an effective measure of entry-level competency in MI techniques, which is the level the RDs participating in the VWH should be exhibiting.

The data collection instrument that will be used in this study also has a section focusing on traditional counseling methods and patient motivation that was developed by the researchers using both inductive and deductive codes. The deductive codes were determined using information from the review of literature conducted on motivational interviewing and other nutritional counseling techniques. Inductive codes resulted from listening to two interviews and refining the established deductive codes and adding new information. The codes and definitions were established to ensure consistency between the raters, and includes the code, a definition, and at least one quote or example to further describe the code. This portion of the tool was validated using the expertise of two experienced RDs from the Hines VA.

Seven questions will be used to evaluate the RD's use of traditional counseling methods during the session. The rater can use responses of Yes or No in response to each question. Four questions of this set will be used to evaluate fidelity: *Does RD review a typical day with patient? Was dietary behavior assessed through diet recall or food frequency questionnaire? Did the RD set goals for the patient (as opposed to the patient setting his own goals)? Is progress towards goals evaluated by the RD rather than the patient?* A threshold of 75% will be set to determine fidelity; if there are 75% or more answers of "Yes" for each question, this will be considered

high fidelity. The remaining three questions will be used to look at the use of traditional counseling techniques among RDs: *Is the RD giving advice rather than letting the patient drive the session? Did the RD talk more than the patient? Did the RD attempt to persuade the patient?* These questions are behaviors that are inconsistent with the spirit of MI, but may be common among RDs. Evaluating these questions should reveal further information as to whether the RD was practicing MI techniques in the counseling session. If 2/3 of the answers to these three questions are “Yes”, the researcher will consider the RDs were not adhering to MI techniques. This data will be used in conjunction with the findings from the MITI scale to establish overall adherence to MI technique.

Patient motivation to change exercise and diet behavior will be assessed using a seven-point Likert scale (1=low, 7=high). A score of 6 or above will indicate a patient is motivated to change. This is strictly a subjective rating and scoring.

Data collection procedures

Data will be collected by one RD (Lisa Korpolinski, RD, CDE) from the Hines VA Hospital in Maywood, IL, and one dietetic intern (Lorry Luscri, MPH) from the Hines VA. Data collection sheets have been developed to use with each tape/transcript. In addition, transcripts will be highlighted and noted with important quotes or other qualitative information to be included in the final analysis. The information obtained on the data collection form will be transferred to an SPSS data collection spreadsheet which will be used to conduct the data analysis. The research team at the Hines VA and in Ann Arbor will communicate via conference call and e-mail to ensure progression of the data collection and appropriate analysis of the data.

Statistical analysis

Much of the data collected in this study can be reported utilizing frequency distributions. To report the overall findings of the qualitative part of the study, statistical analysis as well as direct quotes from the interviews will be used. In addition, the specific research questions will be addressed using the data analysis described below.

The variables that will be most helpful in analyzing the consistency of counseling sessions between RDs include the percent of MI adherent behaviors and the total number of affirmative answers on specific traditional counseling behaviors exhibited by the dietitians. The percent of MI adherent behaviors will be compared across sites. The four specific questions on the topic of traditional counseling that will be used to evaluate fidelity (*Does RD review a typical day with patient? Was dietary behavior assessed through diet recall or food frequency questionnaire? Did the RD set goals for the patient (as opposed to the patient setting his own goals)? Is progress towards goals evaluated by the RD rather than the patient?*) will be reported with a frequency distribution of yes and no answers. A threshold of 75% of “yes” answers will be considered high fidelity. The percentage of yes and no answers will be reported.

Proficiency in MI techniques will be evaluated using the thresholds outlined in Moyers et al. (2007). The first data to consider is the overall global spirit rating (the sum of the scores of evocation, collaboration, autonomy/support divided by three), with an average of 3.5 indicating beginning proficiency in MI, and a rating of 4 or above indicating competency in MI. These global scores will be assessed using frequency distributions. The other thresholds used by Moyers et al. (2007) to assess proficiency in MI include: Percent MI adherent behaviors (total number of MI adherent behaviors/(MI adherent behaviors + MI non-adherent behaviors)), with 90% indicating beginning proficiency in MI technique, and 100% indicating competency;

percent open questions (number of open questions/total number of questions), with 50% considered beginning proficiency and 70% considered competency; percent complex reflections (number of complex reflections/total reflections) 40% indicating beginning proficiency, and 50% indicating complex proficiency. A reflection to question ratio (total number of reflections /total number of questions) of 1 indicates beginning proficiency, and 2 indicates competency. These results will be compared across sites to determine if the RDs at some sites were more proficient at MI than RDs at other sites.

The three questions assessing the use of traditional counseling techniques that are inconsistent with the spirit of MI (*Is the RD giving advice rather than letting the patient drive the session? Did the RD talk more than the patient? Did the RD attempt to persuade the patient?*) will be analyzed by totaling the number of “yes” responses to these questions. If 67% of the answers to these three questions are “Yes”, the researcher will consider the RDs not adhering to MI techniques. This information will be reported as a frequency.

Motivation of patients to make changes will be analyzed using a seven-point Likert scale. A score of 1-2 will indicate a patient is not very motivated, 3-5 will indicate a patient is somewhat motivated, and a score of 6 or above on the scale will indicate a patient is highly motivated to change. This data will be reported using frequency distributions and will be analyzed for both motivation to improve diet and motivation to improve exercise behavior. In addition, the percentage of motivated patients at each site will be compared to determine if patients at certain sites were more motivated than others.

Quality control procedures

When developing a tool for coding and analyzing data, content validity must be established to guarantee the items on the tool are effective, practical, and rational. In this project,

the validated MITI tool will be used to analyze proficiency in MI, but the other data will be analyzed with a tool developed by the research team. Content validity for items on the data collection instrument has been established through several meetings of professionals with a range of knowledge and specialty expertise in motivational interviewing, traditional nutrition counseling, and the original study. The team who reviewed the instrument for content validity includes: the original investigators for the VWH, a PhD candidate from the University of Michigan specializing in motivational interviewing, and two dietitians and one dietetic intern from the Edward Hines, Jr. VA Hospital.

Inter-rater reliability will be established between the two researchers analyzing the data. Reliability of the responses on the instrument will be assessed using the Cohen's Kappa statistic, which will take into account chance agreement.

Both researchers who will be collecting data have completed the Health Insurance Portability and Accountability Act (HIPAA) training and the good clinical practice training.

Potential benefits

The benefit of this study is the ability to provide data on fidelity of counseling techniques in order to provide validity of the results in the VWH study. Results of this study may also give the participating RDs insight as to whether they are actually following the counseling technique they believe they are using. Many RDs may assume they are using MI techniques, and may benefit from the information confirming or refuting this.

Potential risks, discomforts, inconveniences, and precautions

The only risk in this study is that of a breach in confidentiality.

Confidentiality issues

The RDs conducting the counseling sessions will be identified with only their first initial and site name so no personal information about the RD will appear on data collection forms or the aggregate data. No personal information on the patient receiving counseling will be recorded. The data collection forms, the taped sessions, and the transcripts will remain in a locked office at the Hines VA throughout the study and will be sent back to the Ann Arbor VA upon completion of the study. The computer files with aggregate data will be stored on a password-protected server at Hines.

Results

Twenty-eight counseling sessions were reviewed by the two raters. Each participating site provided a sample of tape recorded counseling sessions (Table 1). Six sessions were reviewed and evaluated from sites one, five, and six. Two were reviewed from site three, and eight from site four. Each of the raters independently listened to the sessions with the accompanying transcripts. In the VWH study, RDs counseled the patients on six occasions. Table 1 also indicates the visit number of the session submitted by each site. No initial visits were submitted. Sites one, four, and six submitted a larger variety of visits, while site five submitted only early visits, and site three only submitted late visits.

Table 1. Counseling sessions from the VWH study; number of sessions and session number.

