INFLUENCE OF DEPRESSIVE SYMPTOMS ON WITHIN-SESSION CHANGE TALK

AND HIV ANTIRETROVIRAL MEDICATION ADHERENCE IN A

MOTIVATIONAL INTERVIEWING BASED

ADHERENCE INTERVENTION

A DISSERTATION IN
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INFLUENCE OF DEPRESSIVE SYMPTOMS ON WITHIN-SESSION CHANGE TALK

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ABSTRACT

Although a number of studies have demonstrated that patients' verbal language in favor of change within a Motivational Interviewing (MI) session, known as "change talk," is related to behavior change and intervention outcomes, few have investigated whether change talk (CT) mediates the effects of other patient characteristics on outcomes. This is the first study to investigate whether CT mediates the effect of patient depressive symptoms on HIV antiretroviral therapy (ART) adherence outcomes. MI session tapes for 100 HIV-positive patients participating in an ART adherence intervention study were coded for frequency of utterances expressing desire, ability, reason, need and commitment to adhere/not adhere to an ART medication regimen. Strength of commitment language was also coded and mean strength of commitment and commitment strength change across the course of the session were calculated. There was a weak but significant negative relationship between patient depressive symptoms and ART adherence rate at week 12. Bootstrap mediation analyses showed no mediation effects for any CT variables on the relationship between depressive symptoms and week 12 ART adherence. Despite the lack of a causal mediation role for CT

variables, CT frequency and strength of commitment to change was related to depressive symptoms and ART adherence. Clinically, modified MI strategies for depressed patients may be warranted. Findings from this study support the need for more complex moderator mediator models to investigate whether CT variables mediate the effect of depression on ART adherence outcomes within particular subgroups of depressed patients.

The faculty listed below, appointed by the Dean of the College of Arts and Sciences have examined a dissertation titled "Influence of Depressive Symptoms on Within-Session Change Talk and HIV Antiretroviral Medication Adherence in a Motivational Interviewing Based Adherence Intervention," presented by Shelly L. Peterson, M.A., candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

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To each of the above I extend my deepest gratitude and appreciation.

DEDICATION

I dedicate this dissertation to my amazing family. It is dedicated first to my husband, Tedrick Housh III, whose unconditional love, support and willingness to do more than his share to support our family throughout the course of graduate school and this dissertation I deeply appreciate. I will always be grateful to my amazing mother-in-law, Barbara Housh. Without her unconditional love, support and nurturing of our children, Madeleine, Addison and Saida, this dissertation would not have been possible. Also, I want to thank my mother, Becky Peterson and my sister J.J. Peterson, for always believing in me and for picking up the slack whenever possible.

In addition, I dedicate this dissertation to my children Saida Mampuya, Addison Housh, and Madeleine Housh with the hope that it will inspire them to be life-long learners. Thank you all for your patience with me during the long hours I studied and worked on this dissertation!

As a final note, I dedicate this dissertation to the memory of my son Abdul Mampuya who died on December 13th, 2006. He was with us for too short a time, may he rest in peace.

CHAPTER 1

INTRODUCTION

Motivational Interviewing (MI) is an established therapeutic method for facilitating

behavior change that has been applied to encourage improved antiretroviral therapy (ART)

adherence (DiIorio et al., 2008; Parsons, Golub, Rosof, & Holder, 2007; Parsons, Rosof,

Punzalan, Di Maria, 2005). Although studies have generally supported the efficacy of MI,

relatively little is known about the underlying mechanisms that account for MI's efficacy.

One mechanism which has been proposed as central to the effects of MI on behavior change

is through increasing the language that patients use during MI treatment sessions to express

their interest in and commitment to change (i.e., "Change Talk;" Aharonovich, Amrhein,

Bisaga, Nunes, & Hasin, 2008; Amrhein, 1992; Amrhein, Miller, Yahne, Palmer, & Fulcher,

2003; Moyers, Martin, Christopher, Houck, Tonigan, & Amrhein, 2007). A number of

studies of addictive behavior have indicated that change talk (CT) during the MI session is

predictive of subsequent behavior change (Aharonovich et. al., 2008; Amrhein, 1992;

Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003; Baer et al., 2008; Moyers et al., 2007;

Hodgins, Ching & McEwen, 2009; Moyers, Martin, Houck, Christopher, & Tonigan, 2009).

In light of the apparent importance of CT to the effectiveness of MI, researchers have

examined the role of therapist behaviors in influencing change talk. Research has

demonstrated that the extent to which therapist behaviors are MI consistent can impact

patient change talk (Boardman, Catley, Grobe, Little, & Ahluwalia, 2006; Catley et. al.,

2006; Moyers & Martin, 2006; Moyers, Miller, & Hendrickson, 2005). However, very little

is known about patient factors that may influence CT. Patient factors may be equally

important given that change talk emerges as a function of the dialogue between therapist and

patient. For example, one study found evidence that patients with higher levels of cognitive ability engaged in more CT (Aharonovich et. al., 2008).

To increase understanding of MI and to enhance its effectiveness, it is important to understand how patient factors may influence the treatment process and its mechanisms. In this study the role of CT and the influence of patient depressive symptoms on CT are examined in the context of an MI intervention for antiretroviral medication adherence among HIV-positive individuals. High levels of ART adherence are of great importance for HIV-positive patients because low adherence rates have serious consequences including the development of ART drug resistance and HIV/AIDS progression (Clavel & Hance, 2004; Deeks, 2003; Wood et al., 2003). In addition, there is a great deal of evidence documenting the difficulty that patients have in reaching high levels of adherence (Andrews & Friedland, 2000; Bartlett, 2002; Kastrissios & Blaschke, 1998).

Several studies have investigated the usefulness of MI in promoting ART adherence. Dilorio et al. (2003, 2008) found that participants assigned to an MI intervention group had a significantly greater percent of ART doses taken on time when compared to the control group. Parsons and colleagues (Parsons et al., 2007) found that participants in an MI and cognitive-behavioral intervention to improve ART adherence demonstrated significantly greater improvement in percent dose adherence (number of doses taken divided by the number of doses scheduled) and percent of days adherent (days in which all scheduled doses were taken). In addition, results showed significant decreases in viral load when compared to an education only control group. Overall, the results of these studies indicate that MI may be an effective therapy for increasing ART adherence, however little is known about the role of CT.

