

Nutrition Students Gain Skills from Motivational Interviewing Curriculum



TO PROMOTE LASTING DIETARY behavior changes, many registered dietitian nutritionists (RDNs) are progressing from advice-giving roles to client-centered counseling methods.¹ Motivational interviewing (MI) is one such counseling method used to increase intrinsic motivation and reduce ambivalence to change.^{2,3} MI is based on four key principles: 1) expressing empathy, 2) developing discrepancy, 3) rolling with resistance, and 4) supporting self-efficacy.² The MI spirit encompasses collaborating with clients, using clients' ideas to evoke change, and respecting clients' autonomy.² Open-ended questions, affirmations, reflections, and summaries (OARS) are used throughout MI sessions to build rapport, explore concerns, and convey empathy.²

The use of MI in nutrition counseling has facilitated successful improvements in fruit and vegetable consumption,^{4,5} increased physical activity,^{5,6} and short-term weight loss⁷ with clients. MI-based nutrition counseling also resulted in positive dietary changes in patients with cancer,⁴ diabetes,⁷ and chronic heart failure.⁸

Although MI is gaining momentum among RDNs, many do not receive adequate training.⁹ Rapoport and Perry⁹ surveyed 394 dietitians registered in the British Dietetic Association Database and found 44% who felt inadequately trained in MI during their dietetics education. Most participants (77%) believed dietetic programs would benefit from teaching MI to students.

Little is known about effective methods for training nutrition students in MI, but training programs for practicing dietitians were found to be effective. In a study of 37 practicing dietitians, those who received a 3-day MI training, displayed more empathy and change-focused statements than dietitians who did not receive training.¹⁰

MI curricula has been implemented in medical schools^{11,12} and with diabetes nurse educators,¹³ with positive results; however, the curricula developed were not grounded in learning theories. The Adult Learning Theory (ALT)¹⁴ is a primary theory used in higher education. According to ALT, adult learners are self-directed, autonomous, experienced, goal- and relevance-oriented, and practical.¹⁵ The ALT is preferred by instructors vs traditional teaching methods, and resulted in 82% more knowledge retention in a study of medical residents.¹⁶

The aim of this article is to demonstrate the implementation and evaluation of a theory-based MI curriculum in undergraduate nutrition courses.

ASSESSING MI KNOWLEDGE AND SKILLS

Data were collected between January 2010 and December 2010. The spring class served as the control group (n=15), and the fall class as the intervention group (n=23). This quasi-experimental controlled study was approved by the Human Subjects in Research Committee at the participating university. Written consent was obtained from each participant before the study entry. The intervention and control groups received surveys before and after the study to assess MI knowledge and counseling self-efficacy. Both groups conducted videotaped counseling sessions, which were used in the assessment of MI skills. The counseling sessions were approximately 30 minutes in duration, and used classmates as standardized clients.

The intervention and control groups had four classes of MI curriculum (300 total minutes). The intervention group received the MI curriculum before the post surveys and the mock, videotaped counseling sessions. The control group did not receive the MI curriculum until after the post surveys and mock, videotaped counseling sessions were complete.

MI Curriculum

The MI curriculum involved lectures, videos, worksheets, case studies, and role-play activities. The ALT-based curriculum¹⁴ was developed using Kellogg's Toolbox for Nutrition Counseling Education.¹⁷ Kellogg's Toolbox was comprised of PowerPoint slides (Microsoft Corp), video vignettes, and instructor notes, and chosen for the unique focus on teaching MI to nutrition students and professionals.

The ALT¹⁴ was an appropriate theory for this curriculum because of the demonstrated positive outcomes in higher education.¹⁵ A primary focus in ALT is that adults prefer to learn skill application vs abstract theories.¹⁸ Therefore, the curriculum focused on how to apply MI skills in counseling. Students were given opportunities to apply skills learned in class through role-play activities and worksheets. The video vignettes provided students with examples of how to apply MI skills in counseling clients. Because adults need group interaction and instructor feedback,¹⁵ students debriefed with classmates and the instructor after each role-play and video vignette. To ensure autonomous, self-directed learning experiences,¹⁸ students completed self-assessments of their counseling.

