Document type: Study Protocol

Document date: August 7, 2019

**Improving Negative Symptoms & Community**

**Engagement in Veterans with Schizophrenia**

VA Research, Rehabilitation and Development Service (VA RR&D)

Principal Investigator/Study Chair: Melanie Bennett, Ph.D.

Version 21 8/7/2019

## Abstract

The goal of this project is to evaluate an innovative psychosocial intervention package that will incorporate evidence-based treatment strategies to target the affective-motivational deficits, negative expectancies, and behavioral skills deficits that are central to the maintenance of negative symptoms. The intervention - called EnCoRE (Engaging in Community Roles and Experiences) - will include strategies aimed at teaching Veterans with schizophrenia and negative symptoms ways to (1) overcome deficits in anticipatory pleasure, (2) increase intrinsic motivation for goal-directed activities, (3) reduce expectancies for failure, and (4) perform skillfully in new social situations, all of which can impact implementation of new skills and behaviors. Rather than develop a new set of intervention strategies, we will include within EnCoRE evidence-based strategies for these treatment domains. In addition, we will collect qualitative information both from Veterans concerning their perceptions of the strengths, weaknesses, and barriers to participation in EnCoRE, as well as from a sample of mental health providers who work with Veterans with schizophrenia and negative symptoms, in order to inform a larger scale implementation trial should EnCoRE prove effective here.

List of Abbreviations

EnCoRE (Engaging in Community Roles and Experiences)

RCT (Randomized Controlled Trial)

VISN5 (Veterans Integrated Service Network)

MIRECC (Mental Illness Research, Education and Clinical Center)

VAMHCS (VA Maryland Health Care System)

VAMC (Veterans Affairs Medical Center)

MI (Motivational Interviewing)

MAST (Michigan Alcoholism Screening Test)

DAST (Drug Abuse Screening Test)

CAINS (Clinical Assessment Interview for Negative Symptoms)

SCID (Structured Clinical Interview for DSM-IV)

BPRS (Brief Psychiatric Rating Scale)

UPSA (California San Diego Performance-based Skills Assessment)

MARS (Maryland Assessment of Recovery Survey)

CRIS-CAT (Community Reintegration of Service Members Computer Adaptive Test)

DAS I (Dysfunctional Attitudes Scale)

SFS (Social Functioning Scale)

RFS (Role Functioning Scale)

Future Thinking Task (FTT)

Clinic Service Use Tracking Form (CSUTF)

Service Use Form (SUF)

## Contents

**Protocol Title:** Improving Negative Symptoms & Community Engagement in Veterans with Schizophrenia

## 1.0 Study Personnel

**Principal Investigator/Study Chair:**

Melanie Bennett, Ph.D.
VA Maryland Health Care System
10 N. Greene Street
Baltimore, MD 21201
410-637-1861
mbennett@psych.umaryland.edu

**Co-Investigators:**

Richard Goldberg, Ph.D.
VA Maryland Health Care System
10 N. Greene Street
Baltimore, MD 21201
410-637-1851
Richard.Goldberg@va.gov

Alicia Lucksted, Ph.D.
University of Maryland, Baltimore
737 W. Lombard Street
Baltimore, MD 21201
410-706-3244
aluckste@psych.umaryland.edu

Clayton Brown, Ph.D.
VA Maryland Health Care System
10 N. Greene Street
Baltimore, MD 21201
410-637-1873
Clayton.Brown2@va.gov

Jack Blanchard, Ph.D.
VA Maryland Health Care System
10 N. Greene Street
Baltimore, MD 21201
301-405-8438
jblancha@umd.edu

## 2.0 Introduction

Schizophrenia affects a large number of Veterans each year and is associated with substantial financial, social and personal costs for VA, Veterans, and Veterans' families. Data since 2008 from SMITREC's National Psychosis Registry documents that over 86,000 VA patients each year are classified with a schizophrenia spectrum diagnosis (FY08=87472, FY09=87375, FY10=87118, FY11=86935, FY12=86179). In VISN 5, 1800 Veterans in FY12 (900 at VAMHCS, 900 at the Washington DC VA) were identified with a schizophrenia spectrum diagnosis. Such Veterans have significant treatment needs, especially for psychosocial interventions that focus on enhancing connections with the community78,79. The proposed work will fill an important gap in treatment for Veterans with schizophrenia by incorporating strategies targeting affective-motivational deficits, behavioral skills deficits, and negative expectations of success into a tailored psychosocial intervention package for negative symptoms. By addressing these core deficits, this work has important implications for treatment engagement, adherence, and outcomes, and can translate symptom reductions into improved engagement and functioning in the community.

EnCoRE includes strategies that have been used to effectively address these clinical domains. Treating negative symptoms and improving engagement in community roles and activities addresses many important goals from the VA's 2008 Uniform Mental Health Services Handbook and is directly in line with RR&D priorities of meaningful treatment engagement and improving quality of life among Veterans with serious mental illness (SMI). This research also will advance scientific understanding of and clinical standards of care for individuals with SMI. In addition, VA specifies that recovery and rehabilitation-oriented services for individuals with SMI "must provide a therapeutic and supportive learning environment for Veterans in the program designed to maximize functioning in all domains." By aiming to improve real-world functioning, this project is clearly in line with these goals. Findings from this research will have advance our ability to treat negative symptoms and improve Veterans' engagement and outcomes in employment (seeking, maintaining, performing), social (leisure activities, relationships) and community (self-care, illness management, medication adherence) functioning. Importantly, this project will result in the availability of an intervention manual and training materials that will allow for further testing and use of EnCoRE and will be critical to its dissemination should it be shown to be effective. The qualitative data we will collect from Veterans and mental health providers during the study will identify aspects of EnCoRE that were more or less helpful, interesting, and valuable, which will help us refine the intervention and will assist with future implementation in VA outpatient settings that provide the majority of mental health services to Veterans with schizophrenia. The materials generated from this work thus have the potential to make a meaningful contribution to mental health treatment for Veterans with schizophrenia.

## 3.0 Objectives

The goal of this study is to evaluate an innovative psychosocial intervention package that will incorporate evidence-based treatment strategies to target the affective-motivational

deficits, negative expectancies, and behavioral skills deficits that are central to the maintenance of negative symptoms. The intervention - called EnCoRE (Engaging in Community Roles and Experiences) - will include strategies aimed at teaching Veterans with schizophrenia and negative symptoms ways to (1) overcome deficits in anticipatory pleasure, (2) increase intrinsic motivation for goal-directed activities, (3) reduce expectancies for failure, and (4) perform skillfully in new social situations, all of which can impact implementation of new skills and behaviors. Rather than develop a new set of intervention strategies, we will include within EnCoRE evidence-based strategies for these treatment domains. In addition, we will collect qualitative information both from Veterans concerning their perceptions of the strengths, weaknesses, and barriers to participation in EnCoRE, as well as from a sample of mental health providers who work with Veterans with schizophrenia and negative symptoms, in order to inform a larger scale implementation trial should EnCoRE prove effective here.

Following a short pilot to train interventionists and refine the manual, we will conduct a randomized controlled trial to test the efficacy of EnCoRE in improving ratings of negative symptoms, functional outcomes, and engagement in community activities in a sample of Veterans with schizophrenia and negative symptoms (n=108). Participants will be randomized either to EnCoRE or a health-related control group. These goals fit well within the objectives of the RR&D program of funding research aimed at studying rehabilitation interventions focused on maximizing functional recovery and assisting in the integration of Veterans into civilian life. Specifically, we will address the following Specific Aims:

Specific Aim 1: Train therapists and refine the EnCoRE manual in a preliminary trial with 10 Veterans with schizophrenia and negative symptoms.

Specific Aim 2: Conduct a randomized controlled trial (n=108, medium effect, alpha=.05) to test the efficacy of EnCoRE in producing positive changes at post-treatment and 3-month follow-up on the primary outcomes of negative symptoms and social and community functioning.

Specific Aim 3: Examine qualitative interviews completed by (1) Veterans who participated in EnCoRE and (2) Mental Health Providers to determine aspects of EnCoRE that were perceived as more or less helpful, interesting, and valuable in order to make adjustments prior to conducting a larger, multi-site implementation trial.

## Hypotheses

Hypothesis 1 (H1): Veterans exposed to EnCoRE will have lower mean scores than those in the control condition on the affective-motivational deficit subscale of the CAINS at post-treatment. The EnCoRE group will continue to have a lower mean than the control group at FU (secondary hypothesis). . Letting Y1, Y2, and Y3 be values for the motivational deficit subscale of the CAINS at BL, PT, and FU respectively, and Tx condition the treatment indicator (Tx condition=1, if EnCoRE; Tx=0 if control condition), the analysis model for Hypothesis 1 (post-treatment) will be: Y2 = Y1 + Site (or Group) + Tx condition + error (ANCOVA). Substantively relevant BL covariates found to significantly differ between treatment conditions, even after randomization, would be added. We will also check if there is a covariate by treatment interaction in this case. Significance test of the Tx condition coefficient will test hypothesis 1. The analysis model for the

comparison at FU will be similar, but will include Y2 and Y3 as repeated responses and include a random effect to account for correlation between the two. Thus, it will be a linear mixed model with adjustment for BL (Y2 and Y3 repeated response and adjustment for Y1). A time and group-by-time interaction term will be added (time indicating FU versus PT) in order to estimate the difference of means at FU assessment. A specified contrast using the mixed model will test the hypothesis that the mean affective-motivational deficit in the EnCoRE condition will continue to be less than in the control condition.

Hypothesis 2 (H2): Veterans exposed to EnCoRE will have a higher mean score than controls at post-treatment on the SFS and RFS. The EnCoRE group will continue to have higher a mean score than control at the 3 month FU. The analysis model for H2 will be parallel to those for H1.