Site number	Site name	Sessions evaluated (n)	Visit #2 (n)	Visit #3 (n)	Visit #4 (n)	Visit #5 (n)	Visit #6 (n)
1		6	2	2		1	1
3		2				2	
4		8	3		2	3	
5		6	3	3			
6		6		1	2	1	2

After collecting data independently, the Kappa statistic was used to determine inter-rater agreement of items listed in Table 2. Kappa was calculated for each of the five items on the MITI 3.0 to determine RDs' proficiency in using MI. These items include: overall spirit score, percent MI adherent behavior counts, percent open questions, percent complex reflections, and reflection to question ratio. After the raw scores were collected from each rater, these items were evaluated and grouped into three categories based on the standards set by the MITI 3.0. The three categories were: 1) not reaching beginning proficiency in MI, 2) meeting beginning proficiency

levels, or 3) meeting competency levels. These categories were used to determine inter-rater agreement for items on the MITI 3.0. The lowest Kappa statistic of these five items was percent complex reflections (0.402), and the highest agreement was found with the reflection to question ratio (0.818).

Seven yes/no questions were included in the evaluation to measure the presence or absence of traditional counseling methods used by RDs. The inter-rater agreement on these seven items ranged from 0.484 – 0.778.

Finally, patient motivation (as perceived by the raters) to make diet behavior changes and patient motivation (as perceived by the raters) to make exercise behavior changes was subjectively assessed. Inter-rater agreement for these items was 0.646 and 0.641, respectively. The subjective rating of patient motivation to change eating and exercising behavior was measured on a seven-point Likert scale then collapsed into three categories: not motivated (1-2 on the Likert scale), somewhat motivated (3-5 on the Likert scale), and highly motivated (6-7 on the Likert scale).

Table 2. Inter-rater agreement on data submitted by both raters from taped counseling sessions reviewed from the VWH study.

Item	No. of sessions	Kappa	p-value
Percent complex reflections on the MITI 3.0	28	0.402	0.005
% MI adherent behavior counts on the MITI 3.0	27	0.649	<0.001
Overall spirit score on the MITI 3.0	28	0.759	<0.001
% Open questions on the MITI 3.0	28	0.818	<0.001
Reflection to question ratio on the MITI 3.0	28	1.0	<0.001
Direction of the session was driven by the RD	28	0.484	<.005
The RD was prescriptive in giving advice	28	0.488	<0.001
The RD used persuasive language with the patient	27	0.560	<.001
Dietary behavior was assessed through diet recall or food frequency questionnaire	28	0.588	<0.001
Patient Motivation - Exercise	28	0.641	<.001
Patient Motivation – Diet	28	0.646	<.001
The RD set goals for the patient	27	0.690	<0.001
Progress towards goals was evaluated by the RD	24	0.778	<0.01
The RD reviewed a typical day with patient	27	0.919	0.001

Table 3 shows each item from the MITI 3.0 indicating proficiency in MI and the criterion used to establish the proficiency levels as outlined by Moyers et al., 2007. The data revealed that in general, the RDs were not meeting the beginning proficiency levels. The RDs did not use reflective listening often, illustrated by not meeting the suggested 1:1 ratio of reflections to questions. However, of the sessions where there was inter-rater agreement between the two raters, almost half of sessions reached competency level for percent complex reflections. This indicates that although there were fewer reflections than what would be considered good MI practice, when the RDs were using reflections, they were often complex reflections. A few reached competency levels for the overall spirit score (20%).

Table 3. Proficiency of Motivational Interviewing of Registered Dietitians who participated in the VWH study as measured by the MITI 3.0*.

Code	No. of sessions with inter-rater agreement (n)	Below beginning proficiency levels n (%)	Meets beginning proficiency levels n (%)	Reaches competency levels n (%)
Overall spirit score	25	18 (72%)	2 (8%)	5 (20%)
% MI adherent behavior counts	26	25 (96%)	1 (4%)	0
% Open questions	26	20 (77%)	5 (19%)	1 (4%)
Percent complex reflections	18	9 (50%)	1 (6%)	8 (44%)
Reflection to question ratio	28	28 (100%)	0	0

*See Appendix A

In order to compare overall quality of MI across the participating sites, a point system was devised to assign values to each session meeting the proficiency levels established by the MITI 3.0. Sites were given 10 points per session that met competency levels for each component of the MITI 3.0 and five points per session that met beginning proficiency levels. Sessions that did not reach the beginning levels of proficiency did not get any points. The results of the comparison using this point system are shown in Table 4. This overall comparison indicates that site six had the best use of MI techniques, and site three did not do as well with using MI techniques. Sites one, four, and five, were very similar in their ability with to implement MI techniques. This table also shows the measured areas of MI techniques that the sites had most success putting into practice. The sites did better in the percent of complex reflections category and overall spirit score than other categories. Similar to results in table 3, this data also shows

sites seemed to struggle with reaching even beginning levels of reflection to question ratio and the percent of behaviors that are MI in nature.

Table 4. Overall quality of Motivational Interviewing by sites who participated in the VWH study as measured by the MITI 3.0.

n = number of sessions with inter-rater agreement

Items on the MITI 3.0	Site 1		Site 3		Site 4		Site 5		Site 6		All sites	
	Points	n	Points	n								
Overall spirit score	5	6	5	2	20	6	10	6	20	5	60	25
Percent MI behaviors	0	6	0	2	0	7	5	5	0	5	5	25
Percent open questions	5	6	0	2	10	7	10	6	10	5	35	26
Percent complex reflections	30	6	0	0	5	3	10	3	40	6	85	18
Reflection to question ratio	0	6	0	2	0	8	0	6	0	6	0	28
Total MITI 3.0 components	40		5		35		35		70			

Table 5 indicates the percent of sessions in which RDs used certain components of traditional nutrition counseling. The first four items were intended to illustrate the fidelity of counseling used by RDs across all sites. In 20 of 24 sessions (83%), RDs were using a diet recall or food frequency questionnaire to assess dietary behavior, and in 21 out of 23 sessions (91%), RDs were evaluating the patients' goals rather than letting the patient evaluate his own progress toward goals. The arbitrary cut point set in this study was 75%, indicating that if $\geq 75\%$ of sessions complied with a particular behavior, the researchers would consider this a high level of fidelity of treatment among sites/RDs. In two of the four items used to indicate fidelity, this 75% cut point was met.

The last three items were included in the evaluation process to serve as a check and balance against questions from the MITI 3.0 to assess RDs' proficiency in MI. These items reflect behaviors not considered to be MI behavior. The arbitrary cut point set for these items was 67%; if 67% of the sessions demonstrated these behaviors, this would be considered not using MI techniques. Two of these three items met this criteria, indicating the overall counseling techniques exhibited by the RDs were not MI in nature. The item not meeting this criteria was using persuasive language with the patient. However, the RDs used persuasive language in 52% of the 21 matched sessions.

Table 5. Commonalities found in content of counseling sessions used by Dietitians who participated in the VWH study.

Item	Content of counseling session	Sessions with inter-rater agreement (n)	Frequency of use (n)	Frequency of use (%)
1	The RD reviewed a typical day with patient	26	9	35%
2	Dietary behavior was assessed through diet recall or food frequency questionnaire	24	20	83%
3	The RD set goals for the patient	22	15	68%
4	Progress towards goals was evaluated by the RD	23	21	91%
5	The RD was prescriptive in giving advice	22	17	77%
6	Direction of the session was driven by the RD	21	14	67%
7	The RD used persuasive language with the patient	21	11	52%

Table 6 shows the RDs' proficiency of MI as indicated by the overall spirit score. Sites four, five, and six had some sessions that were rated as meeting the levels of competency for overall spirit score. The majority of sessions were rated as not meeting beginning proficiency standards. The overall global spirit rating is calculated by adding the global scores of evocation, collaboration, autonomy/support and dividing the sum by three, with an average of 3.5 indicating beginning proficiency in MI, and four or above indicating competency in MI (Moyers et al., 2007).

Table 6. Proficiency of Motivational Interviewing of Registered Dietitians who participated in the VWH study: overall spirit score

	No. of sessions with inter-rater agreement (n)	Below beginning proficiency levels n (%)	Meets beginning proficiency levels n (%)	Reaches competency levels n (%)	Total point value for overall spirit score
Site 1	6	5 (83%)	1 (17%)	0	5
Site 3	2	1 (50%)	1 (50%)	0	5
Site 4	6	4 (67%)	0	2 (33%)	20
Site 5	6	5 (83%)	0	1 (17%)	10
Site 6	5	3 (60%)	0	2 (40%)	20

Table 7 shows results from the rating of percent MI behavior. Only one session of those reviewed met the beginning levels of proficiency for overall spirit of MI behavior. This session was from site five. All other sessions did not meet beginning proficiency standards. Percent MI adherent behaviors is calculated by total number of MI adherent behaviors/(MI adherent behaviors + MI non-adherent behaviors), and 90% indicates beginning proficiency in MI technique, and 100% indicates competency (Moyers et al., 2007).