Depressive symptoms is a patient factor selected as potentially influential in the MI therapeutic process with HIV-positive patients because depressive symptoms are associated with decreased ART adherence (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000; Gordillo, del Amo, Soriano, & Gonzalez-Lahoz, 1999; Patterson et al., 1996; Safren et al., 2001; Singh et al., 1996). With the prevalence of depressed mood sometime during the course of their illness estimated at between 18% and 60% in patients living with HIV, depression and its impact on ART adherence remains a primary concern (Asch et al., 2003; Atkinson & Grant, 1994; Bing et al., 2001; Dew et al., 1997; Gordillo et al., 1999; Treisman, Angelino, & Hutton, 2001).

CHAPTER 2

REVIEW OF THE LITERATURE

MI and CT

MI is a counseling approach designed to increase an individual's motivation for change. Both client-centered and directive, MI seeks to increase an individual's intrinsic motivation and reduce ambivalence for behavior change (Miller and Rollnick, 2002). Although MI has most clearly demonstrated effectiveness in treatment retention for alcohol and drug abuse (Dunn, DeRoo & Rivara, 2001; Project Match Research Group, 1997), a number of controlled studies have demonstrated that MI is positively associated with other health related behaviors. MI has been shown to be effective in increasing motivation for smoking cessation, weight loss, and adherence to long-term medication regimens for diabetes, asthma and schizophrenia (Kemp, Kirov, Everitt, Hayward, & David, 1998; Rosen, Ryan & Rigsby, 2002; Williams, Roden, Ryan, Grolnick & Deci, 1998).

Although MI has generally been found to be effective for behavior change across a variety of domains, much less is known about how and why MI works. Understanding the underlying mechanisms of MI's treatment effects is important for improving the effectiveness of MI as well as for training MI practitioners. The mechanism of change that has received the most attention to date is CT. A key component of MI, CT refers to any statement made by the patient that is consistent with behavior change. CT includes statements regarding the disadvantages of the continuing with current behavior, the advantages of change, optimism about their capacity for change, or their actual intentions or plans to change (Miller & Rollnick, 2002). One of the primary purposes of MI is to increase CT and reduce resistance to change, (i.e., "resist-change talk" or counter change talk [CCT];

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Miller & Rollnick, 2002). Prior studies in the substance abuse literature suggest that CT and CCT are dimensions of MI worth attending to in relation to behavior change related outcomes. In two studies described in Moyers et al. (2007), within-session client CT and CCT both independently predicted substance abuse outcomes in the expected direction.

To more directly explore the link between client language and outcome, Amrhein (1992) identified and coded six subcategories of CT language (i.e., desire to change, ability to change, reason to change, need to change, commitment to change and taking steps toward change) and CCT language (i.e., desire not to change, ability not to change, reason not to change, need not to change, commitment not to change, taking steps away from change). In addition to recording the frequency of the CT and CCT language, Amrhein et al. (2003) rated the strength of the each type of CT and CCT utterance. From the six categories of CT and CCT language, only the *strength* of *commitment to change* was a significant predictor of behavior change (reduction in drug use). In addition to being a direct predictor of behavior change, shift in strength of commitment to change language from lower to higher from the midpoint to the end of the session was found to be a significant and robust predictor of overall treatment outcome. Specifically, higher strength of commitment to change language near the end of the MI session predicted decrease in future drug use.

Because CT, and in particular commitment related CT, may be the linchpin for affecting behavioral outcomes, subsequent lines of research have investigated what may impact or increase client within-session CT. One source of influence is therapist behavior. Catley and colleagues (Catley et. al., 2006) explored whether therapist's adherence to MI principles was related to client CT within the MI session. Other studies investigated whether therapist interpersonal skill and adherence to MI principles impact client CT (Moyers &

Martin, 2006; Moyers et. al, 2005, 2005, 2007 & 2009). All of these studies confirm the importance of therapist behaviors in shaping client CT during MI sessions.

While research has supported the role of therapist behaviors in fostering change talk, relatively little attention has been paid to the relationship between client characteristics and their amount of change talk. Client attributes are also likely to be an important determinant of therapeutic outcome and may directly influence change talk or indirectly influence change talk by their impact on therapist behaviors. For example, Francis, Rollnick, Mc Cambridge, Butler, Lane and Hood (2005) found that clients who were highly resistant to smoking cessation elicited higher levels of non-MI adherent confrontational behavior from the therapist, than did low resistant clients. Since confrontational behavior on the part of the therapist has been found to be associated with poorer long-term outcomes (Miller et al., 1993), exploration of how other pre-existing client characteristics become manifest within the MI session is also warranted.

Although the literature on client characteristics and MI is sparse, one study (Aharonovich et al., 2008) looked at client neuropsychological characteristics (i.e. cognition) and their relationship with CT commitment language during a cognitive behavioral therapy intervention to predict drug use outcomes. Results showed a positive relationship between better cognitive abilities and ability to shift to stronger commitment language toward the end of an MI session. Yet, results for the impact of cognition and commitment language on outcome (i.e., retention in treatment and drug use) were mixed. Ability to shift to higher levels of commitment language toward the end of the session predicted treatment retention, and the mean level of commitment language over the entire session, irrespective of cognitive ability, predicted decrease in drug use. However, despite these significant relationships, the

study's small sample size prohibited multivariate analysis to determine whether commitment language would mediate the effect of cognition on treatment outcome. To our knowledge, no studies have investigated within-session commitment language as a mediator of the effect of cognitive or other client factors on treatment outcome. Based on the importance of the association between client factors and commitment language during therapy and their potential impact on outcomes, further research on the potential mediating role of in-session commitment language in the relationship between client related factors and behavior change in MI treatment is warranted.

<div align="center">ART Adherence and MI</div>

In this study, the context for examining the role of client factors and CT in MI treatment is ART adherence among HIV-positive individuals. Since 1995, numerous controlled clinical trials have demonstrated that the use of ART results in substantial viral suppression, sustained increases in indicators of immune system functioning such as CD4 lymphocyte counts, and a decline in HIV/AIDS related morbidity and mortality (Bartlett, 2002, Paterson et al., 2000). Although ART has greatly improved the health prognosis of persons living with HIV, optimism concerning the benefits of these medications is now tempered by evidence that a substantial number of patients do not achieve or sustain maximal reductions in viral load (Bangsberg, Hecht, Charlebois, Zolopa, Holodniy, Sheiner, et al., 2000; Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000). An especially crucial determinant of treatment success is patient ART adherence. Empirical studies suggest that strict ART adherence (greater than or equal to 95%), may be necessary for patients to experience beneficial effects of ART (Andrews & Friedland, 2000; Bartlett, 2002).