Hypothesis 3 (H3): Veterans exposed to EnCoRE will have higher mean scores than controls at post-treatment and at FU on the UPSA-B total score.

Hypothesis 4 (H4). Veterans exposed to EnCoRE will have higher mean ratings on the MARS than control at PT and FU. Analysis models for H4 will be parallel to those for H1.

Hypothesis 5 (H5): General cognitive ability and symptoms of psychosis will not impact the effectiveness of the intervention for negative symptoms and community functioning at PT and FU (See analysis below for H6).

Hypothesis 6 (H6): Greater ratings of consumer participation in and satisfaction with the intervention will be associated with better PT and FU outcomes. For each of the potential modifiers in H5 and H6, we will re-fit the primary analysis model for PT outcomes after adding two terms, the potential modifier and the interaction term between the treatment condition indicator (Tx condition) and the potential modifier. The variable will be a modifier if the coefficient for the interaction term is statistically significant (p-value<.05). A similar model will be used to assess modification at FU but there will be additional interaction terms with time (including 3-way interaction time*treatment condition*modifier), in order to estimate modifying effects at FU (i.e. separate effects at FU vs. PT).

Hypothesis 7 (H7): Improvements on ratings of attitudes/beliefs (e.g. DBS, FTT score) in the EnCoRE condition from BL to PT and FU will be positively associated with improvements in symptom and functioning outcome measures from BL to PT and FU, respectively. Change scores will be computed for attitudes/beliefs and recovery, and for symptom and functioning scales. Pearson correlations will be calculated and significance tests of the null hypothesis of zero correlation will be conducted. Note: These tests of association can be conducted even if improvement on ratings of self-efficacy and recovery are not significant in H3.

## 4.0 Resources and Personnel

This research study will be conducted only by the study staff listed on this protocol. This includes the principal investigator, co-investigators, study coordinators, research assistants (which include assessors, recruiters and interventionists), data manager, and data analyst. Below is a description of each of these roles within this study:

**Melanie Bennett (Principal Investigator)**: will oversee all clinical and scientific aspects of the study, train and supervise interventionists and assessors, oversee and monitor participant recruitment, supervise and conduct data analyses, write scientific papers and report results at scientific meetings. The PI will have access to PHI.

**Richard Goldberg (Co-Investigator):** will assist in training and supervising interventionists and in fidelity ratings throughout the project. He will provide coordination between study sites to ensure smooth data collection and management across sites. He will assist with scientific aspects of the study and with writing of scientific papers.

**Jack Blanchard (Co-Investigator):** will assist with intervention development efforts, train and supervise staff on diagnostic, symptom and functional outcome measure, and participate in writing of papers and other scientific aspects of the project.

**Clayton Brown (Co-Investigator):** will serve as a statistical consultant on the project and will oversee all aspects of data management and data analyses.

**Alicia Lucksted (Co-Investigator):** will guide the development and execution of the qualitative data collection and analyses.

**Kirsten Poston (Study Lead):** will be responsible for overseeing all daily aspects of the study, will monitor and track data collection and data entry to ensure accurate collection and entry. She will oversee all aspects of the study at all study sites, as well as act as the clinic-study liaison, providing information to clinics we are recruiting from about the study and promptly addressing any questions, concerns or expressed needs from the clinic staff or participants. She will also be responsible for assembling study assessments, updating new study forms and maintaining the study regulatory binder. The coordinator will have access to PHI.

**Lan Li (Data Analyst):** will oversee data checking and entry activities and participate in the design and conduct of data and statistical analyses.

**Belinda Kauffman (Data Manager):** will be responsible for setting up and maintaining data and tracking databases.

**Research Assistant Assessors:** will be responsible for scheduling and completing baseline and follow-up assessments with participants.

**Research Assistant Interventionists**: will be responsible for running the study group interventions.

**Research Assistant Recruiters**: will be responsible for recruiting participants and obtaining informed consent.

# 5.0 Study Procedures

## 5.1 Study Design

Randomized Controlled Trial (RCT)

We will implement an RCT of EnCoRE with random assignment to: (1) Outpatient mental health treatment + EnCoRE, or (2) Outpatient mental health treatment + health and wellness (comparison) group. We will recruit half of the sample from the Baltimore VAMC and the other half of the sample split between the Perry Point VAMC and the Washington DC VA. We will recruit participants in rounds. Participants will complete assessments at baseline, post-treatment, and 3-month follow-up. The baseline appointment will include a diagnostic screening interview to determine final eligibility. If a veteran is determined to be ineligible after completing this interview then his or her study participation will be concluded. We will measure symptom and functional outcomes and evaluate potential moderators of outcomes including general cognitive ability, attitudes and beliefs, depression, and psychotic symptoms.

Comparison Condition

The comparison condition will be a Health and Wellness self-management intervention providing education and support related to the management of physical and emotional well-being. This intervention will include 2 individual meetings at the start that will include educational content about health/wellness topics and instruction in relaxation training. A group component of the comparison condition will meet twice per week for 12 weeks (24 sessions). The curriculum for this group will be based on an existing program developed by another VISN 5 MIRECC investigator that is being used in other MIRECC/VA-funded trials. Similar in structure to EnCoRE, group sessions will be held twice per week for 60 minutes. Each Health and Wellness course will be led by a trained interventionist using a manualized curriculum. Sessions will focus on health and wellness issues and education on ways to better manage health-related concerns following a basic structure that includes: review of the previous session's material, new educational content, and discussion/application. Topics will include: 1) Overview, 2) Physical Activity (3 sessions), 3) Nutrition/Healthy Eating (3 sessions), 4) Managing Fatigue/Sleep (3 sessions), 5) Relaxation (3 sessions), 6) Tobacco cessation (3 sessions), 7) Substance Use (3 sessions), 8) Medication/Side Effects (3 sessions), 9) Review (1 session), and Closing (1 session). In addition, participants in this condition will be offered additional individual sessions if needed to practice relaxation skills and receive instruction in implementing them in real-world settings.

Randomization Procedures

After consent is obtained, the diagnostic interview will be administered and if determined eligible, participants will then complete the baseline assessment. After the assessment, the

participant will be randomized to one of the two study conditions, stratified by site. The research assistant conducting the assessment will thus be blind to the participant's study condition. We will randomize individuals within stratification groups in permuted blocks, ensuring that the intervention and control samples will be the same size once every block has been randomized. This procedure maximizes statistical power.

EnCoRE will run for 14 weeks with 2 individual and 24 group sessions. Both the individual and group sessions will be audio-recorded for training and fidelity purposes. The individual sessions will be scheduled at the convenience of each participant and will both be completed before the group begins. Group sessions will be held twice per week for 12 weeks, plus linkage between EnCoRE and participants' treatment teams - will be delivered and coordinated by the study interventionist at each site to maintain continuity of the philosophy and message of the intervention, and ensure that participants have a single person to whom they can address questions or problems. The interventionist will be well-known to the site and will regularly talk with staff regarding study recruitment and operations. Group sessions will be small (4-6 people) format for 60 minutes. The group format allows participants to benefit from modeling and role-playing with peers. The small size provides ample opportunity for participants to get adequate practice, while minimizing demands for sustained attention. Group sessions follow a pre-determined order, but the intervention will be flexible such that topics can be reviewed as needed. While each session has a specific topic, activities are adjusted to meet the needs of each participant. For example, activities such as role-playing are tailored by asking participants to detail situations that they would encounter in which they could use these skills, and then are set up to be as realistic for each participant as possible. EnCoRE includes strategies aimed at teaching Veterans with schizophrenia and negative symptoms ways to (1) increase intrinsic motivation for goal-directed activities, (2) understand and overcome deficits in anticipatory pleasure, (3) reduce expectancies for failure, and (4) perform skillfully in new social situations.

Individual sessions

Motivational interviewing (MI) aims to help individuals explore intrinsic reasons for change in line with their personal preferences and values and overcome ambivalence through empathy, promoting self-efficacy, and emphasizing personal choice84. The 2 individual sessions in EnCoRE include MI to help participants explore how their low degree of engagement in the community has impacted them, and to identify community roles and activities with high personal interest and relevance. The first MI session provides an overview of EnCoRE and information on negative symptoms and how they impact community engagement, plus a values clarification exercise to help participants think about the activities and goals that are most important to them. The session also includes identifying community roles and activities that are personally relevant and in line with each participant's goals and values. These roles/activities will be pursued throughout EnCoRE. The session also discusses participants' own experience of negative symptoms and identification of personal behavioral and cognitive barriers, including discussion of some baseline assessment results re negative expectancies and skills deficits. The second MI session involves a decisional balance exercise highlighting the personal pros of change and reviews some common negative thinking patterns and how these can be barriers to

participating in community activities Each participant also identifies a support person with whom s/he can review progress, goals, successes, and challenges. By the end of the MI sessions, each participant has a list of ways negative symptom and pleasure deficits impact his/her life, community roles and activities that interest him/her, and short-term goals. This list is provided to the participant and to interventionist for referral during group sessions.

Group Sessions

(1) Group sessions format includes. a) Groups begin with goal setting and a review of content from the previous session; b) A new topic, skill, or cognitive strategy is taught; c) An activity is used to illustrate or practice the new information/skill/strategy; and d) Sessions end with a review and a personalized assignment based on goal setting from the start of the session. (2) Motivational enhancement is built into the tone and format of all group sessions in order to help participants utilize internally generated motivation to change. This involves discussing the impact of negative symptoms on their lives, the interventionist acknowledging and reinforcing participants' internal motivation and any change efforts, and charting progress in trying new activities or decreasing negative expectancies. (3) Throughout the group intervention, mutual peer support is encouraged among participants to create a supportive environment.in several ways, including: a) Establishing a consistently positive and supportive group climate, even when participants are not making progress or express waning motivation; b) Encouraging participants to reinforce others' achievements and share their successes and challenges; c) Teaching participants how to give supportive feedback to one another; d) Encouraging participants who try new activities to assist other group members with their ideas. (4) Several other steps provide for optimal learning. Groups are small (4-6 patients), sessions are structured with a predictable format and a preplanned curriculum, interventionists are directive yet flexible, and use visual aids. Individualized binders, and personalized information to enhance memory and attention. Group sessions are broken down into 3 topic areas: psycho-education, behavioral skills training, and cognitive strategies.