Table 7. Proficiency of Motivational Interviewing of Registered Dietitians who participated in the VWH study: percent MI behaviors

	No. of sessions with inter-rater agreement (n)	Below beginning proficiency levels n (%)	Meets beginning proficiency levels n (%)	Reaches competency levels n (%)	Total point value for percent MI behaviors
Site 1	6	6 (100%)	0	0	0
Site 3	2	2 (100%)	0	0	0
Site 4	7	7 (100%)	0	0	0
Site 5	6	5 (83%)	1 (17%)	0	5
Site 6	5	5 (100%)	0	0	0

Table 8 illustrates the RDs' proficiency of MI as measured by the percent of questions asked by the RD as open questions rather than closed questions. One session from site four met the levels indicated as competency. The majority of the sessions did not meet beginning proficiency, but a total of five (one from site one, two from site five, and two from site six) met

the beginning levels of proficiency. If 50% of the total questions asked by the RD are open questions (number of open questions/total number of questions), this is considered beginning proficiency; if 70% are open questions, this is considered reaching competency levels (Moyers et al., 2007).

Table 8. Proficiency of Motivational Interviewing of Registered Dietitians who participated in the VWH study: percent open questions

	No. of sessions with inter-rater agreement (n)	Below beginning proficiency levels n (%)	Meets beginning proficiency levels n (%)	Reaches competency levels n (%)	Total point value for percent open questions
Site 1	6	5 (83%)	1 (17%)	0	5
Site 3	2	2 (100%)	0	0	0
Site 4	7	6 (86%)	0	1 (14%)	10
Site 5	6	4 (67%)	2 (33%)	0	10
Site 6	5	3 (60%)	2 (40%)	0	10

In Table 9, the RDs' proficiency of MI is indicated using the measure of the percent of complex reflections used as opposed to simple reflections. This was an area in which the RDs reached higher levels of competency. Four of six sessions from site six (67%) met the competency level, and 50% (three of six sessions) from site one reached competency levels. Forty percent complex reflections (number of complex reflections/total reflections) indicates beginning proficiency, and 50% indicates proficiency (Moyers et al., 2007).

Table 9. Proficiency of Motivational Interviewing of Registered Dietitians who participated in the VWH study: percent of reflections are complex

	No. of sessions with inter-rater agreement (n)	Below beginning proficiency levels n (%)	Meets beginning proficiency levels n (%)	Reaches competency levels n (%)	Total point value for percent complex reflections
Site 1	6	3 (50%)	0	3 (50%)	30
Site 3	0				0
Site 4	3	2 (67%)	1 (33%)	0	5
Site 5	3	2 (67%)	0	1 (33%)	10
Site 6	6	2 (33%)	0	4 (67%)	40

No sessions evaluated in this study met the beginning levels of competency for reflection to question ratio, as shown in Table 10. A reflection to question ratio (total number of reflections /total number of questions) of 1:1 indicates beginning proficiency levels, and 2:1 indicates competency.

Table 10. Proficiency of Motivational Interviewing of Registered Dietitians who participated in the VWH study: reflection to question ratio

	No. of sessions with inter-rater agreement (n)	Below beginning proficiency levels n (%)	Meets beginning proficiency levels n (%)	Reaches competency levels n (%)	Total point value for reflection to question ratio
Site 1	6	6 (100%)	0	0	0
Site 3	2	2 (200%)	0	0	0
Site 4	8	8 (100%)	0	0	0
Site 5	6	6 (100%)	0	0	0
Site 6	6	6 (100%)	0	0	0

Figures 1 and 2 illustrate percentage of patients who were assessed by both raters as unmotivated, somewhat motivated, or highly motivated at each site. In these figures, it is clear that most participating patients were somewhat motivated in both diet and exercise. Few patients were unmotivated. Site six had the highest percentage of patients who were highly motivated. Although sites four and five had highly motivated patients, those sites were also the only sites to

have unmotivated patients. In Appendix B, evaluation of patient motivation for diet and exercise for each site is shown in more detail.

Figure 1

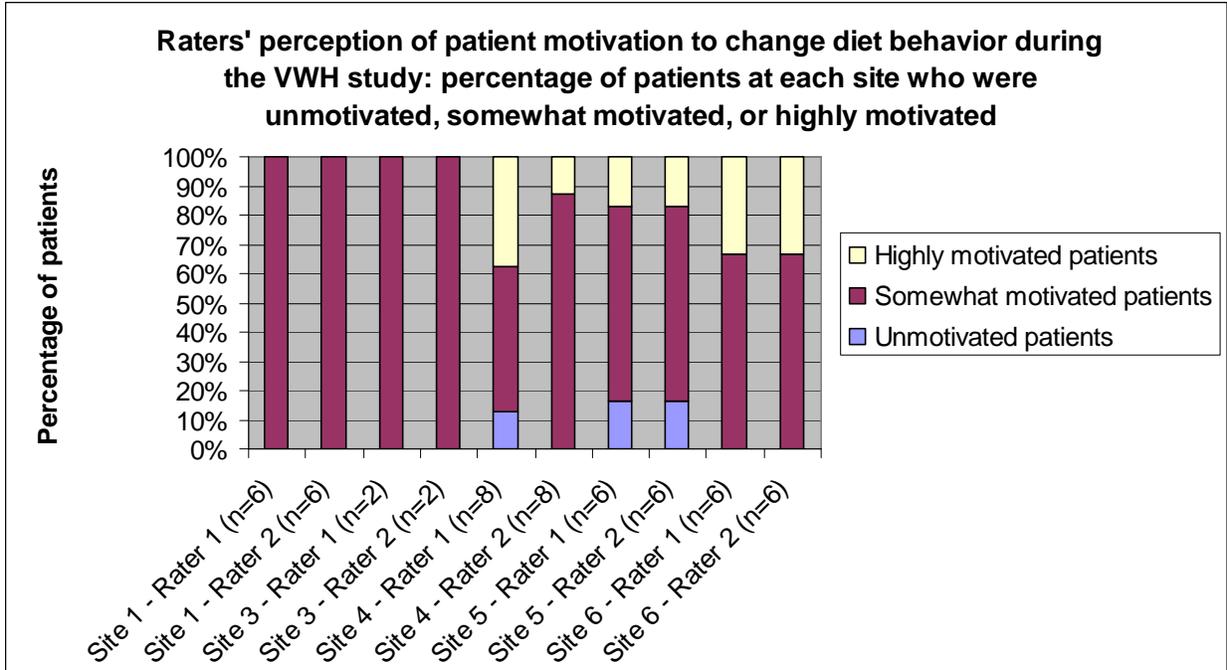
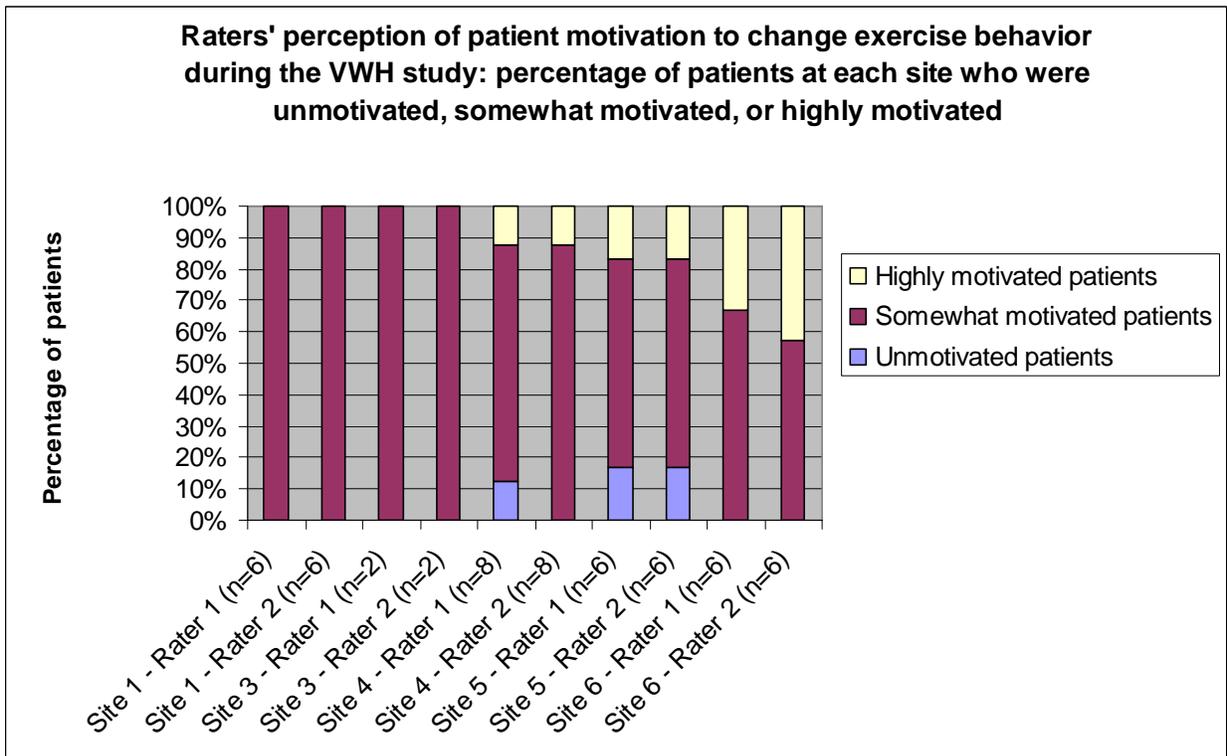