Other studies indicate that poor ART adherence (less than 95%) not only limits the effectiveness of ART, but it can facilitate the development of drug-resistant forms of the virus (Clavel & Hance, 2004; Deeks, 2003). Non-adherent patients can potentially become resistant to all four classes of ART drugs, which may result in limited treatment options and lead to HIV/AIDS disease progression. Moreover, patients who develop drug-resistant HIV can transmit these strains to others, posing a significant risk to public health (Wood et al., 2003).

Despite the promising effects of ART and serious negative consequences of non-adherence, strict adherence to ART is a complex and difficult task to accomplish for most patients. Between 30 and 60 percent of HIV/AIDS patients in clinical settings do not maintain the strict level of adherence necessary for effective treatment (Andrews & Friedland, 2000; Bartlett, 2002; Kastrissios and Blaschke, 1988). A fundamental challenge is the tendency for ART adherence to result in distressing symptoms (side-effects) in patients who were previously asymptomatic rather than ameliorating existing adverse and unwanted symptoms, as is the case with most other medical treatments (Catz et al., 2000; Safren et al., 2001).

Several studies have investigated the usefulness of MI in promoting ART adherence. DiIorio and colleagues (DiIorio et al., 2003 and 2008) found that participants assigned to a MI intervention group had a significantly greater percent of ART doses taken on time when compared to the control group. Parsons et al. (2007) found that participants assigned to a MI and cognitive-behavioral intervention group demonstrated significantly greater improvement in percent dose adherence and percent of days fully adherent as well as significant decreases in viral load when compared to an education only control group. Not all studies, however,

show MI to be more effective than usual ART adherence education groups. Samet et al. (2005) found no differences in self-reported adherence between participants assigned to an MI intervention group and those assigned to a usual care control group. However, the researchers reported that a small sample size and limited exposure to the intervention for some participants may explain the lack of differences in ART adherence between the MI intervention group and the usual care group. Overall, the results of these studies indicate that MI may be an effective therapy for increasing ART adherence, though the mechanisms of action have not been explored.

Predictors of ART Adherence

Prior research has identified factors that are predictive of poor adherence to ART including: complexity of treatment regime (i.e., up to two dozen pills/day, dosing schedule, dietary restrictions; long term duration); immediate and long-term side effects (i.e., fatigue, nausea, diarrhea, insomnia, taste alterations, and peripheral neuropathy); patient's knowledge and beliefs about HIV and treatment; and the patient-provider relationship (Ammassari et al., 2001; Chesney, Morrin & Sherr, 2000).

Recent reviews have emphasized the role of patient related factors in adherence to ART (Chesney et al., 2000; DiMatteo, Lepper & Croghan, 2000; Starace et al., 2002). Examples of patient psychosocial characteristics that have been found to influence adherence include positive affect, coping strategies, self-regulation, social support, self-efficacy, locus of control, perceived stress and depression (Catz et al., 2000; Chesney, 2000; Johnson et al., 2003; Remien et al., 2003; Singh et al., 1996).

With between 18% and 60% of HIV- positive persons experiencing depressed mood sometime during the course of their illness, depression and its impact on ART adherence

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remains a primary concern (Asch el al., 2003; Atkinson & Grant, 1994; Bing et al., 2001; Dew et al., 1997; Gordillo et al., 1999; Treisman et al., 2001). A substantial body of literature demonstrates that depressive symptoms decrease ART adherence (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000; Gordillo et al., 1999; Patterson et al., 1996; Safren et al., 2001; Singh et al., 1996). In a meta-analysis, Di Matteo et al. (2000) found that patients who are depressed are three times more likely to be non-adherent to medical treatment than patients who are not depressed. Safren et al. (2001) found that depressive symptoms at baseline were negatively associated with baseline ART adherence over and above other psychosocial predictors including social support, adherence self efficacy, and punishment beliefs about HIV. In light of the importance of depressive symptoms for ART adherence, researchers have been examining the role of depressive symptoms in ART adherence interventions.

<center>Depressive Symptoms and ART Adherence Therapy</center>

Several studies suggest that depressive symptoms may impair the HIV patient's ability to benefit from adherence treatment (Safren et al., 2001, 2004 & 2009; Tucker et al., 2004). For several reasons, depressive symptoms may interfere with ART adherence. According to Tucker et al. (2004), HIV-positive patients with depressive symptoms may lack the motivation and mental energy necessary to sustain high levels of ART adherence. Other depressive symptoms such as hopelessness, impaired ability to plan future events, cognitive impairments, and forgetfulness have also been posited to interfere with ART adherence treatment (Simoni, Pantalone, Plummer, & Huang, 2007).

Because of the high prevalence of depression in HIV patients and the serious health impairments it may cause as a result of its association with ART non-adherence, researchers

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have begun to develop adherence interventions to simultaneously reduce depressive

symptoms while focusing on increasing ART adherence. Safren and colleagues (Safren et al.,

2004 & 2009) found that integrating treatment for depressive symptoms with ART adherence

therapy significantly increased ART adherence. Given the scarcity of implementation and

limitations of existing ART adherence interventions related to depressive symptoms, more

research is needed to examine how ART adherence interventions are impacted by the high

prevalence of depressive symptoms in the HIV population.

Depressive Symptoms, CT and ART Adherence

Since depressive symptoms have been linked to poor ART adherence and are

expected to have a potentially potent impact on ART adherence interventions, it is logical to

posit that depressive symptoms may reduce or change the pattern of client CT, CCT and

commitment language within a MI for ART adherence session. Depressive symptoms such

as apathy, isolation, decreased optimism, lower confidence and concentration, and difficulties

with future event planning and decision making are likely to manifest within the therapeutic

session as resistance to the therapeutic process and lead to a decrease in the client's ability to

voice change talk in general and commitment to change in particular. Furthermore, as in

Aharonovich et al. (2008) where lower level of patient cognitive ability was related to lower

amount of CT and shift in strength of commitment to behavior change, so might depressive

symptoms affect the HIV patient's ability to make important within MI session shifts in

commitment to adhere to ART medication.