Psycho-education (PE) sessions

PE is used to increase participants' knowledge about negative symptoms and the associated pleasure deficits and links to outcomes85. PE focuses on: (1) definition of negative symptoms and how negative symptoms serve as barriers to engaging in roles and activities in the community, and personal experiences of negative symptoms and the limits these have placed on participants' experiences and relationships; (2) definition of anticipatory pleasure deficits and how these impact engagement in the community; (3) Identification of methods to compensate for pleasure deficits; and (4) Ways to use emotions to guide behavior (i.e. pleasurable activities can be repeated and will be pleasurable again).

Behavioral activation and skills training sessions

Behavioral and skills training interventions are recommended for schizophrenia as ways to increase social engagement and functioning67,86 and to help individuals overcome deficits in

anticipatory pleasure, build skills for successful engagement in the community, and sustain rewarding behaviors over time. Topics include: (1) Behavioral activation focused on increasing activity and access to reinforcement; (2) Methods to compensate for pleasure deficits (scheduling time for activities, seeking support from a significant other, ways to remind oneself that activities will be pleasant and worth doing); (3) Social skills training71 to teach participants skills for interacting with other people in social situations; examples include conversation skills (e.g., starting conversations with a new/unfamiliar person), friendship skills (making plans with a friend, finding common interests), and other skills (interviewing for a job); (4) Behavioral rehearsal of newly acquired skills both in and outside of group sessions; (5) Short-term goal setting in which the participant, with coaching from the interventionist and input from peers, identifies some aspect of a community-based activity to try out in between group sessions. Goals can involve trying a new activity, repeating a past pleasurable activity, or planning for a future activity.

Cognitive Sessions

Cognitive strategies have been used in schizophrenia with success67. To address dysfunctional attitudes and negative expectancies that contribute to negative symptoms we utilize established CBT methods to teach participants what negative expectancies are, identify personal negative expectancies, and challenge beliefs via cognitive restructuring and behavioral experiments.

Assertive Outreach

EnCoRE includes ongoing, active outreach to bolster intrinsic motivation to remain engaged and to communicate that the program is available to assist them when they encounter barriers to achieving their community engagement goals. Outreach activities include: (1) Additional individual MI sessions if needed to reevaluate community engagement goals and problem-solve barriers to trying new community activities, (2) Brief meetings with a participant - such as meeting the participant at the medical center for coffee or a walk around the complex to foster a good relationship and to address and work through any reservations or fears about coming to the program, (3) Community visits with participants (visiting nearby community locations) if needed to assist the participant in trying a new community activity, (4) Linking participants with other professionals if they need assistance with issues related to benefits, transportation, housing, or other services as a way to build the treatment relationship, especially if such issues are seen by the participant as more important in the short-term than other EnCoRE related goals.

In either condition, a reminder letter will be sent to participants who either have started to attend groups but are absent or who have never started groups, and whom we have been unable to reach by phone or in person. If needed, study staff will attempt to schedule participants for their consent or assessments by approaching them at their upcoming VA appointments, as noted in their CPRS medical record. Additionally, a reminder letter will be sent to participants who are scheduled for a consent appointment or due to complete a post-treatment or follow-up assessment but whom we have been unable to reach by phone or in person. If a participant expresses to study staff they he or she is having difficulty attending study

appointments due to lack of transportation then a bus token, or equivalent travel voucher, will be offered to the participant.

## Risks to Participants

Risks to Schizophrenia participants: The interviews, questionnaires, and neuropsychological tests present no significant physical, psychological, social, or legal risks are associated with involvement in the study. All measures are physically non-invasive, have been used in prior research, and elicit minimal distress or discomfort. The assessment tasks have been used in many other research studies with psychiatric patients. They are not harmful or unpleasant. Some participants may experience some embarrassment discussing personal information or when participating in the study interviews. The major costs to participants involve the time required to complete the assessments and to participate in the study interview as well as confidentiality and storage of data. The study interventions are low risk, psychosocial interventions. Participants will continue with their regular mental health treatment (both psychosocial and pharmacological) while engaged in the study and continue to receive care with their regular treatment team. To ensure continuity of care for study participants, we will maintain regular contact with participants' treatment teams to discuss serious issues that emerge during study participation such as medication side effects, recurrence of symptoms, and risk of self-harm or threats to others. The PI will provide supervision and consultation with study interventionists to address clinical issues, and will communicate with patients' treatment teams whenever necessary. These contacts will be described in the informed consent document so participants will be aware that study interventionists communicate with their treatment teams around serious clinical issues.

Risks to Mental Health Provider participants: Qualitative interviews regarding implementation of EnCoRE present no significant risks. Such interviews are not harmful or unpleasant. The major costs to participants involve the time required to participate in the study interview as well as confidentiality and storage of data.

## Data Collection

Schizophrenia Participants will complete baseline (BL; 180-240 minutes; $30), post-treatment (PT; 120 minutes; $30), and 3-month follow-up (FU, 120 minutes; $30) assessments. All participants who are randomized will be contacted for all assessments (intent-to-treat) regardless of attendance at sessions. Assessments can be completed across multiple appointments if needed.

Three types of data will be collected: quantitative data, qualitative data, and interventionist tracking/logs. All measures have been used in research with individuals with schizophrenia and/or evaluation research and have good psychometric properties. We also will conduct qualitative interviews in order to examine feasibility and acceptability to inform future adoption, implementation and sustainability. First, Veterans who participated in EnCoRE will complete a 30-60 minute qualitative interview at post-treatment regarding aspects of EnCoRE they perceived as more or less helpful, interesting, and valuable. For example, we will ask how they liked the group format, what they found helpful, and what they would change, what the

study interventionist did well or could have done differently, and for any other reflections or suggestions about the intervention. Second, we will also conduct qualitative interviews with 20 mental health providers who work with Veterans with schizophrenia at the study sites. These interviews will solicit their experiences treating veterans with schizophrenia and negative symptoms and their impressions regarding EnCoRE content, processes, and how the program integrated with participants' other mental health care. Qualitative interviews will be conducted by the PI, Dr. Lucksted (Co-I), Natalie Kiddie and Kelly Lloyd (study coordinators), and Lorrianne Kuykendall and Kirsten Poston (research assistants) and will be audio recorded so that information can be summarized (see Data Analysis for further description of qualitative analyses). When both the Veteran and provider qualitative interviews are completed, the PI and Co-I will integrate themes, issues, and suggestions (see Data Analysis). Findings will be discussed among the investigators, and used to revise intervention materials to inform future implementation of EnCoRE. We will also gather information from EnCoRE interventionists. First, notes from all supervision meetings throughout the study will be kept and reviewed. Interventionists will be asked to describe their experiences in the individual and group EnCoRE sessions, the strengths and weaknesses of the program content in terms of delivery, and the topics/sessions that most resonated with Veterans. Second, interventionists will also keep logs of each individual and group session, recording information on the topic, the number of Veterans in attendance, observations, and what areas of content or group process appear to be more or less relevant and interesting to participants. These logs will be reviewed by the investigators throughout and at the end of the study to determine content for developing a draft implementation manual and other implementation results.

We have extensive experience tracking participants and expect to achieve an 80% follow-up rate. Data will be collected by experienced Research Assistants (RA) who will be trained using a library of videotaped assessments from our laboratory. All assessments will be supervised by the PI and co-Is. New interviewers will rate 4 videotaped interviews and demonstrate reliability on these instruments as reflected by Intraclass Correlation Coefficients (ICCs) of .80 or greater at the factor score level (continuous ratings), or Kappas greater than .80 (dichotomous ratings) prior to rating participants. Interviews will be videotaped to permit reliability checks [1 interview for every 5 completed (20%)]. Data will be coded by the RA who conducted the assessment and checked by a second RA. Discrepancies will be brought to the PI and resolved.

Protection of Vulnerable Populations- Mentally Ill

Staff is trained to recognize symptoms of SMI and cognitive impairment that could undermine the ability to provide informed consent. Since some participants have poor reading skills, the consent form will be reviewed aloud to all participants in tandem with their own silent reading of the document. The study staff member will review any points about which the potential participant is unclear, and the participant will be invited to ask questions as needed. Staff is trained in strategies for interacting with people with SMI, including speaking slowly and

clearly, stopping frequently to summarize, and providing time for questions. After reading the consent, and before obtaining a signature, a brief questionnaire is administered to verify that the participant has understood the consent document. This questionnaire is attached to the consent form and is completed immediately after explaining the informed consent form and before obtaining the participant's signature. If the participant is unable to answer the questions correctly, the research assistant reviews the aspects of the study that the participant did not understand and asks the questions again. If the participant cannot answer all questions correctly, he/she will not be enrolled.

Protection of Vulnerable Populations-Employees

There will be no specific risks associated with study participation for Employees or Lab Personnel. Informed consent will be obtained and research assessments conducted in the same manner as for other participants. All potential participants will be told that their employment status will not be affected by their decision to participate in the study or not.

## 5.2 Recruitment Methods

Recruitment of Schizophrenia Participants:

We will first recruit and assess approximately 6 Veterans with schizophrenia from one study site to participate in a training trial. We will implement EnCoRE and the control condition, videotape sessions, and provide in-depth supervision and feedback. We will refine the EnCoRE manual for the RCT based on interventionist training and feedback. Following refinement of the treatment manual, we will then recruit a randomized control trial with 108 veterans with Schizophrenia.