The four-class curriculum began with an introduction to MI, and covered the following topics: MI principles, the spirit of MI, the phases of an MI session, and overview of the OARS. In Session 1, students completed one worksheet on OARS and one on MI spirit. The video

*This article was written by **Hayley Smart**, MS, RD, former graduate student, **Dawn Clifford**, PhD, RD, associate professor, and **Michelle Neyman Morris**, PhD, RD, professor, all with the Department of Nutrition and Food Sciences, California State University, Chico.*

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vignette “Mirroring” was shown to demonstrate reflections. Session 2 covered OARS in greater detail, including a mirroring activity and reflection worksheet. Session 3 focused on exploring ambivalence and assessing readiness to change. Video vignettes “Unpacking Meaning: Importance” and “Ambivalence” were shown. Session 4 covered the elicit-provide-elicitechnique, providing a menu of behavior change options, behavioral experiments, goal setting, and assessing barriers to change. Students viewed video vignettes “Offering Advice” and “Experiments 1,” and applied skills learned to a case study.

Assessment Instruments

MI knowledge was assessed using a validated, 10-item multiple-choice test.¹¹ Self-efficacy, defined by Bandura,¹⁹ is an individual’s belief about his or her ability to adequately perform a skill or task, and how those beliefs influence behavior and persistence to continue the skill or task. Self-efficacy was assessed using a five-point Likert

scale question, which followed a basic structure of other instrumentation used to assess self-efficacy.²⁰

The Motivational Interviewing Treatment Integrity (MITI 3.1)²¹ is a coding system used to measure clinicians’ use of MI and treatment integrity of MI. Permission was obtained to use the MITI 3.1 to code the students’ counseling videos. The MITI 3.1 has two components: 1) global scores, which measure counselors’ evocation, collaboration, autonomy/support, direction, and empathy skills; and 2) behavioral counts, which include giving information, MI adherent, MI nonadherent, closed questions, open questions, simple reflections, and complex reflections.²¹ From these two components, five summary scores (global spirit rating, reflection to question ratio, percent open questions, percent complex reflections, percent MI adherent) were calculated to assess MI skills. MITI 3.1 uses score thresholds to categorize summary scores as beginning proficiency or competency based on numerical values determined from the MITI coding system (shown in [Table 1](#)).²¹

Two trained graduate students, who completed a 2-unit graduate-level MI course before the research project, coded the videos. Additional training included reading the MITI 3.1 handbook,²¹ and coding five practice videos. Inter-rater reliability was calculated on practice videos to insure intraclass correlation coefficients were between 0.75 and 1.²² An average intraclass correlation coefficient of 0.83 was achieved for the five summary scores in the practice videos. Videos were coded from the counselor’s first sentence after the nutrition assessment portion of each session. The first coder gave the start sentence and time to the second coder to maintain coding consistency.

Data analyses were conducted using PASW Statistics Standard software (version 18.0, 2009, SPSS, Inc). An α level of $P < 0.05$ indicated statistical significance. Mixed between- and within-subjects analysis of covariance was conducted to analyze MI knowledge and counseling self-efficacy changes within groups (before to after) and between groups (control and intervention). Five

Table 1. Motivational Interviewing Treatment Integrity 3.1 (MITI 3.1) summary scores and score thresholds of undergraduate nutrition students (n=41)

MI summary scores	Score Thresholds		Control (n=17)	Intervention (n=24)	t test	P value
	Proficiency	Competency				
			← mean±SD ^a →	← mean±SD ^a →		
Global spirit rating ^b	3.5	4	3.1±0.5	3.7±0.4 ^c	−4.0	<0.001*
Reflection to question ratio	1	2	0.1±0.1	0.3±0.2	−5.2	<0.001*
Percent open questions ^b	50	70	20.5±12.0	21.8±12.8	−0.3	0.74
Percent complex reflections	40	50	1.0±4.0	7.5±10.8	−2.7	0.01*
Percent MI adherent ^b	90	100	22.5±13.0	55.7±16.3	−7.0	<0.001*

^aSD=standard deviation.^bEqual variances assumed.^cSummary Score reached proficiency; MI Summary Scores: Global spirit rating=evocation+collaboration+autonomy/3; Reflection to question ratio=total reflections/closed questions+open questions; Percent open questions=open questions/open questions+closed questions; Percent complex reflections=complex questions/total reflections; Percent MI adherent=MI adherent/MI adherent+MI nonadherent.