Summary and Purpose of Present Study

Although MI has been shown to be effective for fostering behavior change in a

variety of domains (Aharonovich et al., 2008; Amrhein et al., 2003; Baer et al., 2008;

Gaume, Gmel & Daeppen, 2008; Hodgins, Ching & McEwen, 2009; Moyers et. al., 2007, 2009; Strang & McCambridge, 2004) there is a lack of research on the underlying processes through which MI might have its effects. One hypothesized mechanism of action is that MI increases CT (and reduces CCT), which in turn leads to behavior change. Studies of MI treatment for drug and alcohol addiction have provided support for this hypothesis and led to additional research to understand factors that may increase or decrease CT (Aharonovich et al., 2008; Amrhein et al., 2003; Baer et al., 2008; Gaume, Gmel & Daeppen, 2008; Moyers et. al., 2007, 2009; Strang & McCambridge, 2004). Prior research has focused mostly on the impact of therapist adherence to MI on CT and paid little attention to the potential role of patient characteristics such as cognitive ability which may be as important as therapist behavior in influencing patient change talk (Aharonovich et al., 2008). Patient characteristics certainly warrant further exploration if MI treatment is to be improved by understanding its underlying mechanism of action.

The context for investigating the role of patient characteristics and CT in MI treatment in this study is MI treatment for ART adherence among HIV-positive patients. ART adherence is important and challenging for HIV-positive patients (Andrews & Friedland, 2000; Bartlett, 2002; Kastrissios and Blaschke, 1988). Although there is some evidence that MI may be effective for increasing ART adherence (Dilorio et al., 2003 & 2008; Parsons et al., 2007), little attention has been paid to patient factors that might influence change talk. For example, depressive symptoms which have been shown to be an important predictor of adherence and to impair patients' ability to benefit from adherence treatment (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000; Gordillo, del Amo, Soriano, & Gonzalez-Lahoz, 1999; Patterson et al., 1996; Safren et al., 2001; Singh et al., 1996), may

impact an MI based ART adherence treatment intervention by negatively affecting change talk. The purpose of this study was therefore to examine, among patients receiving ART, whether change talk mediates the presumed relationship between depressive symptoms and adherence. Specifically, the goal was to examine the effect of depressive symptoms on adherence and then to examine CT, CCT and commitment language strength (mean strength over the session and increase in strength toward the end of the session) as potential mediators of any influence of depressive symptoms on ART adherence. Figure 1 illustrates the single mediation model. Based on prior findings it was hypothesized that:

1. There would be a negative association between depressive symptoms and ART medication adherence.

2. The association between depressive symptoms and ART medication adherence would be mediated by CT/CCT (commitment and all other types [i.e., desire, ability, reason, need, taking steps]) and commitment language strength mean and shift variables (i.e., depressive symptoms will be positively related to CCT and negatively related to CT and commitment strength mean and shift, and in turn, CCT will be negatively related to ART adherence and CT and commitment strength and shift will be positively related to ART adherence). Commitment CT/CCT was separated from the five other types because prior research indicated that commitment CT was the only direct predictor of behavior change.
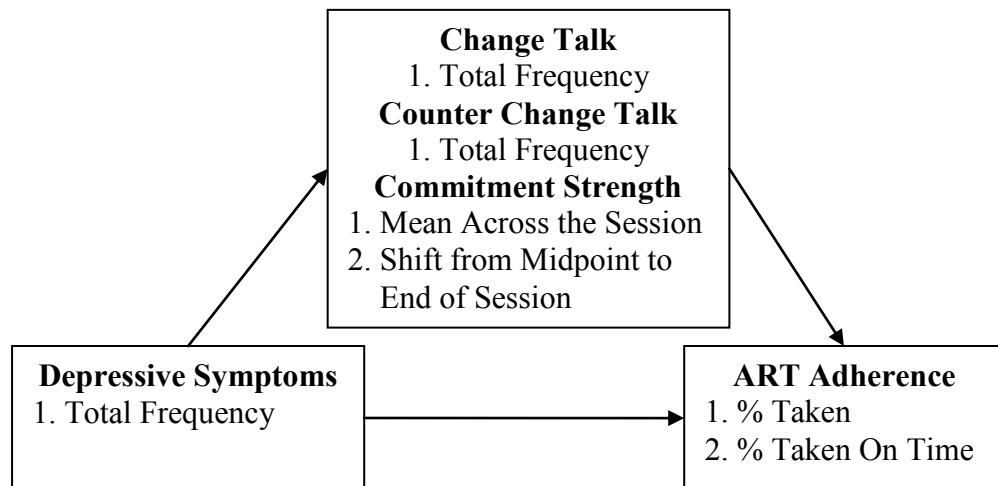
Figure 1. Illustration of Single Mediation Model for all Potential Change Talk Mediators.

CHAPTER 3

METHOD

Overview of Project MOTIV8

This study examined motivational counseling provided as part of Project MOTIV8, one of the first randomized interventions to examine the use of MI alone and in combination with another therapy to increase ART adherence. In brief, 204 HIV-positive patients who enrolled in the Motiv8 study were randomly assigned to one of the following groups: 1) a standard care (SC) group receiving usual medical care (n=65, 32%); 2) an Enhanced Counseling (EC) group receiving adherence counseling using MI (n=70, 34%); and 3) an Enhanced Counseling /Observed Therapy (EC/OT) group receiving MI-based adherence counseling and OT in which a portion of daily medication doses are supervised (n=69, 34%).

Participants

Participants for the MOTIV8 study were recruited from five clinics (a free health clinic, two academic hospitals, a VA hospital, and a large private practice) that provide medical services for patients with HIV in a large Midwestern city. Eligible participants were HIV positive, 18 years of age or older, English speaking, and either starting a new or altered ART regimen or having self-reported or physician suspected ART adherence problems as evidenced by clinical viral load values (HIV RNA > 1000 copies/ml). Participants who did not self-administer their medication, had an acute illness that would interfere with study participation, or did not live within the defined study radius were excluded. Approval for the study was obtained from the Institutional Review Boards at each clinic and at the University

of Missouri – Kansas City. The participant sample for this study consisted of the first 100 Project MOTIV8 participants who completed the first enhanced counseling session.

Procedure

If patients were interested and eligible they completed informed consent procedures and were scheduled for a baseline session and enrollment. Before randomization into one of the three study groups, participants completed a set of baseline measures via an Auditory Computer Assisted Self Interview (QDS, 2006) which presents questions and response options both on a computer screen and as an audio recording. For purposes of the current study, demographic information and baseline assessment data for depressive symptoms will be used.

MOTIV8 participants were randomized into standard care or one of the two treatment arms (EC or EC/OT). Participants in both the EC and EC/OT groups were scheduled to receive five individual in-person counseling sessions (weeks 0, 1, 2, 6 & 11) and four 15-minute phone contacts. MI for enhancing motivation for change, including eliciting change talk, was the focus of EC and EC/OT session one. For this study the week one counseling sessions for the first 100 EC and EC/OT participants were coded and analyzed. The sample size was determined based on recommendations by Efron and Tibshirani (1993) indicating that sample sizes greater than 80 are required to compensate for asymmetry in the distribution of Bootstrap mediation analyses which were used in the this study. In addition, the target sample size was adjusted upward to 100 participants to account for an expected missing data rate of 15 percent.