Potential veteran participants will be identified by several methods: (1) CPRS chart review and screening via use of partial HIPAA waiver, (2) VA clinician referrals of participants who meet inclusion criteria and who might be interested in participating, (3) Self referrals by participants who hear about the study and are interested in participating, (4) Self-referral via IRB approved study flyer, (5) Self-referral via IRB approved announcements in the MIRECC newsletter which is generated on a quarterly basis. We will also use the VAMHCS MIRECC Recruitment Database (Protocol # 00042721) at the Baltimore and Perry Point sites to identify participants who meet study eligibility criteria. We will also provide an IRB approved study flyer to other MIRECC study teams to distribute to Veterans participating in other studies; Veterans who receive the flyer this way can self-refer to this study if they are interested.

Participants will be screened for eligibility via chart review. Study staff will then contact a VA treatment team member to determine if a potentially eligible participant is clinically stable enough to participate in the study and can be contacted for recruitment. If the VA treatment team member does not respond within one week the study team will accept this as an implied approval and recruitment will proceed. Per VA CIRB requirements, initial contact with Veterans

will be made in person or by letter prior to any telephone contact. In-person contact will be made with Veterans before or after their VA appointments.

We may also send out a recruitment letter to potential participants to see if they are interested in participating in the study. They will be given contact information for the study team as well as a postcard to mail back in a sealed pre-stamped envelope to indicate their interest or lack of interest in the study. A follow-up phone call will be made after one week to ensure the participant received the mailing, and to provide them with additional information about the study if they express an interest

Recruitment will involve the following process:

1) Participants will be screened for preliminary eligibility via chart review.
2) For those who meet preliminary eligibility criteria, study staff will contact a member of the Veteran's VA mental health treatment team to determine if the Veteran is clinically stable enough to participate in the study and can be contacted for recruitment.
3) For those who are identified as sufficiently clinically stable, a form describing the study will be provided to the treatment team member to give to the Veteran at his/her next appointment. This form will include study team contact information and describe that the Veteran may be approached by the study team about his/her participation.
4) If the Veteran has any objections to being approached by the study team, this will be recorded on the form and the form will be returned to the study team.
5) If the Veteran is not scheduled to see the treatment team member within 2 weeks, a letter will be sent to the Veteran as outlined above. A second letter will be sent if we have not heard back from and were unable to reach a Veteran after sending the first recruitment letter. This would be useful in cases in which a Veteran does not receive the first letter. If a Veteran does not respond after two letters, we will not send additional letters.

Further, it should be re-iterated that research assistants who will interact with participants are all specially trained to work with persons with serious mental illnesses. Research staff will first consult the participant's treatment team for permission to begin the consent process. This will help avoid approaching people who may be in crisis or may not be able to comprehend the study procedures, risks, and benefits.

<u>Recruitment of Provider Participants:</u>

We will collect qualitative interviews with 20 VA mental health providers who work with Veterans with schizophrenia to inform feasibility and implementation.

Study staff will attend individual clinic team meetings, and will introduce the study during the clinic meetings. Providers will be asked if they would like to participate in the study/qualitative interviews at that time. If providers express an interest in participating, they will be contacted by study staff to schedule a time to review the consent form. Providers may also self-identify for participation in the study if they hear about the study and are interested.

Payment to Participants

Veteran Participant payments:

Schizophrenia participants will be paid $30 for completing each of the three study assessments at baseline (prior to starting the intervention), post treatment (immediately following the intervention) and follow-up (3 months following the intervention), for a maximum total of $90 for the assessments. They will also be paid $10 for completing each of the 2 individual sessions, and $5 for each of the 24 group sessions for a maximum total of $140 for individual/group sessions. If a veteran is found to be ineligible after completing the baseline's diagnostic interview, he or she will be paid $5 and his or her study participation will be complete.

Participants will be paid at the completion of each research appointment. If study staff encounter a problem with accessing vouchers or gift cards (for example if the fiscal year budget does not allow for access to research funds) and are unable to pay participants at the time of their completed appointment, study staff will pay the participant as soon as possible (when funds become available) following their appointment if paid in VA voucher or gift card. If vouchers or gift cards are unavailable, the participant may be offered cash. Participants can also be mailed the voucher or gift card for their convenience. Participants will be informed ahead of time if there will be any delay in payment for completing research tasks and offered payment in cash.

Provider Participant payments:

VA provider participants will not be paid for their participation in this study.

## 5.3 Informed Consent Procedures

Schizophrenia Participants:

Written informed consent will be secured from all participants. Our research staff are carefully trained on obtaining consent from participants with serious mental illness and supervised by senior staff members. Only study staff listed on this protocol will be allowed to obtain informed consent for this study. Approval will be secured from the mental health clinician before a potential participant is approached, and the study staff will verify that any potential participant is sufficiently stabilized to provide consent before approaching him/her. After securing clinician approval, the study interviewer will meet the participant, introduce him/herself to the participant, and inform that participant that their clinician has been contacted about their participation in our research. The study interviewer will use the clinician's name so the participant will not be confused. The study interviewer will then provide an overview of the project, and invite him/her

to participate. Interested participants are provided an informed consent form. Staff members are trained to recognize symptoms of severe mental illness and cognitive impairment that could undermine a participant's ability to provide informed consent. The consent form is reviewed with all participants in detail. All participants will be given the opportunity to read the entire consent form on their own and to ask the research staff member questions prior to agreeing to participate and prior to signing the form. Research staff are trained in strategies for interacting with people with severe and persistent mental illness, including speaking slowly and clearly, stopping to summarize frequently, and providing time for questions.

After the consent form has been summarized in detail with the participant and all questions answered, the staff confirms that the participant is still interested in participating by soliciting a verbal response. Those who express willingness to provide consent must complete a brief questionnaire to assess competency and understanding of the consent form. If the participant is unable to answer the questions correctly, staff re-reviews the aspects of the study that the participant did not understand. The staff member asks the questions a second time. If the participant cannot answer all questions correctly, he/she will not be enrolled in the study.

Per IRB regulations, a copy of the signed consent form is given to the participant, and the original is kept in the research office. Participants will also receive a Health Insurance Portability and Accountability Act Authorization to Obtain, Use and Disclose Protected Health Information for Research (HIPAA) that will be summarized for them. Staff will ask participants if they have any questions once the document has been read, and then participants will sign the authorization. A copy of this signed form will be given to the participant. In keeping with the requirements put forth in the Department of Veterans Affairs: a) social security numbers of veterans will not be solicited; b) research staff will restrict telephone and other contacts with veterans to the procedures and data elements outlined in the IRB approved protocol; c) initial contact with veterans must be made in person or by letter prior to telephone contact; d) verification of the study will be provided following the guidelines set forth in HRPP/IRB policies and procedures 10G. In following the most recent VHA Handbook, version 1200.5, consents will no longer be scanned nor will study enrollment or progress notes be added into participants' medical records.

Provider Participants:

Written informed consent will be secured from all provider participants. Our research staff are carefully trained on obtaining consent from participants and are supervised by senior staff members. A member of the study staff will meet the participant, introduce him/herself to the participant, and then provide an overview of the project, inviting him/her to participate. Interested participants are provided an informed consent form. The consent form is reviewed with all participants in detail. After the consent form has been reviewed and all questions answered, the staff confirms that the participant is still interested in participating by soliciting a verbal response. Per IRB regulations, a copy of the signed consent form is given to the participant and the original is kept in the research office.

## 5.4 Inclusion/Exclusion Criteria

Schizophrenia Participants:

**Training Trial**

**Inclusion criteria:** (1) DSM diagnosis of schizophrenia or schizoaffective disorder; (2) Age between 18 and 75 years; (3) Seen by a mental health professional at the recruitment site at least once every 3 months for the last 6 months (to demonstrate that participants receive ongoing and regular mental health care); (4) Competent to sign Informed Consent. **Exclusion criteria**: (1) Documented history of serious neurological disorder or head trauma with loss of consciousness; (2) Mental retardation (defined as a total IQ score less than 70 as measured by the Wechsler Test of Adult Reading or as indicated by chart review; (3) Inability to effectively participate in the baseline assessments due to psychiatric symptoms on two successive appointments; (4) Current problematic substance use as indexed by scores on the Michigan Alcoholism Screening Test and the Drug Abuse Screening Test (described below); (5) Currently meet criteria for a major depressive episode.

**RCT**

**Inclusion criteria:** (1) DSM diagnosis of schizophrenia or schizoaffective disorder; (2) A CAINS minimum rating of a "moderately severe deficit" (3 or greater on a 0-4 scale) on one or more of any symptom domain within the affect-motivation factor (i.e., symptoms of asociality, avolition, and anhedonia) or a minimum rating of a “moderate deficit” (2 or greater on a 0-4 scale) on two or more of any affect-motivation symptom domain; (3) Age between 18 and 75 years; (4) Seen by a service provider twice within the last 6 months *or once in the last 6 months consistently for two years, as in line with the Veteran’s recorded mental health treatment plan* (to demonstrate that participants receive ongoing and regular mental health care); (5) Competent to sign Informed Consent. **Exclusion criteria**: (1) Documented history of serious neurological disorder; (2) Mental retardation (defined as a total IQ score less than 70 as measured by the Wechsler Test of Adult Reading or as indicated by chart review; (3) Inability to effectively participate in the baseline assessments due to psychiatric symptoms on two successive appointments; (4) Current problematic substance use as indexed by scores on the Michigan Alcoholism Screening Test and the Drug Abuse Screening Test (described below).

