



# Motivational Interviewing for Smoking Cessation

Grant Number: R44CA088569-03

## Abbreviated Abstract

About 25% of Americans smoke and many current smokers do not plan to quit any time soon. For these smokers, interventions tailored to decrease their resistance and increase their readiness to stop smoking are most effective. Motivational Interviewing (MI) focuses on overcoming resistance to change by increasing awareness that smoking is a problem, strengthening motivation, and increasing confidence that change is possible. The present project will develop an interactive multimedia simulation and tutoring environment to train healthcare professionals and students to deliver a brief motivational smoking consult for patients not ready to quit smoking. Preliminary results of the effectiveness study indicate that providers-in-training found the tutorials good learning tools and that they learned more about delivering MI-based interventions from the tutorial than from reading material containing the same content.

## Primary Investigator

Kelly Carpenter, PhD  
Talaria, Inc  
1121 34<sup>TH</sup> Ave  
Seattle, WA 98122  
(206) 748-0443 ext 13  
Fax: 206 748-0504  
[kcarpenter@talariainc.com](mailto:kcarpenter@talariainc.com) ; [www.talariainc.com](http://www.talariainc.com)

Kelly Carpenter, PhD, a clinical psychologist, has been at Talaria since 2001. She is the Principle Investigator for several SBIR grants at Talaria, including Motivational Interviewing for Smoking Cessation (Phase I and II), Internet-based Coping Skills Training for PTSD (Phase I & II), Adaptive Support Environment for Alcohol Dependence (Phase II), and Computer-based HIV Prevention (Phase II). She received her PhD from Clark University in Worcester, MA in 2000 and completed a pre-doctoral internship and a post-doctoral fellowship at the Seattle VA Hospital specializing in PTSD and addictions treatment.

## Research Team & Affiliations

Leslie Cohn, PhD, Private Practice; Lynn Dhanak, PhD, Talaria, Inc  
John Baer, PhD, University of Washington; Lisa Hagen, BS, University of New Mexico

## Total Budget

\$750,000

Visit the SBIR Product Directory online at <http://cancercontrol.cancer.gov/hcirb/sbir>



## Research Objectives

Aim 1: To develop computer-based training programs to teach healthcare providers and students to deliver brief motivational interventions for smoking cessation.

Aim 2: To evaluate the training program in a randomized trial.

## Theory/Hypothesis

Healthcare providers and student will learn to conduct brief motivational interventions for smoking cessation from an interactive computer program that allows for rehearsal and illustrates best practice examples.

## Experimental Design

The two tutorials, Brief Negotiation (BN) and Quick Interventions for Targeting Smoking (QUITS), include interactive exercises with tailored feedback, video and audio examples and exercises, interactive practice and review (using Talaria's audio recording panel to record skill practice), and free-response textbox items for personal reflection. Instructional material from the two tutorials was based on Miller and Rollnick's Motivational Interviewing (2nd ed.; 2002) and Rollnick et al.'s (1999) Health Behavior Change: A guide for practitioners.

BN teaches healthcare providers the basic principles and skills of MI in the context of the healthcare setting. BN teaches providers to use techniques such as the OARS skills (open-ended questions, affirmations, reflections, and summaries) and coping with patient ambivalence towards change. BN uses a case-based approach to learning, requiring users to apply their knowledge to patient examples throughout the training.

QUITS is directly geared toward very brief smoking cessation interventions. Specifically, QUITS teaches providers to assess each patient's stage of change (via a 0-to-10 "readiness to quit" scaling question), importance of smoking cessation, and confidence in being able to quit. The providers are taught to choose an intervention based on their assessment (e.g., choose the decisional balance intervention if importance rating is low). QUITS uses a teaching method that delivers targeted lessons and feedback to users based on their existing knowledge (facet-based learning; Minstrell, 1992).

After the two tutorials were completed the computerized standardized patient assessment was created using a similar development process. Dr. John Baer, a specialist in MI training, assisted with the writing of scripts for this assessment. Dr. Baer also assisted with the creation of the multiple choice quizzes. Usability testing and pilot testing were conducted with members of the target audience.

## Final Sample Size & Study Demographics

155 providers-in-training

- Dental, medical, MSW, nursing, pharmacy, & PA students
- 65% Caucasian, 27% Asian, 5% Hispanic, 3% Black, 2% Hawaiian/Native American
- Age: M = 26.5 (5.83); Range = 19 – 56 years
- Sex: 78% female, 22% male



## Data Collection Methods

Participants were recruited via e-mail announcements posted on student listserves and flyers posted at a large northwestern university. Graduate students in medicine, dentistry, pharmacy, social work, physician assistant training and both undergraduate and graduate nursing students were eligible.