Counselors

MOTIV8 counselors were Master's level professionals who received training in MI, cognitive-behavioral skill building, HIV and medication adherence. A licensed clinical psychologist with expertise in MI provided a day-long workshop and supervised practice role-plays. Before counseling participants, counselors demonstrated competency in MI skills as well as in other study protocol elements. All counseling sessions were recorded and counselors received ongoing supervision and verification of their fidelity to MI principles to ensure counseling met acceptable performance ratings throughout the project.

Measures

This secondary analysis from the Motiv8 project included the following measures:

Demographic Information

Demographic information was collected at baseline. Participants provided age, gender at birth, education, ethnicity and racial status information.

Depressive Symptoms

Patients' depressive symptoms over the previous week were measured by the 20-item self-report instrument, Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977; see Appendix A). The CES-D has been widely used for measuring depressive symptoms in HIV infected individuals (Catz et al., 2000; Cook et al., 2002; Griffin & Rabkin, 1997; Lyketsos et al., 1993, 1996) and has established reliability (Alpha of .85 -.90, split-half and Spearman-Brown of .77-.92) and validity (concurrent with other depression scales and discriminate between psychiatric and general samples). The 20 items are rated on a 4-point Likert-type scale. Total sum scores range from 0 to 60 and higher scores are

indicative of a greater level of depressive symptoms. Scores of ≥ 16 indicate the likelihood of major depression. For purposes of analyses, the CES-D total score was used as a continuous variable to indicate amount of depressive symptoms experienced.

ART Adherence

ART adherence data was obtained from an electronic pill-cap (Medication Events Monitoring System; MEMS; AARDEX, Inc). Currently considered the "gold standard" for collecting medication adherence data, the MEMS cap microprocessor captures the time and date when a medication bottle is opened (Chesney, 2000). Participants agreed to keep one of their ART medications in the MEMS cap bottle. For participants on more than one medication, the medication with the most complex dosing schedule or most side effects expected was kept in the MEMS cap bottle. Data from the MEMS cap microprocessor were downloaded and used to calculate ART dose adherence as: 1) the percentage of prescribed ART doses taken (number of doses taken divided by the number of doses prescribed) and 2) the percentage of ART doses taken on time (plus or minus 2 hours around the targeted dose time). ART dose adherence was calculated for three time points: 1) week 1 (the 4-7 day period before the first enhanced counseling session; 2) week 2 (the 7 day period after the first enhanced counseling session); and 3) week 12 (30 days of adherence data prior to week 12 of Project MOTIV8).

Change Talk and Commitment Language Coding System

Two independent coders, the author and a trained research assistant, blinded to patient characteristics coded a total of 100 MI session tapes using the Motivational Interviewing Skill Code (MISC v. 2.1; Miller, Moyers, Ernst, & Amrhein, 2008; see Appendix B) and the Manual for the Motivational Interviewing Skill Code (MISC v. 1.1; Miller, 2000):

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Addendum to MISC 1.0 (Hagen-Glynn & Moyers, 2009; see Appendix C). Coding of the

entire MI session was conducted aurally and with the use of transcripts in just one pass.

During transcription of the audiotapes, language was separated into speech emitted by the

therapist or speech emitted by the client. The coded statements were those made by the client

about their movement toward (CT) or away (CCT) from ART medication adherence. Neutral

client language in which there was no inclination either toward or away from ART adherence

was not coded. Brief responses such as "yeah" were not coded unless they were in response

to therapist language that pulls for change talk.

Derived from the Motivational Interviewing Skill Code (MICS v. 2.1; Miller,

Moyers, Ernst, & Amrhein, 2008) CT and CCT utterances were categorized as either

"commitment" language or "other" language. The "other" category consisted of CT or CCT

pertaining to the client's desire, ability, reason, need or client taking steps to move toward or

away from ART adherence. "Commitment" language included client statements implying

agreement, intention or obligation regarding how they will take (or not take) their ART

medication. In addition, statements about how the patient will rearrange his life to take his

medication were also coded as commitment language. Examples of commitment language

include: "I'll do whatever it takes to take my medication" or "I'm going to take my

medication."

After sub-categorization, level of strength of client commitment language toward and

away from ART adherence was assessed and assigned a strength value of low, medium or

high. Strength ratings ranged from -3 for high CCT to +3 for high CT. For example, the

verbal commitment expressed by "I am determined to take my medication" was coded as

high CT and given a score of +3 whereas "I'm probably not going to take my medication"

was coded as medium CCT and given a score of -2. Participant strength of commitment language was calculated as the average of the strength scores across the entire session.

MI sessions varied in length from 7 to 72 minutes. To standardize the length of the sessions, each session was divided into 10 equal temporal sections or deciles by dividing the total number of MI session minutes by 10. Decile calculation preserved the temporal order of the session which was important for pinpointing or examining patterns of other CT, CCT and commitment language within the session. Based on prior studies (Aharonovich et al., 2008; Amrhein et al., 2003) indicating that commitment strength shift scores are related to outcome, commitment shift scores were computed for each patient by subtracting the commitment strength scores of the 4th decile, or midpoint of the session from the commitment strength scores of the 9th decile, or the end of the session. Decile 4 was considered the midpoint of the session and the 9th decile was considered the end of the session because the content of the 10th decile focused primarily on the therapist and client arranging their next visit.

Training of Coders

Coder training consisted of 5 hours of MISC instruction, 15 hours of individual coding practice, and 1-2 hours of weekly group-coding practice throughout the project to minimize coder drift. On-going supervision of coding practices and resolution of coding discrepancies was provided by a psychologist expert in MI and trained in MI coding practices.

Reliability of Coding

Although the reliability of the MISC 1.1 is not well established, a number of studies have used the more exhaustive MISC 1.0 on which the MISC 1.1 is based to rate treatment

integrity (Moyers et al., 2003; Tappin et al, 2000) and counselor MI skill (Catley et al., 2006; Miller & Mount, 2001). The MISC 1.0 has provided good inter-rater reliability when used to index client behavior (Catley et al., 2006): client change talk (ICC = .78) and client counter change talk (ICC = .53).