Provider Participants:

**Inclusion criteria:** (1) Work in VA mental health service in one of the 3 study locations (Baltimore, Perry Point, Washington DC VAMCs), (2) Work with Veterans with schizophrenia, (3) Willingness to participate. **Exclusion criteria:** (1) None.

## 5.5 Study Evaluations

| Table 3 Domain | Measure (time for administration) | Time-point |
|---|---|---|

| | | |
|---|---|---|
| Diagnosis | Structured Clinical Interview for DSM-IV[79] - Mood Disorders and Psychotic Symptoms Sections (SCID)(60 minutes) | BL |
| Symptoms | Clinical Assessment Interview for Negative Symptoms[73] (CAINS); Brief Psychiatric Rating Scale (24-item version)[80] (BPRS)(60 minutes) | BL, PT, FU |
| Social/ Community Functioning Recovery/Self-efficacy | Role Functioning Scale (RFS); Social Functioning Scale (SFS); [82] Brief University of California San Diego Performance-based Skills Assessment (UPSA)[83] Maryland Assessment of Recovery Survey (MARS)[84] Community Reintegration of Service Members Computer Adaptive Test[100] (CRIS-CAT); Quality of Life (TL-30S) (20 minutes) | BL, PT, FU |
| Attitudes/ Beliefs | *Success and Resource Appraisals Questionnaire Dysfunctional Attitudes Scale (DAS I and II)[86]* Future Thinking Task[87] (15 minutes) | BL, PT, FU |
| Attendance/ Satisfaction | Participant Satisfaction Questionnaire and Service Satisfaction Scale[88] Qualitative interview (10 minutes) | PT, FU |
| Feasibility/ Acceptability | Recruitment and retention of participants, Attendance and participation data, Information from qualitative interviews from Veterans and providers, EnCoRE interventionist logs and supervision notes | Ongoing Qualitative Interviews: PT |
| Adherence and Competence | Adherence Rating Scale, Competence Rating Scale; Completed by blinded coders. | Ongoing |
| Substance Abuse | Michigan Alcoholism Screening Test[89], Drug Abuse Screening Test[90] (5 minutes) | BL, |
| Cognitive functioning | Weschler Test of Adult Reading, Brief Cognitive Assessment (15 minutes) | BL, |
| Other | Demographics Form, Clinic Services Use Tracking Form (CSUTF), Morisky Medication Index[95], Medication Use, Service Use Form (SUF)[96] (10 minutes) | BL, PT, FU |

## 5.6 Data Analysis

Data will be screened for errors using frequency and contingency tables and univariate and bivariate plots before analysis. As the primary outcome measures are scales we expect (but will verify) that they are approximately normally distributed; if not, we will consider alternatives (e.g. transformation or a generalized linear model). Our primary analytical approach will be to compare EnCoRE versus control at post-treatment (Hypotheses 1 thru 4 below) after adjusting for BL scores. This is one type of analysis of covariance (ANCOVA) linear regression model that improves power by reducing residual variation102,103. We will also check whether there is an interaction between baseline severity and treatment effect. If there is, we will report these results as well. We will conduct a similar analysis (adjusting for BL) to compare the conditions at FU while including the post-treatment assessment in a repeated measures model, as including these values can help reduce bias in the FU estimates when participants miss the FU but are assessed at PT. We will enter site as a fixed effect into the analysis models because there will only be 3 sites (in relatively close proximity). Because the groups will have rolling admission, we do not expect significant group effects, however we will verify this by calculating intra-group correlations (i.e. ICC's) and if model fit is improved, we will include group as a random effect in

primary analysis models (then, the model would be a linear mixed model that includes adjustment for BL). In this case we will replace site with group in the model as sample size will not be sufficient to adjust for both. Viewed from another perspective, group is nested within site and is thus the more specific nested variable to be adjusted for. We will also check covariate balance (demographics, clinical characteristics) across the two conditions. Randomization should keep the two conditions in balance, however it is possible for imbalance to occur by chance. If a substantively relevant BL covariate significantly differs across the two conditions we will adjust for the covariate. Because this is a randomized trial, no covariates other than BL score of the outcome measure and site will be adjusted for a priori. To assess potential bias due to missing assessments, we will compare BL characteristics of participants who were versus were not assessed at PT/FU. We will check that attrition rates are comparable in the two conditions. Our procedures and analyses will be based on the intent-to-treat principle: we will attempt to assess all participants at PT and FU including those who discontinue treatment early. All available data will be included in the analyses. We expect to have assessments on 85% of the sample (i.e. 15% attrition) at PT and 80% (i.e. 20% attrition) at FU. To analytically address potential bias in the comparison of the conditions at PT due to missing assessments, we will conduct a sensitivity analysis by imputing missing outcome values using a regression multiple imputation approach that will produce unbiased estimates under the Missing at Random (MAR) assumption, similar to mixed effects models104,105. If Non-Ignorable (NI) dropout is indicated we will further conduct a sensitivity analysis under departures from the MAR assumption using the procedure of Carpenter106. SAS Procedures MI and MIAnalyze will be used. Similar procedures will be used for missing data at FU.

Specific Aim 1: Train therapists and refine the EnCoRE manual in a trial with approximately 6 Veterans with schizophrenia. Procedures are described in section 3C.

Specific Aim 2: Conduct a randomized controlled trial to test the efficacy of EnCoRE in producing positive changes at PT and FU on the primary outcomes of negative symptoms and social and community functioning. Hypothesis 1 (H1): Veterans exposed to EnCoRE will have lower mean scores than those in the control condition on the affective-motivational deficit subscale of the CAINS at post-treatment. The EnCoRE group will continue to have a lower mean than the control group at FU (secondary hypothesis). . Letting Y1, Y2, and Y3 be values for the motivational deficit subscale of the CAINS at BL, PT, and FU respectively, and Tx condition the treatment indicator (Tx condition=1, if EnCoRE; Tx=0 if control condition), the analysis model for Hypothesis 1 (post-treatment) will be: Y2 = Y1 + Site (or Group) + Tx condition + error (ANCOVA). Substantively relevant BL covariates found to significantly differ between treatment conditions, even after randomization, would be added. We will also check if there is a covariate by treatment interaction in this case. Significance test of the Tx condition coefficient will test hypothesis 1. The analysis model for the comparison at FU will be similar, but will include Y2 and Y3 as repeated responses and include a random effect to account for correlation between the two. Thus, it will be a linear mixed model with adjustment for BL (Y2 and Y3 repeated response and adjustment for Y1). A time and group-by-time interaction term will be added (time indicating FU versus PT) in order to estimate the difference of means at FU assessment. A specified contrast using the mixed model will test the hypothesis that the mean affective-motivational deficit in the EnCoRE condition will continue to be less than in the control

condition. Hypothesis 2 (H2): Veterans exposed to EnCoRE will have a higher mean score than controls at post-treatment on the RFS and SFS. The EnCoRE group will continue to have higher a mean score than control at the 3 month FU. The analysis model for H2 will be parallel to those for H1.

Specific Aim 3: Examine qualitative interviews completed by (1) Veterans who participated in EnCoRE and (2) Mental Health Providers who work with Veterans with schizophrenia to determine aspects of EnCoRE that were perceived as more or less helpful, interesting, and valuable in order to make adjustments prior to conducting a larger, multi-site implementation trial. Qualitative data analyses will be organized and supervised by Dr. Lucksted. Interviews with Veterans randomized to EnCoRE (n=49) and mental health providers who work with Veterans with schizophrenia in PRRCs (n=10) will be audiotaped and transcribed by a trained HIPAA compliant professional. We will analyze data in 3 phases employing “constant comparison”107,108 of data units with others and data with emerging themes. Transcripts will be: (1) read and discussed by the PI and Co-I, creating a brief summary that captures our best understanding of what the interviewee sought to convey; (2) closely open-coded (categorizing each line or small unit of data with labels that convey their meaning vis-a-vis the study focus) by 2 team members, and these codes discussed to consensus. Breaking the data into small units and not using an a priori code template helps keep analysis focused on the data and the interviewee’s meaning, minimizing tendencies to see data through one’s preconceived ideas about the topics at hand; (3) As these steps near completion, we will examine meaning across interviews via focused cross-interview coding109 to organize themes, variations and interrelationships among the ideas, views, and experiences conveyed by the multiple interviews. We will pay particular attention to ideas/themes that can contribute to intervention effectiveness and implementation. In doing so we will consider interviewee’s personal reflections distinct from their observations/impressions of other Veterans, and will pay close attention to their personal theories regarding the nature, causes, structure, meaning, effects, and management of negative symptoms. Qualitative software program Atlas-ti 5.0 will be used. The study team will discuss the results to identify concrete ideas for improving/refining the intervention suggested by each point in the combined summaries. The results of (2) will also be used by the study team to identify issues related to feasibility and implementation.

Secondary Aim 1: Test the efficacy of EnCoRE in producing positive changes at PT and FU on a second measure of social/community functioning (UPSA-B). Hypothesis 3 (H3): Veterans exposed to EnCoRE will have higher mean scores than controls at post-treatment and at FU on the UPSA-B total score.

Secondary Aim 2: Test the efficacy of EnCoRE in producing positive changes at PT and FU on mental health recovery. Hypothesis 4 (H4). Veterans exposed to EnCoRE will have higher mean ratings on the MARS than control at PT and FU. Analysis models for H4 will be parallel to those for H1.