Figure 2



Discussion

In general, the RDs participating in the VWH study did not exhibit competency in using MI techniques, and often were not reaching the beginning proficiency levels. It should be noted that the thresholds set by the MITI 3.0 as outlined in the methodology are quite high, and may not be appropriate standards for the nutrition counseling field. However, as indicated by the results for the overall spirit score, there were several sessions where the RD exhibited higher levels of MI competency. The overall spirit score is composed of three components: evocation, collaboration, and autonomy and support. The creators of the MITI 3.0 further define each of these concepts by describing what types of behaviors would be considered MI-adherent for that category, and which would be non MI-adherent. The researchers found several good examples of RDs using MI-adherent behaviors for these categories. For example, one component of evocation is eliciting change talk: *“Now when you eat all that sugar, how does that make you feel?”* The non MI-adherent type of behavior would be to provide the patient reasons for change rather than eliciting change talk from the patient: *“So maybe we’ll keep that as a goal just because your blood pressure was still pretty high today.”* Other examples of MI-adherent and MI non-adherent behaviors for evocation are listed in Appendix C.

Collaboration is also a very important aspect of the spirit of MI. Collaboration involves working with the patient in a mutual fashion to help the patient meet goals. In situations where the RD acts as an expert or takes an authoritarian role in the session, that is considered non-MI behavior. To a certain degree, this is unavoidable as the RD really is the expert and should be educating the patient, however, it is imperative to assure the patient is interested in the information and willing to receive it. The RDs often exerted an “expert” role by giving

information to the patient when he did not ask questions or inquire about the issue discussed by the RD. Examples of these behaviors are listed in Appendix C.

The final component of the overall MI spirit score is autonomy/support. The RDs in the VWH study were skilled in giving encouragement and praise (*i.e.*, “*You can do it!*”). This is an important part of establishing rapport with patients and encouraging a collaborative and open environment. Overall there were numerous examples of MI-adherent behaviors in autonomy and support. There were also occasions when the RD was more pessimistic about a patient’s ability to change, or took away from the patient’s ability to make his own decisions. These types of behaviors are considered non-adherent to the spirit of MI. Examples of these behaviors from the study are listed in Appendix C.

The RDs did not meet the basic proficiency levels for percent of behaviors are MI-adherent. The MI-adherent behaviors exhibited by the RDs were mostly in the form of affirming or supporting the patient’s actions (“*Good job!*” or “*Excellent!*”) or thoughts (“*I think that’s a very good idea.*”) as positive progress towards the goals. This seems to be the easiest form of MI-adherent behavior for the RDs to demonstrate, as the researchers did not find very many examples of asking permission before giving information or educating the patient, or emphasizing that patient’s role of control. For the most part, educational materials or general information was given without regard to whether the patient was ready for information or willing to make further changes in the specific area addressed. Appropriate MI behavior in a situation where the patient exhibits resistance is not to advise or direct the patient to make changes the RD considers beneficial (MI non-adherent behaviors), but to emphasize the patient’s ability to make decisions for themselves (to change or not to change) or roll with this resistance. Another area where MI-adherent behaviors should be used are helping a patient establish action steps toward

achieving goals. To do this, RDs in this study used phrases such as: *“How are you preparing to do that?”*

The MI non-adherent behaviors in the sessions often occurred when the RD gave the patient information (handouts or facts) without exploring the patient’s readiness for this information or inquiring whether this information would be helpful or accepted by the patient.

RD: “Anything else that we need to think about?” Patient: “Not really. Just food intake, the times that I eat, and keeping with my walking program. I mean, that all seems to be the key to it you know.” RD: “You know, you’re right. I was just trying to think if... actually, there’s another form here about behavior changes. It talks a little bit more about avoiding overeating. Maybe this would be helpful for you to take a look at. And there’s also some more forms on portion sizes, so I’ll give you some of those.” The alternative approach to this type of information-giving could be to simply ask *“Would you be interested in...?”* *“Would you like some more information on...”* There are also more subtle ways to inquire whether the patient is interested in further change and/or information, such as this example by one of the study RDs: *“...your weight has been stable from October until now so you got through the holidays with no weight gain, so that’s really good. But if you want to try to trim the calories a little bit more, that would actually be a great place to do it and it would help your blood sugar control as well.”* Another example: *“Well I’m wondering if you would like to, if you’re interested in discussing some alternatives for the soda just because it is a fair amount of sugar that you’re getting?”* or *“Is there a topic that you’re interested in...”* Another good question to ask to assess patients’ interest in change is: *“Are you comfortable with that?”*

In addition, some of the RDs were very directive or even confrontational with patients, which is non-MI in nature. Some examples of these occurrences were: “

- *When you get in the habit of doing something, you get accustomed to it so then when you go back to it, it doesn't taste as good.”*
- *“Okay, we can't be in denial here. We've got to...I make you go home and measure it.”*
- *“We're not going to lose 10 pounds doing this are we?”*
- *RD: “What about regular pop?” Patient: “Two or three a week? Well only 2, 3, 4 cans a week. That's what I now drink.” RD: “Okay and why are you not drinking diet pop?”*

One of the benefits to listening to the sessions as well as utilizing the transcripts is that the raters were able to pick up vocal cues from the RDs and the patients to discern overall tone and attitude. For example, in one session, the RD made the following statement in an accusing tone to the patient: *“You have no idea what you had to eat??”* Confrontational or authoritative attitudes and statements will lower the percent of MI-adherent behavior, as well as the autonomy/support score, and therefore the overall spirit score.

Other instances of non-MI behaviors include cases where the RDs were prescriptive or authoritative by setting goals for the patient instead of allowing the patient to initiate his own goals. *“If you increase 10% from the 3898, it would be 3937, if you increase 25%, it'll be 4963. Do you want to set a new goal of 4000 a day?”* RDs also exercised authority with patients by imposing rules or behaviors on patients: *Patient: “Does it matter what kind of fat?” RD: “Well in ice cream, it's, you don't have much choice, it's saturated fat which is the bad fat, what trans fats look like. Alright, it's not just trans fats that are bad, it's saturated fats that are bad too.” Patient: “What about butter?” RD: “Same thing. That's a saturated fat, that's a no-no.*

And any margarines you use need to be the reduced fat, low fat margarines and it needs to be in tub.”

The RDs in the VWH study from sites one, five, and six had some sessions meeting beginning proficiency for the percent of open questions. The use of closed questions is high in the nutrition discipline due to the use of diet recalls to collect information, and further clarifying questions about quantities, methods of preparation, and other details related to the items reported during the recall. Common examples of closed questions heard in the sessions included: *“Do you eat three meals a day?” “Is the soda regular or diet?” “Does it already have a marinade on it or something or is it just steamed?”*

Even though there were a large number of closed questions used in the sessions, the RDs also used open questions effectively in their counseling sessions. Open questions are crucial to MI because they establish rapport with the patient by getting the patient talking, allow the patient to have more of a collaborative role in the session, and help the patient to establish the willingness and momentum to move toward change.