*P<0.05, 2-tailed.

separate independent-sample *t* tests were conducted to compare MITI 3.1 summary scores of control and intervention groups and to determine whether summary scores reached beginning proficiency or competency.

OUTCOMES AT A GLANCE

Of the 38 participants, 31 were white, 35 were women, 28 were nutrition and food science majors with an option in dietetics, 34 were in their senior year, and 35 had no previous counseling experience. There were no significant differences in demographic characteristics between intervention and control groups.

Twenty-two of the 23 participants in the intervention group and all 15 participants in the control group completed the before and after MI knowledge and counseling self-efficacy surveys. MI knowledge improved significantly in both groups, as shown in the before and after surveys. The intervention group showed significant improvements in MI knowledge in the before and after surveys. Counseling self-efficacy improved significantly within each group, with no significant differences between groups (Table 2).

All participants conducted video-taped counseling sessions. The intervention group scored significantly higher than controls in four of five

summary scores: global spirit rating, reflection-to-question ratio, percent complex reflections, and percent MI adherent (Table 1). There were no significant differences in percent open questions. All summary scores in the control group were below proficiency. Global spirit rating was the only summary score to reach proficiency in the intervention group.

LESSONS LEARNED

The effectiveness of a 300-minute theory-based (ALT¹⁴) MI curriculum on MI knowledge, MI skills, and counseling self-efficacy of undergraduate nutrition students was examined. The MI curriculum resulted in significant

Table 2. Change in motivational interviewing (MI) knowledge and counseling self-efficacy scores of undergraduate nutrition students within and between groups

	n	Control Group		n	Intervention Group		Between groups (<i>P</i> value)
		Mean±SD ^a	Within-group (<i>P</i> value)		Mean±SD	Within-group (<i>P</i> value)	
MI knowledge^b							
Pre	15	4.2±1.9		23	4.4±1.9		
Post	15	4.8±2.3	<0.001*	22	6.5±1.5	<0.001*	0.02*
Counseling Self-efficacy^c							
Pre	15	2.7±0.62		23	2.5±0.75		
Post	15	3.5±0.64	<0.001*	22	3.5±0.60	<0.001*	0.47

^aSD=standard deviation.^bMI knowledge test scores had a total of 10 points possible.^cCounseling self-efficacy scores based on 5-point Likert scale (1=not at all confident, 5=very confident).

*P<0.05.

improvements in MI knowledge in the before and after surveys in the intervention group compared with the control group; however, most of the students did not receive passing scores. This may be due to the fact that a well-known published nutrition counseling curriculum was adapted for the intervention and then tested using a validated MI knowledge instrument that was developed by practitioners in a different health field.

Counseling self-efficacy increased in both groups, possibly because they received some type of counseling education or out-of-class counseling experience between the before and after surveys; although its likelihood of occurrence is unknown. Students in the intervention group may have found MI more challenging than expected, explaining the lack of difference between the intervention and control groups. Nutrition counseling curriculum may be sufficient to increase counselor self-efficacy regardless of whether MI is included. According to Bandura,¹⁹ students' amount of previous work experience leads to increased self-efficacy. In a study of 116 counseling students, the amount of internship hours and work experience were positively related to counseling self-efficacy; however, self-efficacy was not equivalent to counselor's competence.²³ The finding of Tang and colleagues supports the need for internships and practicum experiences to build counseling confidence, but it also implies that a counselor can be competent even with low counseling self-efficacy.