Secondary Aim 3: Assess the modifying effect of covariates on the effectiveness of EnCoRE including general cognitive ability and psychotic symptoms. Hypothesis 5 (H5): General cognitive ability and symptoms of psychosis will not impact the effectiveness of the intervention

for negative symptoms and community functioning at PT and FU (See analysis below for H6). Hypothesis 6 (H6): Greater ratings of consumer participation in and satisfaction with the intervention will be associated with better PT and FU outcomes. For each of the potential modifiers in H5 and H6, we will re-fit the primary analysis model for PT outcomes after adding two terms, the potential modifier and the interaction term between the treatment condition indicator (Tx condition) and the potential modifier. The variable will be a modifier if the coefficient for the interaction term is statistically significant (p-value<.05). A similar model will be used to assess modification at FU but there will be additional interaction terms with time (including 3-way interaction time*treatment condition*modifier), in order to estimate modifying effects at FU (i.e. separate effects at FU vs. PT).

Secondary Aim 4: Examine the associations of improvements in attitudes/beliefs regarding success and recovery on symptoms and functioning. Hypothesis 7 (H7): Improvements on ratings of attitudes/beliefs (e.g. DBS, FTT score) in the EnCoRE condition from BL to PT and FU will be positively associated with improvements in symptom and functioning outcome measures from BL to PT and FU, respectively. Change scores will be computed for attitudes/beliefs and recovery, and for symptom and functioning scales. Pearson correlations will be calculated and significance tests of the null hypothesis of zero correlation will be conducted. Note: These tests of association can be conducted even if improvement on ratings of self-efficacy and recovery are not significant in H3.

Other analyses

To examine feasibility and acceptability we will 1) Track measures of engagement and participation by recording: a) actual recruitment as compared to recruitment goals, to determine the pace at which subjects consent to participate; b) rates of engagement and attendance at intervention sessions, and the number of reminder and other outreach contacts required to keep participants engaged. This will tell us how much staff time is required to get participants to remain involved; c) Track VA clinic service and medication use with the CSUTF and the SUF after post and follow-up assessments by conducting chart reviews. 2) Track costs, including: a) Training of research therapists in the intervention; b) Payments for session attendance. Attendance at training sessions and information on training session duration will be recorded by project staff. We will determine inter-rater reliability for the adherence and competence scales, then calculate mean adherence ratings for intervention congruent and noncongruent behaviors and mean competence ratings. 3) Review supervision notes and interventionist logs to identify content for implementation materials via discussion among the investigators. We will examine CRIS-CAT responses and explore reliability/validity in a schizophrenia sample.

Sample Size Considerations

We have powered this RCT for primary hypotheses 1 and 2 of Specific Aim 2 (two outcome measures). We consider the tests for the FU assessment as secondary. A medium effect size at PT (e.g. Cohen's d = .50) would generally represent a minimum clinically important difference. For example, for the primary outcome in H1, the CAINS Affective-Motivational Deficit Subscale (average rating range: 0–4), we know that d=.50 represents a .36 point difference in means between EnCoRE and control at PT which is slightly more than 1/3 of the distance

between anchor points (0=No impairment, 1=Mild deficit, 2=Moderate deficit, 3=Moderately Severe deficit, 4=Severe deficit). Because we are testing 2 hypotheses under Specific Aim 2, we specified the alpha level=.05/2=.025 for the sample size calculation. Power was set =.80. We expect 15% attrition at PT. For these specifications and under the primary analysis model, we would need a sample size of N=92 when the correlation between baseline and post-treatment outcome measure = .70. Although, setting this correlation to .70 is reasonable, this correlation could plausibly be lower, requiring the sample size to be greater. Therefore, we re-set this correlation to be .63, and found that a sample size of N = 108 would then be required. Calculations were performed assuming a repeated measures design using the Sampsi command in Stata version 8.

### 5.7 Withdrawal of Subjects

Schizophrenia participants may be removed from the study if the investigator decides that the study is no longer in their best interest, or if a participant fails to follow instructions of the research staff. There are no consequences of a subject's decision to withdraw from the research and the procedures in this study. Participants are free to withdraw at any time, and participation is entirely voluntary.

## 6 Reporting

All Unanticipated Problems, Serious Adverse Events, Deviations related to this study will be reported to the engaged participating sites within 5 business days of study staff becoming aware of the event. Adverse events that do not meet the criteria for reporting within 5 business days will be reported to the VA Central IRB and the participating sites at the time of continuing review in summary format.

## 7 Privacy and Confidentiality

All research appointments will be conducted in private rooms with closed doors within the VA Maryland Health Care System (VAMHCS) or the DC VAMC. All participants will receive research information in a private room with the door closed within the VA Maryland Health Care System (VAMHCS) or the DC VAMC. All qualitative interviews and assessments will be conducted in private rooms within the VAMHCS or the DC VAMC. If a Veteran is unable to complete the qualitative interview or study assessment at a VAMC then we will offer to conduct the interview over the phone and strongly encourage the Veteran to choose a confidential location for the interview. All digitally recorded sessions will take place within a room with the door closed at all study locations. If a provider is unable to complete the interview in a private VAMHCS or DC VAMC room then they will be asked to answer the qualitative questionnaire over email. Although no questions should elicit answers with PHI, we will require that providers encrypt all emails as a safeguard.

Digital audio recordings will be saved on a secure VA network, and digital audio files of Veteran and provider qualitative interviews will be posted on a secure website that a VA-approved transcription agency has access to. The transcription agency has completed all training and other requirements to be a contractor with the VA and our research center. Once

the agency has transcribed an interview, the word file of the transcript will be posted on the site, which we will download and store on a secure VA network. The transcription company will not keep a copy of the audio recordings, and will delete the audio recording once the transcription process is complete. The study team will keep a copy of all audio recordings either in electronic or CD form, as required by the VA Records control schedule. Provider qualitative email responses will be stored and analyzed as transcriptions.

Data collected at the DCVA will be mailed back or transported in a locked bag by study staff to the Baltimore VA for data entry and storage. The DCVA utilizes United Parcel Services of America (UPS) for shipping of packages. If data is mailed back, UPS sends an email to the study coordinator (Kelly Lloyd) once it has been shipped and then once it has been received at the Baltimore VA, as a way to track the location of the package. The data being shipped or transported from the DCVA may include paper data containing participant random ID numbers, as well as video or audio recordings of assessments, groups, and individual sessions (only labeled with ID numbers).

Data from the Perry Point VA will be transported back to the Baltimore VA for data entry and storage. This data will be transported in a locked bag by study staff. The data being transported back from the Perry Point VA may include paper data containing participant random ID numbers, as well as video or audio recordings of assessments, groups, and individual sessions (only labeled with ID numbers).

All hard copies of coded research assessment forms will be stored in a locked cabinet in a locked office in the VA Maryland Health Care System, MIRECC Offices (209 W. Fayette Street, Baltimore, MD 21201, suite 720. Consent forms which contain participants' names but not their project ID number are kept in a separate locked cabinet in a locked office at the VA Maryland Health Care System, MIRECC Offices (209 W. Fayette Street, Baltimore, MD 21201, suite 720. The file that links participant names to their project ID number will be stored behind the VA Firewall at all times. Access to the link file will be limited to only study staff listed on this protocol.

Coded electronic data collected in this study will be stored and managed at the VA Maryland Health Care System, MIRECC Offices (209 W. Fayette Street, Baltimore, MD 21201, suite 720), and stored behind the VA firewall. All data, including the investigator’s research records and any participant identifiers will be retained in accordance with the Dept. of Veterans Affairs Records Control Schedule (RCS 10-1), and will not be destroyed.

# 8 Communication Plan

The coordinator of this study is very familiar with the approvals required prior to initiating study activities at each site. They will ensure that all CIRB approvals as well as local IRB and R&D offices have approved the study prior to study implementation. All amendments and modifications for this study will be sent to the engaged participating sites (VAMHCS and DCVA R&D offices). If approval from these participating sites is required prior to implementation, this study will follow those procedures in place.

All study staff will be emailed and briefed during study team meetings on any changes to the protocol and will be provided a copy of the current version of the informed consent form from the coordinator as soon as it is made available. We will have weekly study team meetings and ongoing supervisions to ensure protocol compliance by study staff. Study staff will also be informed on a regular basis to report any non-compliance immediately to the study coordinator and PI of this study. Any incidents of non-compliance will be reported in accordance with VHA Handbook 1058.01 and the VA Central IRB Table of Reporting Requirements. In the event of any serious adverse events, unanticipated problems, or interim results that may impact the conduct of the study, all study sites will be informed immediately via email or study team meeting. The PI of this study will meet with the local facility director and LSI at each site to inform them that the study will no longer require engagement of the local facility.

# 9 References

1. Bellack, A.S., Green, M.F., Cook, J.A., et al. (2007). Assessment of community functioning in people with schizophrenia and other severe mental illness. Schizophr Bull, 33(3), 805-822.

2. Leifker, F.R., et al. (2009). Determinants of everyday outcomes in schizophrenia: Influences of cognitive impairment, functioning capacity, and symptoms. Schizophr Res, 115(1), 82.

3. Velligan, D.I., Alphs, L., Lancaster, S., et al. (2009). Association between changes on the Negative Symptom Assessment Scale (NSA-16) and measures of functional outcome in schizophrenia. Psychiatry Research, 169, 97-100.

4. Remington, G., Foussias, G., & Agid, O. (2010). Progress in defining optimal treatment outcome in schizophrenia. CNS Drugs, 24(1), 9-20.

5. Addington, J., & Addington, D. (2000). Neurocognitive and social functioning in schizophrenia: A 2.5 year follow-up study, Schizophr Res, 44, 47-56.

6. Bozikas, V.P., Kosmidis, M.H., Kafantari, A., et al. (2006). Community dysfunction in schizophrenia: Rate-limiting factors. Prog Neuropsychopharmacol Bio Psychiatry, 30, 463-470.

7. Norman, R.M.G., Malla, A.K., Cortese, L., et al. (1999). Symptoms and cognition as predictors of community functioning: A prospective analysis. Am J Psychiatry, 156(3), 400-405.