To assess inter-rater reliability of MISC coding within this study, a subset of 20 of the 100 session recordings were coded by both coders. Double coding of sessions and reliability calculations were performed after the coding of every five sessions to prevent coder drift as recommended in Hagen-Glynn and Moyers (2008).

The intraclass correlation coefficient (ICC) statistic was used as an estimate of reliability because it is a conservative measure of reliability and it adjusts for systematic differences and chance agreement between raters. PASW version 18.0 was used to calculate the ICCs and the following system proposed by Cicchetti (1994) was used to evaluate the level of reliability: ICCs of .75-1.0 = excellent, .60-.74 = good, .40-.59 = fair and below .40 = poor. A score of approximately .60 or higher indicated that there was an acceptable level of coder inter-rater reliability.

For the subsample of twenty double coded sessions, reliability measures for other and commitment CT and CCT and commitment strength and commitment shift categories are given in Table 1. As can be seen, ICCs indicated reliability for CT variables was excellent with the exception of the ICC for the commitment CCT variable; only one instance of commitment CCT language was observed by one of the coders. When a category exists in one set of codes but not in the other or the category does not exist in either set of codes, ICC is not calculable.

Table 1

Single-item reliability measures for session coding

Variable	ICC	Coder 1		Coder 2	
		M	SD	M	SD
Other CT	.99	51.25	26.06	51.40	24.25
Commitment CT	.94	6.35	5.18	6.00	5.42
Other CCT	.97	19.30	11.92	21.05	13.98
Commitment CCT	NC	.05	.22	0	0
Commitment Strength	.82	2.5	.49	2.4	.58
Commitment Shift	.89	.08	1.6	-.09	1.8

CT = change talk; CCT = counter change talk; NC = not calculable

CHAPTER 4

ANALYSES

Statistical Analysis

All analyses were performed using PASW for Windows, version 18.0 statistical

software. Prior to analysis, data were cleaned and the assumptions of normality were tested to

ensure they were met (Tabachnik & Fidell, 2001). Data for predictive variables of CT, CCT

and commitment language as well as for the ART adherence outcome variables violated the

assumptions of normality as indicated by the significant values on the Kolmogorov-Smirnov

statistic ($p < .001$) for all variables. The distributions for CT, CCT and commitment language

strength and shift variables were positively skewed (range: 1.6 to 4.9) and highly kurtotic

(range: 3.5 to 26.5). The distributions for ART adherence variables were negatively skewed

(range: -1.3 to -3.3) and kurtotic (range: 1.2 to 10.8). As these measures, respectively, are

count and rate data, the skewed distributions were not unexpected. For the ART adherence

rate data, this highly negative skew did not indicate a problem with the data, but rather

reflected the high ART adherence rates of the study population. Likewise, the highly

positive skew for the CT, CTT and commitment strength and shift measures was not

indicative of problematic data as count data are often not normally distributed. Several

outliers with z-score values greater than the absolute value of 3.29 were identified in the CT

and CCT data. These outliers were checked and found to be correct rather than erroneous

data points. Nevertheless, outliers can be problematic; accordingly two CT, three CCT and

one of the commitment language scores were replaced with values of two times the standard

deviation plus the mean as described by Field (2009). One participant was found to have

extreme values on all types of CT measures and was deleted from the dataset. In addition,

one MI session tape was not audible and was omitted from the sample. Thus, the final sample size for analysis was 98 rather than 100.

Preliminary Analyses

Descriptive and frequency analyses were used to summarize the demographic variables of age, gender, race, ethnicity and education as well as depressive symptoms and all ART adherence and CT related variables. Preliminary analyses designed to address the need for covariates in the main analyses were conducted to determine if there were significant differences on baseline depressive symptoms and CT and ART adherence related variables based on participants' demographic characteristics. Parametric techniques including Pearson's Product Moment correlation, t-tests for independent samples and one-way ANOVA were used when comparing variables with a normal distribution (i.e., depressive symptoms, age, gender, race, ethnicity, and education). Non-parametric techniques including Spearman's rho, the Mann-Whitney U test, and the Kruskal-Wallis test were used to analyze relationships involving the non-normally distributed CT and ART adherence related variables.

Chi-square, independent samples t-test and Mann-Whitney U tests were used to determine if there were demographic characteristic, CT and ART adherence related differences between participants with complete ART adherence data and those who had incomplete ART adherence data. Differences between treatment groups (enhanced counseling or enhanced counseling plus observed therapy) were calculated for all variables to determine if treatment group should be considered a covariate in subsequent analyses.

Main Analyses

To test hypothesis one, predicting a negative association between depressive symptoms and ART medication adherence, correlation coefficients were calculated between baseline depressive symptom scores and ART adherence (% taken and % taken on time) scores. Again, due to the non-normal distribution of the ART adherence data, Spearman's rho, a non-parametric statistic, was used to determine these relationships.

A single mediator model was used to test the second hypothesis predicting that the relationship between depressive symptoms and ART adherence (% taken and % taken on time) is mediated by the amount of any of the six CT, CCT and commitment language strength (mean and shift) variables. As shown in figure 1, the single mediator model consists of the following relationships between variables: 1) X→Y referred to as path (c) or the total effect; 2) X→M referred to as path (a); 3) M → Y referred to as path (b); and 4) X→Y after controlling for M denoted by (c') and referred to as the direct effect. Spearman's rho was used to calculate correlations between depressive symptoms and CT variables as well as correlations between CT variables and ART adherence variables.
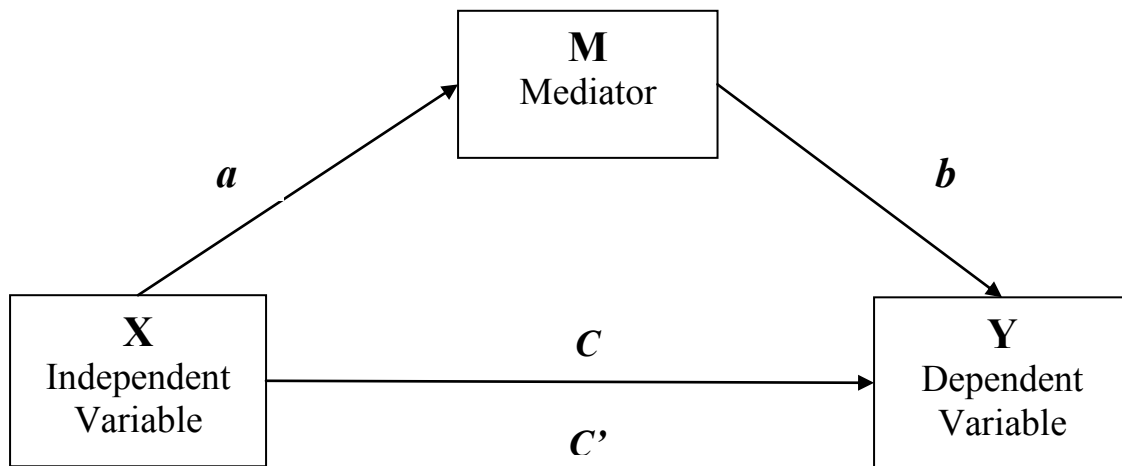
Figure 2. Single Mediator Model