One good practice that some of the RDs exhibited was using open questions to get information for the diet recall rather than just relying on closed questions. Good examples of this type of questioning included: *“Well what’s a typical evening meal for you?”* The same type of question can be used to get the patient discussing exercise: *“As a matter of fact, how have you been doing with the walking?”* An alternative strategy to establish rapport and set the stage for open communication is to begin the session with an open question such as: *“So how is everything going for you?” “So what changes have you made since the last time we talked?”*

Using open questions is also an excellent way to help the patient realize what changes he has made that has resulted in progress towards his goals. *“Now what are you doing differently*

than you had been doing before?” Another way to employ open questions is by asking “Any questions for me at this point?”

One of the areas the RDs in the study were most successful in using MI techniques was when using complex reflections. Although there were a low number of reflections used, a high percentage of the reflections were complex. Overall, the total number of reflections used by the RDs could be increased. One of the easiest ways RDs can use reflections in counseling sessions is to rephrase statements made by the patient in what is called a simple reflection.

Patient: “...instead of bread, I get the green beans.” RD: “So you’ve really started watching your bread intake?” or Patient: “I have an insatiable sweet tooth and so the other day, I just broke down and I bought a whole bag of Starbursts.” RD: “So it sounds like the pastries and the candies are still a big problem?”

Several of the RDs were using complex reflections in the counseling sessions. This interaction is a good example of how the RDs were using complex reflections: *“It sounds like you’ve made a lot of changes but you’re just feeling bad because you want to do more of something.” Patient: “No! I don’t enjoy it. I enjoy it while I’m eating it, but that’s it. Afterwards I feel guilty, and “I shouldn’t have done this” so I just stay away from it. It’s hard but I just have to do it. I’ve lived a long time without it, so why not?” RD: “Okay, so you feel it’s better for you to just avoid that rather than to think about just smaller quantities?”*

Three of the components of traditional counseling methods were also used to look at the RDs’ proficiency of MI. The results from these questions confirmed the findings from the MITI 3.0 tool, that the RDs were exhibiting behaviors that were non-MI in nature. Of note was the percentage of RDs using persuasive language with the patients, which is not considered MI behavior. Often if the RD was talking more than the patient, these RDs had lower overall MI

qualities in their session because much of the talking was giving information in an authoritative manner. Also if the patient was not talking very much, they were not as able to contribute in a collaborative manner to the session or express their own ideas about change. Whether or not the patient or the RD was evaluating progress toward goals was difficult to discern due to the use of the stages of change form. In practice, this form allows the patient to indicate how often they are performing certain behaviors, and thus compare the current behavior to the past behaviors as previously indicated on the form. After completing the form, the patient could evaluate how well he/she progressed on the items, or the RD could comment on the patient's progress without the patient's input.

The final element the researchers considered was the motivation of the patients participating in the study. It is important to note that if patients are already highly motivated in a counseling session, the ability to use MI is decreased. MI is best used when patients are not motivated or just slightly motivated, or what is called the precontemplation or contemplation stages of the stages of change. In these stages, patients either show no intention of changing and may actively resist change (precontemplation), or may recognize that change needs to occur but still exhibit an overall state of ambivalence about whether or not to change (contemplation). In this study, no patient was in the precontemplation phase, as precontemplative patients would not have chosen to enroll in the study. Only a few patients were labeled "unmotivated" by the raters. Overall, most of the patients were somewhat motivated, thus the RD may have not had as many opportunities for MI than if the patients would have been unmotivated. However it should be noted that using the SOC form, the patients were able to indicate the level of motivation on several behaviors, therefore giving the RD numerous opportunities for using MI on specific behavior changes if patients were less motivated in certain areas. In addition, those sites with the

more highly motivated patients (sites four, five, and six) were also the sites that exhibited more MI-adherent behavior, even if in theory they may not have had as many opportunities as those sites with less motivated patients.

An example found in the study that illustrates high patient motivation was: *“Yeah I have to because I’ve never been this heavy, this large, and this disproportioned in my life and it’s starting to become somewhat depressing and to think that summer’s just right around the corner and I need to get this beached body back into shape.”* Low patient motivation was exhibited by this patient: *“I’m at now, I’m..., what I have walked is like a maximum. It is like I have almost struggled to do that.”*

Regardless of the level of patient motivation, the researchers identified opportunities where the RD could have used MI but did not. The following is an example of a missed opportunity to use MI. *RD: “Right, and you are walking, I mean your activity is well so it means that you’re walking but maybe your caloric intake hasn’t decreased enough for the weight to come down.” Patient: “Yeah, I need to start the other physical exercise like maybe push ups, jumping jacks, and stuff like that.” RD: “Now what about the smaller portions?”* In this example, the patient wanted to discuss physical activity in more detail, but the RD directed him into a discussion about eating behavior. A more appropriate response by the RD would be to allow the patient to direct the session and respond to his concerns about physical activity. These types of missed opportunities will lower the global scale rating for autonomy/support and thus the overall spirit rating for the session.

There are some weaknesses to the methods in this study with regard to using the MITI 3.0 as an evaluation tool. Raters were not trained to use the MITI 3.0 as suggested by Moyers et al. (2007). The recommended training is a stepwise process involving approximately 40 hours of

practice. Due to the time constraints in this study, the raters familiarized themselves with the MITI 3.0 and its use and practiced with a few sessions prior to beginning the research. Each rater has also conducted extensive reading and research on the topic of MI, and use MI in their own counseling practices. The two intended uses of the MITI 3.0 are to measure the integrity of clinical trials of MI or to provide feedback about ways to improve MI practice in a non-research setting (Moyers et al., 2007). In this study, the MITI 3.0 was used in a slightly different way than the intended purposes. The tool was used to measure the fidelity of the RDs in using MI, but not as a way to provide feedback on an individual basis.

Moyers et al. (2007) also state that random, 20-minute segments of taped counseling sessions may be the most effective way to analyze the sessions, suggesting that longer time periods may result in decreased rater attention and increased difficulty making decisions on the global scales given an increased amount of data. Although the full length of the sessions were used in this research, the raters also had the transcripts to follow with the session. This eliminated the issue of decreased attention and neither rater found that an increased amount of information made the session more difficult to rate on a global scale. In addition, none of the sessions were over one hour in length. Finally, although the MITI 3.0 has been validated, the thresholds to determine proficiency or competency in MI have not been validated (Moyers et al., 2007), but they can be a good indicator of skill level in MI as well as fidelity of counseling between sites.

The sample used in this study does not allow for the results to be generalized to a larger population. The sample size in this study was small, and some of the sites (particularly site three) had few recorded sessions submitted for this study. There are a variety of ways reliability of the results could have been improved. Some possibilities include: more sessions could have been

submitted from each site or each site could have included sessions by several RDs (some sites had only one or two RDs who taped sessions). Ideally, all sessions would have been taped and analyzed in this study to increase reliability. If not all sessions were able to be taped, another possibility would have been to tape the same session number for each patient (for example, visit #4), so each session would have been analyzed when the patient was at the same time in the study.

Another thing to consider in the sample is that the patients in this study volunteered to participate, therefore the sessions and the level of motivation in this sample may not be similar to a larger population. Patients also had to agree to let the session be taped, which could indicate a selection bias; this group of patients as may have particular characteristics that those not agreeing to be taped did not have. In addition, the effect of taping the session may have influenced the behavior of the RD and/or the participant during the session.

The results of the study are valid, as inter-rater agreement was established between the two raters on most items. The item that was low in inter-rater agreement was percent of reflections are complex. Low inter-rater agreement on this item can be attributed to rater's differing opinions as to what constituted a "complex" vs. "simple" reflection. There were only two other items with inter-rater agreement <0.5 , which were two of items used to evaluate fidelity of counseling techniques across sessions. In the analysis of all items, sessions in which the raters did not agree were dropped from the results. Bias was eliminated in the study as the raters were blind to site of the sessions as they were evaluating them.