8. Norman, R.M.G, et al. (2000). Relationship of symptoms and level of functioning in schizophrenia to general wellbeing and the QOL Scale. Acta Psychiatr Scand, 102, 303-309.

9. Dickerson, F.B., Ringel, N., & Parente, F. (1999). Predictors of residential independence among outpatients with schizophrenia. Psychiatr Serv, 50(4), 515-519.

10. McGurk, S.R. & Meltzer, H.Y. (2000). The role of cognition in vocational functioning in schizophrenia. Schizophr Res, 45, 175-184.

11. Shamsi, S., Lau, A., Lencz, T., et al. (2011). Cognitive and symptomatic predictors of functional disability in schizophrenia. Schizophr Res, 126 (1-3), 257-264.

12. Tsang, H.W., Leung, A.Y., Chung, R.C., et al. (2010). Review on vocational predictors: A systematic review of predictors of vocational outcomes among individuals with schizophrenia: An update since 1998. Austr New Zea J Psychiatry, 44(6), 495-504.

13. Kelley, M., van Kammen, D., & Allen, D. (1999). Empirical validation of primary negative sym-ptoms: Independence from effects of medication and psychosis. Am J Psychiatry, 156, 406-411.

14. Mueser, K.T., Bellack, A.S., Morrison, R.L., et al. (1990). Social competence in schizophrenia: Premorbid adjustment, social skill, and domains of functioning. J Psychiatry Res, 24, 51-63.

15. Sayers, S.L., Curran, P.J., & Mueser, K.T. (1996). Factor structure and construct validity of the Scale for the Assessment of Negative Symptoms. Psychol Assessment, 8, 269-280.

16. Dyck, D.G., Short, R. & Vitaliano, P.P. (1999). Predictors of burden and infectious illness

in schizophrenia caregivers, Psycho Som Med, 61, 411-419.

17. Perlick, D.A., Rosenheck, R.A., Kaczynski, R., et al. (2006). Components and correlates of family burden in schizophrenia, Psychiatr Serv, 57, 1117-1125.

18. Provencher, H.L. & Mueser, K.T. (1997). Positive and negative symptom behaviors and caregiver burden in the relatives of persons with schizophrenia. Schizophr Res, 26, 71-80.

19. Buchanan, R.W. (2007). Persistent negative symptoms in schizophrenia: An overview. Schizophr Bull, 33(4), 1013-1022.

20. Pratt, S.I., Mueser, K.T., Smith, T.E. & Lu, W. (2005). Self-efficacy and psychosocial functioning in schizophrenia: a mediational analysis. Schizophrenia Research, 78, 187-197.

21. Kirkpatrick, B., Fenton, W., Carpenter, W.T., & Marder, S.R. (2006). The NIMH-MATRICS consensus statement on negative symptoms. Schizophr Bull, 32, 296-303.

22. Montgomery, S.A., & van Zwieten-Boot, B. (2007). ECNP consensus meeting. Negative, depressive, and cognitive symptoms of schizophrenia. Eur Neuropsychopharmacology, 17, 70.

23. Beck, A.T., Rector, N.A., Stolar, N.M., & Grant, P.M. (2009). Schizophrenia: Cognitive Theory, Research, and Therapy. NY: Guilford Press.

24. Turkington, D., Didley, R., Warman, D.M., & Beck, A.T. (2004). Cognitive-behavioral therapy for schizophrenia: A review. J Psychiatric Pract, 10(1), 5-16.

25. Rector, N.A., Seeman, N.V., & Segal, Z.V. (2003). Cognitive therapy of schizophrenia: A preliminary randomized controlled trial. Schizophrenia Research, 63, 1-11.

26. Bechdolf, A., et al. (2004). A randomized comparison of group cognitive-behavioural therapy and group psychoeducation in patients with schizophrenia. Acta Psychiatr Scand, 110(1), 21-28.

27. Barrowclough, C., Haddock, G., Tarrier, N., et al. (2001). Randomized controlled trial of motivational interviewing, cognitive behavior therapy, and family intervention for patients with comorbid schizophrenia and substance use disorders. Am J Psychiatry, 158(10), 1706-1713.

28. Barrowclough, C., Haddock, G., Lobban, F., et al. (2006). Group cognitive-behavioural therapist for schizophrenia. Randomised controlled trial. Br J Psychiatry, 189, 527-532.

29. Granholm, E., McQuaid, J.R., McClure, F.S., et al. (2005). A randomized, controlled trial of cognitive behavioral social skills training for middle-aged and older outpatients with chronic schizophrenia. Am J Psychiatry, 162(3), 520-529.

30. Valmaggia, L.R., van der Gaag, M., Tarrier, N., et al. (2005). Cognitive-behavioural therapy for refractory psychotic symptoms of schizophrenia resistant to atypical antipsychotic medication. Randomised controlled trial. Br J Psychiatry, 186, 324-330.

31. Kurtz, M.M., & Mueser, K.T. (2008). A meta-analysis of controlled research on social skills training for schizophrenia. J Consult Clin Psychol, 76, 491–504.

32. Bailer, J., et al. (2001). Efficacy of individualized CBT for schizophrenic patients with negative symptoms and social disabilities. Z Klin Psychol Psychother, 30, 268–278.

33. Cather, C., Penn, D., Otto, M.W., et al. (2005). A pilot study of functional Cognitive Behavioral Therapy (fCBT) for schizophrenia. Schizophr Res, 74(2-3), 201-209.

34. Daniels, L. (1998). A group CB and process-oriented approach to treating the social impairment and negative symptoms associated with chronic MI. J Psych Practice Res, 7, 167.

35. Johnson, D.P., Penn, D.L., Fredrickson, B.L., et al. (2009). Loving-kindness mediation to enhance recovery from negative symptoms of schizophrenia. J Clinical Psychol, 65(5), 499-509.

36. Wykes, T., Steel, C., Everitt, B., et al. (2008). Cognitive behavior therapy for schizophrenia: Effect sizes, clinical models, and methodological rigor. Schizophr Bull, 34, 523–537.

37. Rector, N.A., Beck, A.T., & Stolar, N. (2005). The negative symptoms of schizophrenia: A cognitive perspective. Can J of Psychiat, 50(5), 247 257.

38. Beck, A.T., & Rector, N.A. (2005). Cognitive approaches to schizophrenia: Theory and Therapy. Annu Rev Clin Psycho, 1, 577-606.

39. Grant, P.M., Huh, G.A., et al. (2012). Randomized trial to evaluate the efficacy of cognitive therapy for low-functioning patients with schizophrenia. Arch Gen Psychiat, 69(2), 121-127.

40. Horan, W.P., et al. (2011). Development and psychometric validations of the Clinical Assessment Interview for Negative Symptoms (CAINS). Schizophr Res, 132(2-3), 140-145.

41. Kring, A.M., Gur, R.E., Blanchard, J.J., et al. (in press). The Clinical Assessment Interview for Negative Symptoms (CAINS): Final Development and Validation. Am J Psychiatry.

42. Blanchard, J.J., & Cohen, A.S. (2006). The structure of negative symptoms within schizophrenia: Implications for assessment. Schizophr Bull, 32(2), 238-245.

43. Kimhy, D., Yale, S., Goetz, R.R., et al. (2006). The factorial structure of the schedule for the deficit syndrome in schizophrenia. Schizophr Bull, 32(2), 274-278.

44. Foussias, G., & Remington, G. (2010). Negative symptoms in schizophrenia: Avolition and Occam's razor. Schizophr Bull, 36(2), 359-369.

45. Medalia, A., & Brekke, J. (2010). In search of a theoretical structure for understanding motivation in schizophrenia. Schizophr Bull, 36(5), 912-918.

46. Barch, D.M., & Dowd, E.C. (2010). Goal representations and motivational drive in schizophrenia: The role of prefrontal-striatal interactions. Schizophr Bull, 36(5), 919-934.

47. Kring, A.M., & Caponigro, J.M. (2010). Emotion in schizophrenia: Where feeling meets thinking. Cur Dir Psychol Sci, 19(4), 255-259.

48. Kring, A.M., & Moran, E.K. (2008). Emotional response deficits in schizophrenia: Insights form affective science. Schizophr Bull, 34(5), 819-834.

49. Horan, W.P., Blanchard, J.J., Clark, L.A., & Green, M.F. (2008). Affective traits in schizophrenia and schizotypy. Schizophr Bull, 34(5), 856-874.

50. Aghevli, M.A., Blanchard, J.J., & Horan, W.P. (2003). The expression and experience of emotion in schizophrenia: A study of social interactions. Psychiatry Research, 119(3), 261-70.

51. Gard, D.E., Kring, A.M., Gard, M.G., et al. (2007). Anhendonia in schizophrenia: Distinctions between anticipatory and consummatory pleasure. Schizophr Res, 93, 253-260.

52. Kring, A.M. (1999). Emotion in schizophrenia: Old mystery, new understanding. Current Directions in Psychological Science, 8(5), 160–163.

53. Barch, D.M. (2005). The relationships among cognitive, motivation, and emotion in schizophrenia: How much and how little we know. Schizophr Bull, 31 (4), 875-881.

54. Burbridge, J.A., & Barch, D.M. (2007). Anhedonia and the experience of emotion in individuals with schizophrenia. J Abnormal Psychology, 116(1), 30-42.

55. D'Argembeau, A., Raffard, S., & Van der Linden, M. (2008). Remembering the past and imagining the future in schizophrenia. J Abnormal Psychology, 117(1), 247-251.

56. Forbes, C., Blanchard, J.J., Bennett, M., et al. (2010). Initial development and preliminary validation of a new negative symptom measure: The clinical assessment interview for negative symptoms (CAINS). Schizophr Res, 124(1-3), 36-42.