Despite mounting criticism (Hayes & Preacher, 2010; MacKinnon, 2008; Mallinckrodt, Abraham, Wei & Russell, 2006; Preacher & Hayes, 2004) of the method, testing of mediation hypotheses have been most frequently guided by procedures outlined by Barron and Kenny (1986) and quantified with regression analyses. According to the Baron and Kenny definition, variable M is considered a mediator when: 1) X significantly predicts Y; 2) X significantly predicts M; 3) M predicts Y when X is controlled; and 4) the direct effect c' is non-significant.

Recently, the Bootstrap method for single mediator models developed by Preacher and Hayes (2004) has become a more widely used statistical method for mediation analysis. A non-parametric re-sampling procedure, the Bootstrap assesses mediation by taking a large number of estimations of the sample (e.g. 2000-5000) to empirically generate a sampling distribution from which the indirect effect of (ab) is computed. With this distribution, confidence intervals, p values and standard deviations are determined. Presence of a

significant indirect effect of mediation (ab) is confirmed when the confidence interval generated through re-sampling does not contain 0.

Use of the Bootstrap procedure provides several important advantages over the popular Barron and Kenney (1986) method: 1) no assumptions regarding normality of the sample distribution, linearity of variable relationships, or equality of means and variances must be met; 2) uses a more direct approach to testing the indirect effects of mediation; 3) has more power to detect mediation in smaller sample sizes; 4) lowers risk of excluding potential mediators from the analysis; 5) has less overdispersion, inflation of significance and unwarranted inferences than the Poisson regression model when analyzing count and rate data.

Operationally, the Bootstrap method for testing mediation has only two requirements: 1) there is an effect to be mediated (i.e., $C \neq 0$), and 2) the indirect effect (i.e., ab) is statistically significant in the direction predicted by the mediation hypothesis (Preacher and Hayes, 2004). Thus, the PASW macro procedures developed by Preacher and Hayes (2004) for estimating indirect effects in single mediation models were used to separately assess whether the association between depressive symptoms and ART adherence (% taken, % taken on time) is mediated by any of the six categories of CT, CCT and commitment strength and shift. Output generated from the Bootstrap procedure included confidence intervals, p-values and standard deviations. The presence of a significant indirect effect (ab) of mediation was determined by examining the confidence intervals generated through the Bootstrap re-sampling. Mediation effects were confirmed when the confidence interval did not contain 0.

CHAPTER 5

RESULTS

Participant Characteristics

Demographic characteristics for the 98 Motiv8 project participants included in this secondary analysis are depicted in Table 2. Participant ages ranged from 19 to 59 years with an average age of 40.6 years (SD = 9.1). Seventy-six (77.6%) identified their gender as male at birth. The sample was racially and ethnically diverse with more than half (53%) of the participants identifying themselves as African American (52), 23 (23.5%) as Hispanic or other race, and 16 (16.3%) as white. There was also a wide range in level of education; half of the participants had post high school training or college or graduate degrees (50%), 29 percent were high school graduates and 21 percent did not finish high school.

Table 2 also shows the means and standard deviations for all participants for ART adherence rates at baseline, week 2 and week 12; the six categories of CT for the session; and depressive symptom score reported at baseline. At week 1, which constituted the baseline measure of ART adherence and coincided with the MI session, the average percent of ART doses taken was 86.8 (SD = 20.3) and the average percent of doses taken on time was 81.3 (SD = 25.0). At week 2 (the average adherence for the 7 days following the MI session), ART adherence increased for both percent taken (M = 92.0, SD = 21.0) and percent taken on time (M =85.7, SD = 24.8). At the more long-term week 12 follow-up time point, ART adherence decreased to levels lower than at the week 1 baseline time point with an average of 84.6 (SD = 22.8) percent taken and 75.8 (SD = 24.7) percent taken on time.

As measured by the CES-D (Radloff, 1977), the average extent of depressive symptoms reported by participants was 18 (SD = 13). Given that CES-D scores $\geq$ 16 indicate

the likelihood of major depression (Radloff, 1977), the number of depressive symptoms participants were experiencing at the beginning of the study was considered to be relatively high.

As might be expected due to the collapsing of several types of change talk into the "other" CT and "other" CCT categories, participants engaged most frequently in other CT (M = 59.1, SD = 34.5) and other CCT (19.8, SD = 21.6) during the MI session. Participants committed to move toward ART dose adherence via Commitment CT an average of 7.2 (SD = 6.9) times per session while rarely committing to move away from taking their medication with an average of only .27 (SD = 1.0) commitment CCT statements per session. Due to the infrequency of commitment CCT within the data set, this variable was omitted from further analyses. On the scale of -3 to 3, average strength of participant commitment language during the session was 1.1 (SD = 1.3). Commitment language strength shifted an average of .16 (SD = 1.8) from the 4th to the 9th decile.

Table 2

Participant Demographic, ART Adherence and Change Talk Characteristics

Characteristic	All Participants	
	M (SD)	No. (%)
Age, years	40.6 (9.1)	
Male Gender at Birth		76 (77.6)
Female Gender at Birth		22(22.4)

(-table continues-)

Characteristic	All Participants	
	M (SD)	No. (%)
Race/Ethnicity		
African American		52 (53.1)
Hispanic		10 (10.2)
White		16 (16.3)
Other		13 (13.3)
Education		
Less than High School		21 (21.4)
High School Grad/GED		28 (28.6)
More than High School Degree		49 (50)
Depressive Symptom Score	18 (13.0)	
ART Adherence		
Week 1 - % Doses Taken	86.8 (20.3)	
Week 1 - % Doses Taken On Time	81.3 (25.0)	
Week 2 - % Doses Taken	92.0 (21.0)	
Week 2 - %Doses Taken On Time	85.7 (24.8)	
Week 12 - % Doses Taken	84.6 (22.8)	
Week 12 - %Doses Taken On Time	75.8 (24.7)	
Category of Change Talk		
Other CT	59.1 (34.5)	
Commitment CT	7.2 (6.9)	
Other CCT	19.8 (21.16)	
Commitment CCT	.27 (1.0)	
Commitment Strength	1.1 (1.3)	
Commitment Strength Shift	.16 (1.8)	

Note: Week 1 *n* = 98, Week 2 *n* = 94, Week 12 *n* = 86.