Because the MITI 3.0 does not evaluate the patient's motivation or stage of change, additional questions were added by the researchers to the evaluation tool used by the raters to assess patient's motivation to change diet behavior, as well as motivation to change exercise

behavior. The taped sessions were used in conjunction with a written transcript, increasing the ability for the raters to form accurate judgment about the MI behaviors and the patient motivation as the tone and inflection of the RD and the patient was heard. Much can be discerned about the patient-RD relationship by listening to vocal cues.

Although this study adds to the limited base of knowledge and research of the use of MI in the scope of counseling done by RDs, the ability to generalize to larger populations is restricted due to the sample used. However, the practical significance of the research is that RDs may be able to understand the concept and application of MI and how it can be utilized in the field of nutrition counseling. Many RDs believe they are using MI to its full capacity in their counseling practice, but may see that there are many areas they could focus on to increase success in using these techniques. In addition, this study shows the great importance of training RDs in this technique. Even with the amount of standardized training provided to these RDs, the ability of RDs to exhibit proficiency in MI was minimal, and differences between the use of MI at different sites were noted. Finally, to fully implement and gain benefits from the use of MI in nutrition counseling, ongoing supervision and continuing education involving constructive feedback and evaluation to improve practice is necessary.

This study indicates a need for further research in evaluating MI techniques in nutrition counseling, as well as evaluating the use of these techniques in conjunction with outcomes. Also, given raters in this study perceived the patients as somewhat motivated, which may have decreased ability for RDs to use MI techniques, another area that could be explored is the association between patient motivation, use of MI technique, and outcomes. More appropriate thresholds on the MITI 3.0 for nutrition counseling may need to be developed to evaluate proficiency in MI in this discipline.

Conclusion

Overall, there was a fair level of fidelity in the types of counseling techniques used by the RDs in the VWH study. The majority of the RDs in the study did not demonstrate proficiency in MI as measured by the MITI 3.0. Most veterans participating in the VWH study were somewhat or highly motivated to change diet and exercise behavior.

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Appendix A

Data collection tool

Appendix B

Raters' evaluation of patient motivation for diet and exercise at each site

Figures 1 – 5 show each rater’s evaluation of patient motivation for diet and exercise for each site. At sites one and three, all patients were somewhat motivated for both exercise and diet, but none were highly motivated. The other three sites had some patients who were highly motivated in either diet or exercise, or both. According to the perception of the evaluators, site six had the most highly motivated patients.