57. Silverstein, S. M. (2010). Bridging the gap between extrinsic and intrinsic motivation in the cognitive remediation of schizophrenia. Schizophr Bull, 36(5), 949-956.

58. Nakagami, E., Hoe, M., Brekke, J. (2010). Prospective relationships among intrinsic motivation, neurocognition, and psychosocial functioning in schizophrenia. Schizophr Bull, 36, 935.

59. Yamada, A.M., Lee, K.K., Dinh, T.Q., et al. (2010). Intrinsic motivation as a mediator of relationships between symptoms and functioning among individuals with schizophrenia spectrum disorders in a diverse urban community. J Nervous and Mental Disease, 198, 28-34.

60. Gold, J.M., Waltz, J.A., Prentice, K.J., et al. (2008). Reward processing in schizophrenia: A deficit in the representation of value. Schizophr Bull, 34(5), 835-847.

61. Heerey, E.A., & Gold, J.M. (2007). Patients with schizophrenia demonstrate dissociation between affective experience and motivated behavior. J Abnormal Psychology, 116, 268-278.

62. Heerey, E.A., Robinson, B.M., McMahon, R.P., & Gold, J.M. (2007). Delay discounting in schizophrenia. Cognitive Neuropsychiatry, 12(3), 213-221.

63. Waltz, J.A., et al. (2009). Patients with schizophrenia have a reduced neural response to both unpredictable and predictable primary reinforcers. Neuropsychopharm, 34(6), 1567-1577.

64. Heerey, E.A., et al. Stuck in the present: Degraded representations of future rewards and events in schizophrenia. Under review.

65. Dickinson, D., Bellack, A.S., & Gold, J.M. (2007). Social/communication skills, cognition, and vocational functioning in schizophrenia. Schizophr Bull, 33(5), 1213-1220.

66. Choi, J., & Medalia, A. (2010). Intrinsic motivation and learning in a schizophrenia spectrum sample. Schizophr Res, 118(1-3), 12-19.

67. Dixon, L.B., Dickerson, F., Bellack, A.S., et al. (2010). The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. Schizophr Bull, 36, 48-70.

68. Kern, R.S., Glynn, S.M., Horan, W.P., & Marder, S.R. (2009). Psychosocial treatments to promote functional recovery in schizophrenia. Schizophr Bull, 35(2), 347-361.

69. Grant, P.M., & Beck, A.T. (2009). Defeatist beliefs as a mediator of cognitive impairment, negative symptoms, and functioning in schizophrenia. Schizophr Bull, 35(4), 798-806.

70. Rector, N.A. (2004). Dysfunctional attitudes and symptom expression in schizophrenia: Differential associations with paranoid delusions and negative symptoms. J of Cog Psych: An International Quarterly, 18(2), 163-173.

71. Bellack, A.S, Mueser, K.T., Gingerich, S., & Agresta, J. (2004). Social Skills Training for Schizophrenia: A Step-by-Step Guide. New York: Guilford.

72. Green. M.F., Kern, R.S., Braff, D.L., et al. (2000). Neurocognitive deficits and functional outcome in schizophrenia: Are we measuring the 'right stuff'? Schizophr Bull, 26(1), 119-136.

73. Green, M.F., Kern, R.S., & Heaton, R. K. (2004). Longitudinal studies of cognitive and functional outcome in schizophrenia: Implications for MATRICS. Schizophr Res, 72, 41-51.19.

74. Ventura, J., et al. (2009). Symptoms as mediators of relationship between neurocognitive and functional outcome in schizophrenia: A meta-analyses. Schizophr Res, 113, 189-199.

75. Blanchard, J.et al. (2011) Toward the next generation of negative symptom assessments: CANSAS. Schizophr Bull, 37(2), 291-299.

76. Horan, W., Rassovsky, Y., Kern, R., et al. (2010). Further support for the role of dysfunctional attitudes in models of real-world functioning in schizophrenia. J Psychiatr Res, 44, 499.

77. Kring, A.M., et al. (2010). Emotion in schizophrenia. Curr Dir Psychol Sci, 19(4), 255-259.

78. Majtabai, R., Fochtmann, L., Chang, S., Kotov, R., Craig, T.J., & Bromet, E. (2009). Unmet Need for Mental Health Care in Schizophrenia: An Overview of Literature and New Data From a First-Admission Study. Schizophrenia Bulletin, 35(4), 679–695. doi:10.1093/schbul/sbp045

79. Rosenheck, R.A., Desai, R., Stenwachs, D., & Lehman, A. (2000). Benchmark-ing treatment of schizophrenia: a comparison of service delivery by the national government and bystate and local providers. Journal of Nervous and Mental Disease, 188(4), 209-216.

80. Bellack, A.S., Bennett, M.E., & Gearon, J.S. (2007). Behavioral Treatment for Substance Abuse in People with Serious and Persistent Mental Illness. NY: Taylor and Francis.

81. Couture, S.M., Blanchard, J.J., Bennett, M.E. (2011). Negative expectancy appraisals and defeatist performance beliefs and negative symptoms of schizophrenia. Psychiatry Research, 189, 43-48.

82. Park. S.G., Bennett, M.E., Couture, S.M., & Blanchard, J.J. (2013). Internalized stigma in schizophrenia: Relations with dysfunctional attitudes, symptoms, and quality of life. Psychiatry Research, 205(1), 43-47.

83. Gard, D.E., Gard, M.G., Kring, A.M., & John, O.P. (2006). Anticipatory and consummatory components of the experience of pleasure: A scale development study. Journal of Research in Personality, 40, 1086–1102.

84. Miller, W.R., & Rollnick, S. (2002). Motivational Interviewing, 2nd Edition. NY: Guildford.

85. Xia, J. et al. (2011). Psychoeducation for schizophrenia. Schizophr Bull, 37(1), 21-22.

86. Lejuez, C.W., et al. (2001). Brief behavioral activation treatment for depression. Behav Modif, 25(2), 255-286.

87. Carroll, K. M. & Rounsaville, B. J. (1990). Can a technology model of psychotherapy research be applied to cocaine abuse treatment? NIDA: Research Monograph Series, 140, 91.

88. First, M., Spitzer, R., Gibbon, M., et al. (2001). Structured Clinical Interview for DSM-IV Axis I Disorders – Patient Edition (SCID-I/P). NY: New York State Psychiatric Institute.

89. Ventura, J.L., et al. (1993). Brief Psychiatric Rating Scale (BPRS) expanded version: Scales, anchor points, and administration manual. Int J Methods in Psychiatric Res, 3, 227-243.

90. Kleinman, L., Lieberman, J., Dube, S., et al. (2009). Development and psychometric performance of the schizophrenia objective functioning instrument: An interviewer administered measure of function. Schizophr Res, 107, 275-285.

91. Mausbach, B.T., Harvey, P.D., Goldman, S.R., et al. (2007). Development of a brief scale of everyday functioning in persons with serious mental illness. Schizophr Bull, 33(6), 1364-1372.

92. Drapalski, A.L., Medoff, D., Unick, G.J., Velligan, D.I., Dixon, L.B., Bellack, A.S. (2012). Assessing recovery of people with serious mental illness: Development of a new scale. Psychiatri Serv, 63, 48-53.

93. Resnik, L., Tian, F., Ni, P., & Jette, A. (2012). Computer-adaptive test to measure community reintegration of Veterans. J Rehabil Res Dev, 49(4), 557-566.

94. Couture, S., Grant, P., Beck, A., et al. (2007) SARA-Q. Unpublished test.

95. Weissman, A.N., & Beck, A.T. (1978). Development and validation of the DAS. Paper presented at the Meeting of the American Educational Research Association, Toronto, ON.

96. MacLeod, A.K., & Byrne, A. (1996). Anxiety, depression, and the anticipation of future positive and negative experiences. J Abnormal Psychology, 105, 286-289.

97. Attkisson, C., & Greenfield, T. (1996). The CSQ and the SSS-30. In L. Sederer & B. Dickey (Eds.), Outcomes Assessment in Clinical Practice (p120-127). Baltimore, MD: Williams&Wilkins.

98. Selzer, M. (1971). The Michigan Alcoholism Screening Test. Am J Psychiatry, 127, 1653-58.

99. Skinner, H. (1982). The Drug Abuse Screening Test. Addictive Behaviors, 7, 363-371.

100. Morisky, D.E., Green L.W., & Levine, D.M. (1986). Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care, 24, 67-74.

101. Rosenheck, R.A., & Neale, M.S. (1988) Cost-effectiveness of intensive psychiatric community care for high users of inpatient services. Arch Gen Psychiatry, 55,459-466.

102. Fitzmaurice, G.M., Laird, N.M., & Ware, J.H. (2004). Applied Longitudinal Analysis. Hoboken, NJ: John Wiley & Sons.

103. Piantidosi S. (1997). Clinical Trials: A Methodologic Perspective. New York, NY: John Wiley & Sons.

104. Sterne, J.A.C., White, I.R., Carlin, J.B., et al. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. B Med J, 338, b2393.

105. Schafer, J.L. (1997). Analysis of Incomplete Multivariate Data. Chapman and Hall, New York.

106. Carpenter, J.R., Kenward, M.G., & White, I.R. (2007). Sensitivity analysis after multiple imputation under missing at random: A weighting approach. Statistical Methods in Medical Research,16, 259-275.

107. Charmaz, K. (2000). Grounded Theory. In N.K. Denzin & Y.S. Lincoln (Eds.), Handbook of Qualitative Research, Second Edition. Thousand Oaks, CA: Sage.

108. Strauss, A.L., & Corbin, J. (1998). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory, 2nd Edition. Thousand Oaks, CA: Sage.

109. Charmaz, K. (1995). Grounded theory, in JA Smith, R Harre, & L VanLangenhove (Eds.), Rethinking Methods in Psychology. London: Sage.