The MI curriculum resulted in significantly higher MI skill scores compared with the control group. However, it was insufficient to train students to conduct MI-based sessions at a beginning proficiency level. Only one summary score (global spirit rating) reached beginning proficiency in the intervention group. Given the limited opportunities to practice MI in class, the curriculum should be considered a foundation of MI knowledge and students will most likely require continuous MI training to reach beginning proficiency. In a similar study, 46 medical students received two MI lectures (3 hours each); one during their first year of medical school, the other during their third year. After the training, students completed mock counseling sessions and only became proficient in reflections.¹²

In the present study, the lowest scores were percent complex reflections and reflection-to-question ratio (Table 1). There were no significant differences in percent open-ended questions between intervention and control groups. This demonstrates the need to add more practice material to the reflection and questioning portions of the curriculum. Students spent an estimated 60 minutes of the 300-minute curriculum practicing MI skills with a classmate, but more time is likely needed for application activities. In research by Brug and colleagues,¹⁰ 16 to 24 hours of MI training was sufficient to increase MI spirit and use of MI skills. In other studies where MI curriculum was implemented, training length ranged from 2 hours to 2 days.¹⁰⁻¹³ Therefore, 300 minutes may be sufficient to provide basic didactic training, but insufficient to produce proficient practitioners.

There are several limitations to this research, one being the small convenience sample. The counseling self-efficacy question was derived from the validated General Self-Efficacy scale,²⁰ but not formally tested. Thus, it may not have been an accurate measure of counseling self-efficacy. Furthermore, participants were surveyed about previous counseling experiences but they were not surveyed regarding concurrent counseling experience while enrolled in the class. There may have been participants who were concurrently involved in a community nutrition practicum that involved counseling. Future researchers should consider including questions on surveys about activities outside of class that may affect counseling self-efficacy.

The mock, videotaped counseling sessions involved classmates acting as standardized patients. Although standardized patients, unknown to the student counselor, are shown to be most effective in counseling role-plays,²⁴ many students knew one another and were familiar with the counseling skills being used. This may be prevented in the future by recruiting non-nutrition students or actors to serve as clients.

Although the MITI 3.1²¹ is widely used in the MI community, score thresholds are based on expert opinion and lack thorough validity testing. Other data collection methods may be needed in conjunction with score thresholds to

accurately assess proficiency and competency. The MITI 3.1 is designed for clinicians and may not be completely applicable to students.²¹ One study found that summary scores may not accurately assess students' MI skills and suggested the use of an alternative instrument when analyzing student videos.²⁴

Despite limitations, this is the first known attempt to examine the effects of MI curriculum on nutrition students' knowledge, self-efficacy, and MI skills. The ALT was used as a framework and students applied skills learned in class and obtained immediate feedback from peers and the instructor during in-class activities. The MI curriculum increased MI knowledge and resulted in significantly higher MI skill scores in the intervention group compared with the control group.

IMPLICATIONS FOR DIETETICS RESEARCH AND PRACTICE

This curriculum provides an initial exposure to MI in the training of future food and nutrition practitioners. Undergraduate curriculum in MI serves as a starting point to prepare students for dietetic internships and careers as food and nutrition practitioners. Given the strong body of evidence that MI improves client outcomes, curricular implementation is imperative.

Many students find that MI is harder than it appears. There are specific communication techniques to learn, such as reflective listening, formulating open-ended questions, and affirming the client. In addition, the counselor has to let go of his or her personal agenda and invite the client to voice personal interests in behavior change. The client is given complete autonomy. Therefore, the counselor often has to roll with the client's resistance to change. The MI practitioner holds back from telling the client what he or she needs to change and instead asks the client what he or she would like to change, if anything, all while demonstrating empathy and warmth.

Nutrition and dietetics faculty who are trained in MI are needed. In many areas of dietetics, a faculty member can become knowledgeable on a topic by reading up on the topic and attending seminars and workshops. Unlike other topics, hands-on experience is an important component for gaining proficiency in MI. Therefore, faculty

training may be a barrier to teaching this topic at the didactic level.

Although it may not be feasible for all programs to provide training in MI that results in student proficiency, 300 minutes is at least sufficient to impart a foundational knowledge. The tested curriculum includes counseling demonstration videos, in-class activities, and visual aids that are important components for didactic learning. Training students in MI does not necessarily translate to application of MI skills among food and nutrition practitioners.¹⁰ Practicums, internships, continuing education, and supervision are essential for new nutrition counselors who hope to gain proficiency in MI.

Further research is needed to evaluate the most effective methods for nutrition students to learn MI. Like many learned skills, students must be provided with opportunities to observe, apply, and practice learned material. Retention of MI skills from undergraduate education to dietetic internship or profession, as well as the amount of MI training needed to ensure application of MI in practice, warrants further investigation.

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