Figure 1

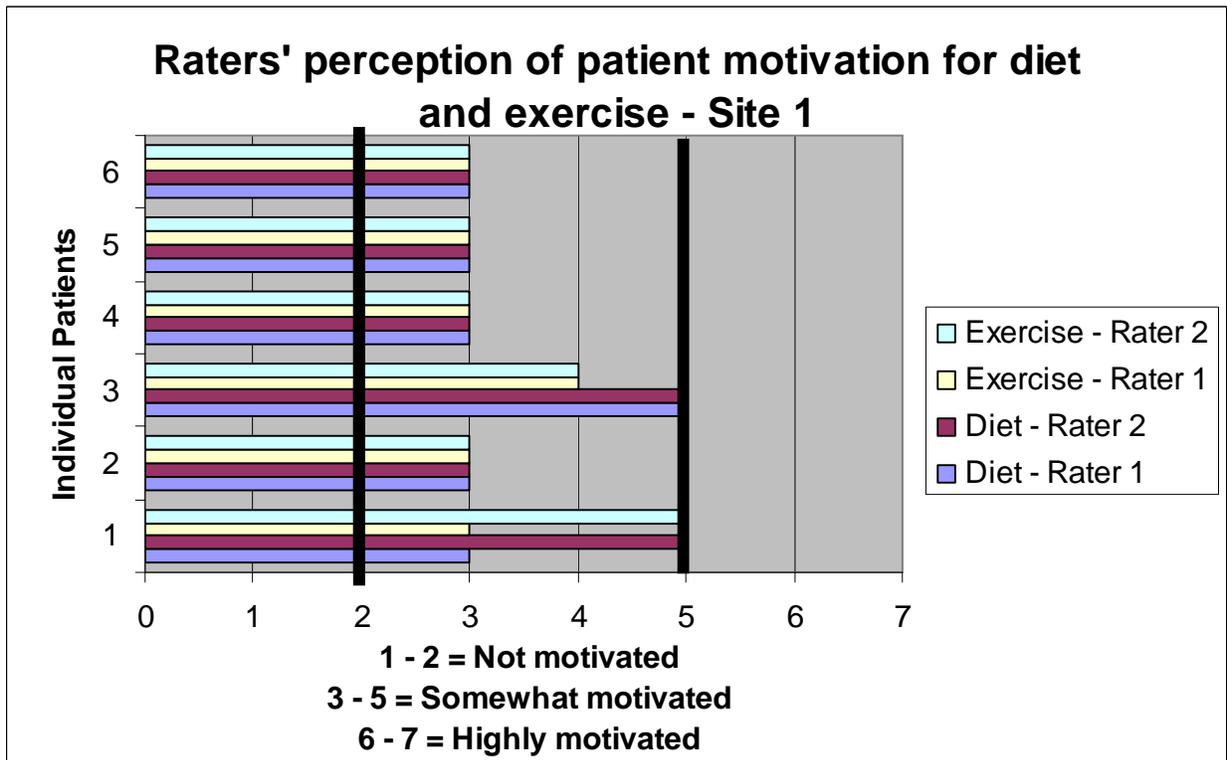


Figure 2

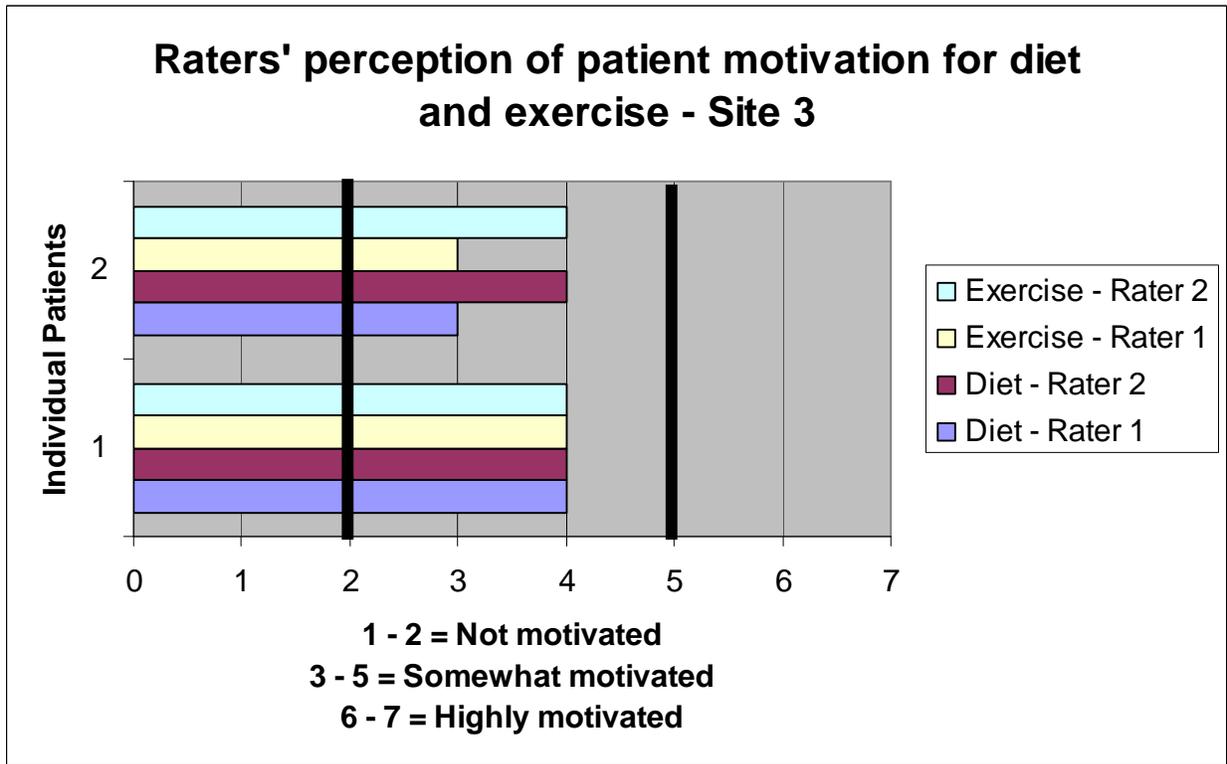


Figure 3

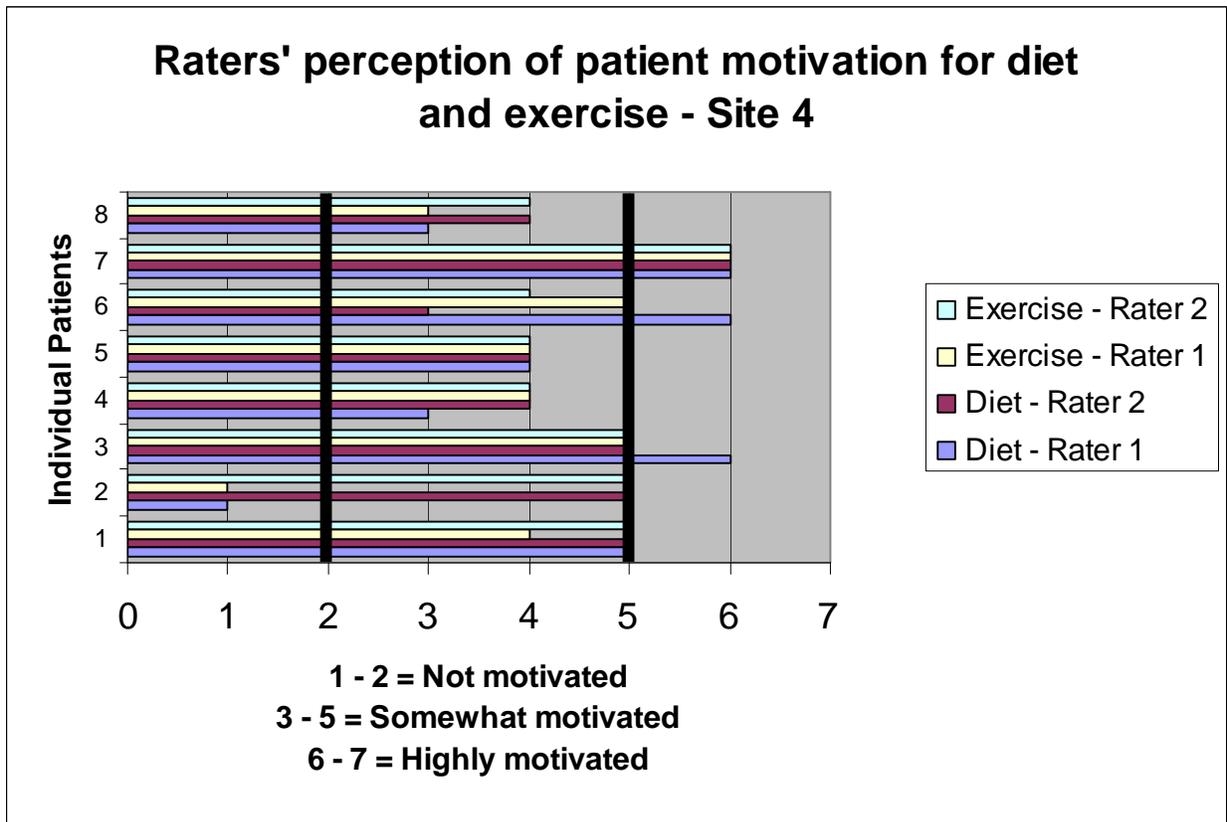


Figure 4

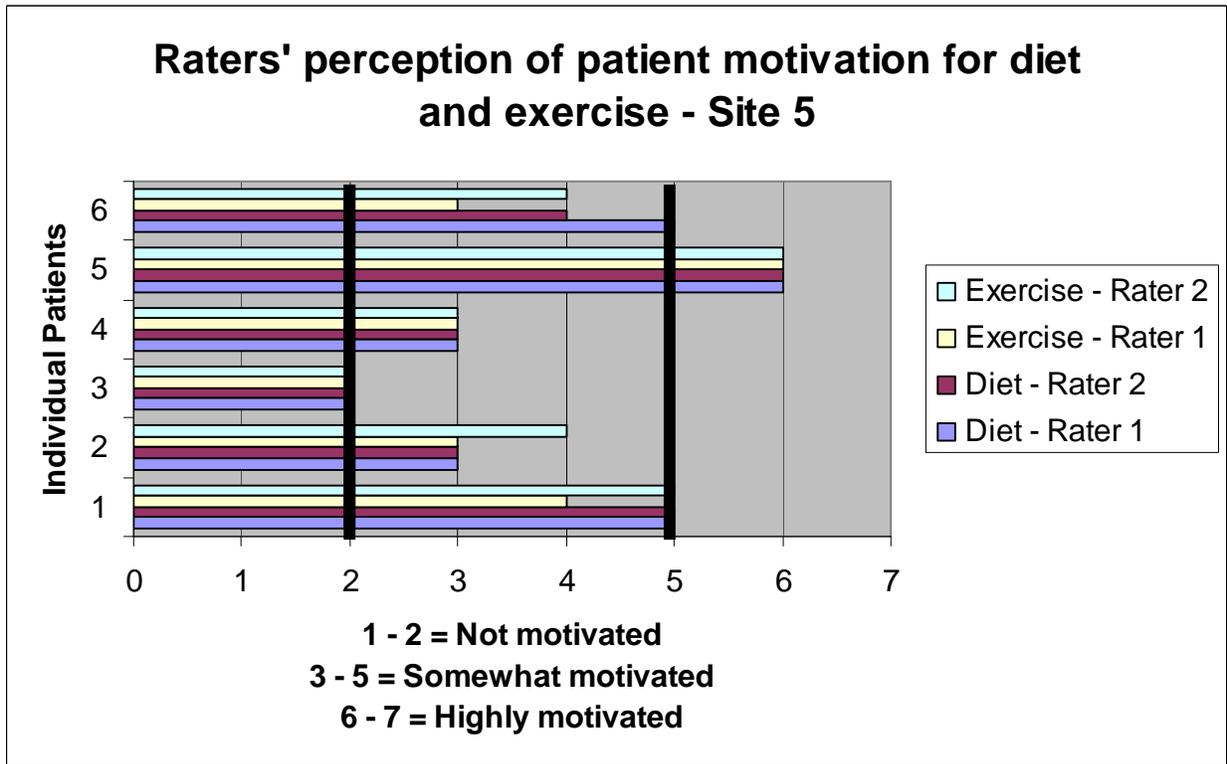
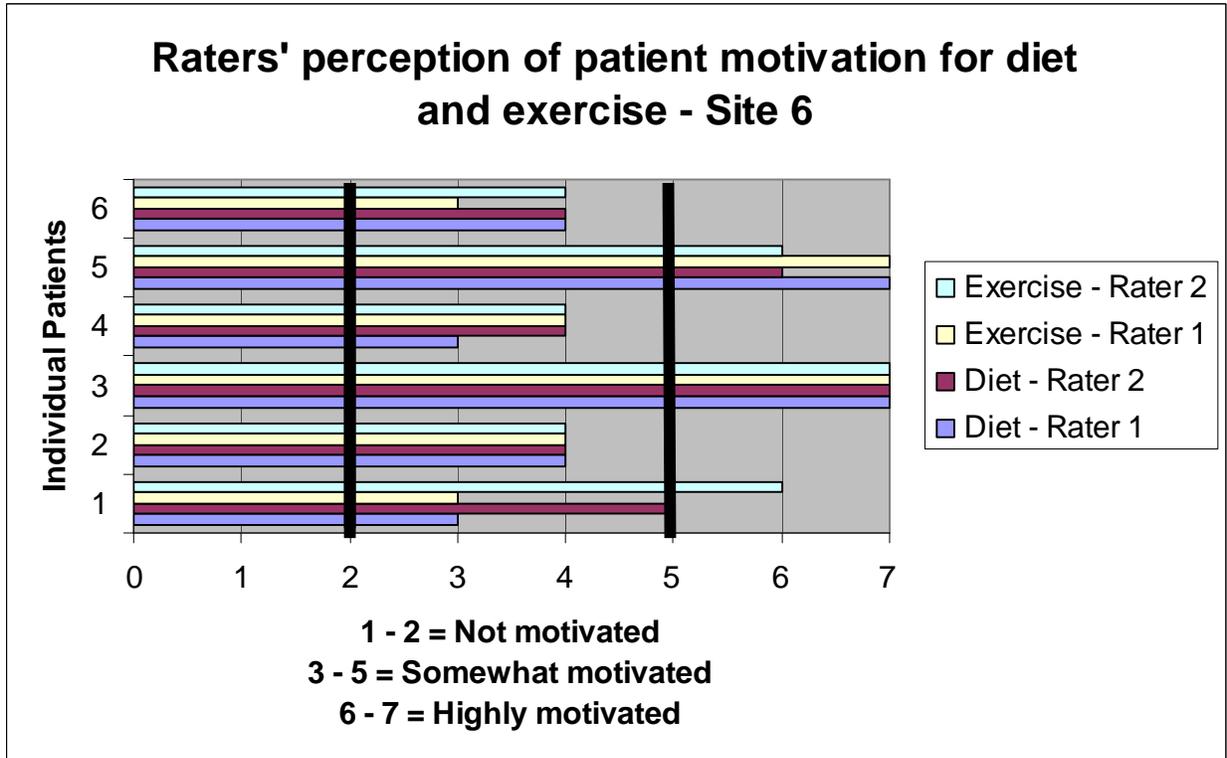