The study was conducted at Talaria, Inc. Participants were advised about the informed consent process. After giving consent, each participant completed a demographics form and the computerized standardized patient assessment pre-test. Participants were randomly assigned to either use both of the online tutorials, QUITs and BN, or to spend an equivalent amount of time reading materials that contained the same information as the tutorials. After either using the tutorials or reading the MI training materials for approximately two hours, participants took two multiple choice quizzes and the computerized standardized patient assessment post-test.

## Outcome Measures

A computer-based virtual standardized patient assessment (using video clips of standardized patients) was used to evaluate clinical skills and was given both as a pre-test and a post-test. Multiple-choice post-tests were given after each training program (BN and QUITs) and a usability questionnaire was administered at the end of the study for participants in both groups.

## Evaluation Methods

One hundred and fifty-five participants were recruited from local training programs via e-mail and flyers. They were randomized to use the 2 training programs or to read equivalent print materials. Both conditions took about 2 hours.

## Research Results

### Knowledge Quiz Results

Two multiple-choice quizzes were administered: One covering the content in the BN tutorial and readings and one covering the content in the QUITs tutorial and readings. We conducted two independent-samples t-tests and both showed significant differences between the reading and the tutorial groups (BN,  $t(148) = -3.05, p < .003$ ; QUITs,  $t(148), -2.56, p < .012$ ); see Table 1.

### Computerized Standardized Patient Assessment (CSPA)

Results Pretest CSPA scores averaged 17.13 (SD = 5.17) for tutorial users and 19.53 (SD = 5.32) for the reading group. Mean posttest scores were 36.6 (SD = 5.78) for the tutorial group and 33.11 (SD = 5.59) for those who read. To examine our hypothesis that participants in both learning conditions would improve their scores on the SPVA, we conducted a paired-samples t-test (pretest vs. posttest). Results indicated that there was overall improvement in scores ( $t(130) = -33.37, p < .000$ ). Next, a one-way ANCOVA was conducted to evaluate the between-groups differences on CSPA posttest scores, controlling for pretest scores. Results indicated a significant difference between the conditions ( $F(148) = 65.18, p < .000$ ) with tutorial users scoring an average of one standard deviation above the readings group.

Participants in both groups learned MI skills during the intervention and some of the responses to the standardized patient assessment changed dramatically between pretest and posttest. At pretest, many



participants used techniques such as lecturing and offering unsolicited advice. Common techniques at posttest included requesting permission to discuss a topic, offering to collaborate in developing a change plan and setting small manageable goals. For example, contrast one tutorial-group participant's pretest and posttest responses to the same question:

Pretest: "I would have her discuss her concerns with her husband and children about her quitting smoking. She should tell them that she may be going through a difficult time, but that she needs them to help her through it. Then have her make a list of what she eats, so she can be aware. Also have her join a support group with other people in her situation."

Posttest: "I would ask her what she believes the next step should be. We could then formulate a plan together that moves her in the direction of quitting with goals that are attainable."

#### Usability/satisfaction

The usability/satisfaction questionnaire administered at the end of either the readings or the tutorial contained both Likert-scaled questions and open-ended questions. Usability questionnaires for the tutorial and reading groups were not identical because they were tailored to assess unique characteristics of the two study conditions. The readings group questionnaire included ten Likert-type questions with responses ranging from "strongly disagree" (1) to "strongly agree" (5), and six free-response items. The usability questionnaire for the tutorial group had 15 Likert-type and seven free-response items. Overall, participants had a more favorable impression of the tutorial as compared to the readings; see Tables 2 and 3 for example questions.

Responses to open-ended usability items about the tutorials were overwhelmingly positive. For example:

"I think it will be a wonderful learning tool for both students and professionals."

"...it's interactive—you can't just read the sections and move on you have to integrate the material as you go."

"Both contents and interface are well designed. The quantity and mastery of the material came in a relatively short amount of time compared to a lecture or text format. I hope this gets implemented in educational settings in place of the standard lecture format on behavioral change techniques."

"I liked that the actors included people of color and also of different sexual orientations."

## Barriers & Solutions

### Product(s) Developed from This Research

BN (Brief Negotiation) and QuITS (Quick Interventions to Target Smoking)