Figure 5



Appendix C

Examples of MI adherent and MI non-adherent comments affecting the overall spirit score

Evocation

MI adherent

- RD evokes the patient's reasons for change and ideas about how that may happen
 - *Patient: "Yeah, I wasn't as uncomfortable as I've been in the past, you know, because you sit there and overeat and so forth, so I ate until I was full and then I stopped." RD: "You know, I think it's really important for you to reflect on how you felt very satisfied and you felt good about that so that when you are faced with that situation again, you can go back and go, "You know, the last time I dealt with this, I just ate until I was satisfied and I stopped and I felt really comfortable with that and that worked for me" so that you know, you can increase your chance of doing that again."*
- RD recognizes and conveys that motivation for change comes from the patient and works with the patient to expand on this motivation
 - *Patient: "Well I'm doing pretty good with that one there except I did have my pie, you know, during the holidays but I do stay away from the pastries." RD: "Excellent. And we talked about how to include those to substitute them for something else, so that's okay once in a while. Very good. Does that make you feel good to be able to say that?" Patient: "Yeah, it sure does."*

MI non-adherent

- RD misses opportunities to explore ambivalence
 - *Patient: "That's probably a little larger portion than I should eat. I figure I don't do it that often." RD: "Do you usually do something else that day earlier to maybe compensate for those calories a little bit more? You know, a smaller meal earlier in the day or exercise more?"*
- RD makes assumptions about the patient's intention of changing/not changing
 - *RD: "Are you still thinking about cutting back on that?" Patient: "Yeah, I mean I'm, you know, within my mind. I just have to force myself." RD: "Actually I'm going to put that as a separate goal because that's, it doesn't sound like you're quite ready to really make a whole lot of changes there because you're working on other things right now."*

Collaboration

MI adherent

- RD works cooperatively with the patient to achieve goals and allows the patient to influence the flow and outcomes of the session
 - *"What do you think is realistic for you, in terms of a goal?"*
 - *"So where do you think you would like your walking goal set for next time? What do you think might be a good number?"*
 - *"Okay, your average from the last week was 5410, great, so knowing that, did you have any ideas in terms of new goals?"*
 - *"Alright so for next time, what do you think that you would want to work on? Are there any things that you would want to continue?"*

MI non-adherent

- RD acts as an expert or takes an authoritarian role in the session
 - *“Yeah, maybe on the weekends and the I guess the only other thing would be to just take the portion that you’re having of the fried fish and make it a smaller portion. That would, so like I said maybe half, about half of what you’re doing now. If you doing about 8 ounces, go down to about 3 – 4 ounces. Yeah, that might work. Then you might kind of jump start that weight loss. We’ve got to find ways to just kind of tweak the calories so they come down a little, so you know, every time you come, see it a little bit lighter, which you are right now but it’s very gradual, so okay. So let’s change, yeah, limit intake of fried foods but let’s specifically maybe just cut your portions in half?”*
- RD does not allow the patient to contribute ideas or goals and/or does not incorporate those that are contributed
 - *Patient: “One day I had an orange and then there’s one day I had some grapes. Yeah, I’m trying to get more fruit.” RD: “Yeah, that’s great. We had talked about eating light popcorn instead of the extra butter?”*
 - *RD: “Well iced tea is healthier for you so you can do the iced tea or water would be even better yet. That would be the best option for you.” Patient: “Yeah I ought to try some water.” RD: “Alright what about other food choices when you’re dining out?”*
 - *Patient: “Well I’ve been doing, been working on that and also doing some changes with my food.” RD: “We’ll talk about those in just a second.”*

Autonomy/Support

MI adherent

- RD reinforces and praises progress
 - *“Okay, well, good. You went from, you know, it never crossed your mind to you know, doing it occasionally so that’s good.”*
 - *“I think you’re doing great!”*
 - *And that’s fine, going slow, as long as you’re moving forward, that’s what counts.”*
 - *“...so you met your goal, exceeded your goal. So that’s very good.” “Very good progress.”*
 - *“Okay, well, for the most part though you have made some positive changes.”*
 - *“Good for you, you are doing really, really well!”*
 - *“Good job and I like that you’re thinking of how you can translate that into something tangible for your family, and that’s great.”*
- RD supports goals set by the patient and the patient’s ability to make choices
 - *“So do you think that’s realistic?”*
 - *“Do you feel confident that you can continue to keep up walking at this level?”*
 - *Patient: “I think everything is going pretty good...I need to lose at least 11 pounds.” RD: “You’re on your way. That’s realistic, that’s very realistic.”*
 - *“...you’ve been really good about setting realistic goals and really working towards them. So what do you have in mind as far as a goal from here on out for walking?”*
 - *“So of the things that we’ve talked about, what do you feel that you’re ready to do?”*
 - *“The other suggestion, and this would be a decision for you to make. If you found it helpful for you to record your exercise, you might want to keep that going.”*

- RD supports self-efficacy of the patient's ability to change or steps toward change
 - *"Well good, how did that work for you?"*
 - *"So what do you do if there's a birthday party and there is ice cream?"*
 - *"So it sounds to me like you're aware of it and many times you are controlling your portions. Sometimes you don't but that indicates to me that process is there, very good."*
 - *"And that's fine, yeah, it's, that's why there are so many different ways of losing weight because what works for one person may not work for another and this one works for them, and that one, you know, it, so that's why we try to remain really flexible about, okay, you tried this, it didn't work, let's try this, you know, and working with the individual because that's exactly right. You have to use what works for you. So I really commend you for going back to something that you knew worked."*
 - *"Any change is going to help in the long run so that's fine."*
 - *"I love that you're walking on your lunch hour. That's great."*
 - *"Well is that a goal that you think you want to continue to work on?"*
 - *"...I think it helps you feel more empowered over your whole eating habits when you can say, "You know what? I can do this any time but I just choose not to do it right now."*
 - *"What are your thoughts on that? Do you have any ideas of what you could do to change or substitute?"*
 - *"You know what? That's the thing is that we're all human and we just make those kind of silly decisions but if you see that it's a problem and you continue doing it, that's where the problem comes in. But if you see that it's a problem and you go, "Oh, whoops. This isn't a healthy thing. What can I do to change it?" Then you know you're going to make progress."*

MI non-adherent

- RD detracts from the patient's perception of choice
 - *"We've got to set some goals."*
 - *"I think the biggest thing today is that the days that you didn't really get any activity in, those are, that's the biggest thing that I think we need to work on is just making sure you get that amount of walking in every day."*
- RD assumes the patient will change behavior to fit what the RD thinks is best
 - *"Do you think you could get at least 6000 steps every day? Maybe even possible 10% more than that? If we said average of 6000 steps, times 10%, so maybe set a goal of about 6500 steps every day? And that needs to be every day, even on off days."*
- RD expresses pessimism about the patient's ability to change
 - *"The thing is, how long are you going to be able to do that?"*