Preliminary Analyses

Preliminary parametric and non-parametric analyses were conducted to determine if there were differences in depressive symptoms, ART adherence and CT, CCT, and average and shift commitment strength measures based on any participant demographic characteristics. Results are displayed in Table 3. Mann-Whitney U tests revealed significant gender differences in both commitment CT ($U = 549$, $z = -2.5$, $p = .01$, $r = .25$) with men ($Md = 6$, $n = 76$) having more commitment CT than women ($Md = 4$, $n = 22$), and in commitment strength ($U = 572$, $z = -2.3$, $p = .02$, $r = .22$) with men ($Md = .83$, $n = 76$) having higher commitment strength than women ($Md = .50$, $n = 22$). Using the Cohen (1988) criteria, the effect size associated with $r = .25$ or $.22$ is small. Thus, the small effect size and small percentage of women included in the study were considered low enough to justify not using gender as a covariate in subsequent analyses.

Additionally, the Kruskal-Wallis Test revealed significant differences in week 12 (percent dose taken) adherence between the three education level groups (less than high school, $n = 16$: high school diploma/GED, $n = 32$: college degree, $n = 38$), χ^2 $(1, n = 86) = 6.2$, $p = .05$. Post Hoc analyses between pairs of the three education level groups conducted with the Man-Whitney U revealed that those with college degrees ($Md = 97.0$, $n = 38$) had greater week 12 ART percent doses taken ($U = 182$, $z = -2.3$, $p = .02$, $r = .3$) than did those with less than a high school diploma ($Md = 88.5$, $n = 16$). Application of the Bonferroni correction to the post hoc analyses dictated an alpha level of .017 for significance among these pairs. The difference in week 12 ART adherence (percent doses taken) between participants with a college degree and those who did not finish high school was significant at the alpha level of .020 and thus fell short of the .017 alpha level required by the Bonferroni

adjustment. As a result, subsequent analyses by education level were not warranted or conducted. There were no significant differences in baseline characteristics for any of the other CT or ART adherence variables or for depressive symptoms.

Table 3

Relationship of Demographic Characteristics to ART Adherence and Change Talk

Variables	Age		Gender at Birth			Race/Ethnicity			Level of Education		
	r	*p*	*t*	*r*	*p*	F	χ^2	*p*	F	χ^2	*p*
Depressive Symptoms	.025	.81	1.3		.19	.66		.62	.78		.60
Other CT	.128	.21		.03	.73		6.5	.09		6.5	.09
Commit CT	.095	.35		.25**	.01		.66	.88		.66	.88
Other CCT	.116	.26		.02	.84		1.2	.76		1.2	.76
Commit Strength	.001	.99		.22*	.02		2.3	.51		2.3	.51
Commit Shift	-.11	.28		.04	.71		6.3	.10		6.3	.10
Week 1 % Taken	.041	.34		.02	.82		3.1	.38		6.6	.47
Week 1 %Taken On Time	-.049	.32		.02	.81		4.2	.24		5.0	.66
Week 2 %Taken	-.049	.32		.09	.39		4.6	.20		3.0	.89
Week 2 % Taken On Time	-.010	.46		.03	.80		3.5	.32		3.3	.85
Week 12 % Taken	.156	.08		.05	.66		4.2	.24		14.1*	.05
Week 12 % Taken On Time	.136	.11		.04	.67		7.1	.07		11.0	.14

Note: Week 1 *n* = 98, Week 2 *n* = 94, Week 12 *n* = 86.

Table 4 reflects participant characteristics by Motiv8 Project treatment group (EC and EC + OT). No significant differences between the treatment groups on any of the demographic characteristics, ART adherence rate variables or change talk variables were

found. As a result, treatment group was not considered to be a confounding variable and was
not relevant for subsequent analyses.

Table 4

Participant Characteristics and Treatment Groups

Characteristic	All Participants (n = 98)		EC (n = 50)		EC/OT (n = 48)	
	M (SD)	No. (%)	M (SD)	No. (%)	M (SD)	No. (%)
Age, years	40.6 (9.1)		40.9 (9.3)		39.7 (9.1)	
Male Gender at Birth		76 (77.6)		38 (76)		38 (79.2)
Female Gender at Birth		22 (22.4)		12 (24)		10 (20.8)
Race/Ethnicity	M (SD)	No. (%)	M (SD)	No. (%)	M (SD)	No. (%)
African American		52 (53.1)		23 (46)		29 (60)
Hispanic		10 (10.2)		6 (12)		4 (8)
White		16 (16.3)		17 (34)		16 (33)
Other		13 (13.3)		10 (20)		3 (6)
Education						
Less than High School		21 (21.4)		9 (18)		12 (25)
High School Grad/GED		28 (28.6)		13 (26)		15 (31)
More than High School		49 (50)		26 (56)		21 (43.9)
Depressive Symptoms	18.7 (13)		20.7 (15)		16.7 (10.8)	

(--table continues--)

Characteristic	All Participants		EC (n = 50)	EC/OT (n = 48)
	M (SD)	No. (%)		
ART Adherence				
Week 1				
% Taken	86.8 (20.3)		87.2 (21.8)	86.9 (19.2)
% Taken On Time	81.3 (25)		83.2 (23.4)	79.6 (27.2)
Week 2				
% Taken	92 (21)		86.8 (21.6)	86.7 (19.1)
% Taken On Time	85.7 (24.8)		83.1 (23.2)	79.6 (26.9)
Week 12				
% Taken	84.6 (22.8)		83.8 (24.1)	85.5 (21.5)
% Taken On Time	75.8 (24.7)		75.2 (25.9)	76.4 (23.7)
Category of Change Talk				
Other CT	59.1 (34.5)		60.7 (33.4)	54.1 (25.2)
Commitment CT	7.2 (6.9)		7.5 (6.7)	6.3 (5.0)
Other CCT	19.8 (21.2)		20.4 (17.7)	17.6 (15.7)
Commitment Strength	1.1 (1.3)		.84 (.59)	.75 (.50)
Commitment Shift	.16 (1.8)		.27 (1.9)	.05 (1.6)

Note: Week 1 $n = 98$, Week 2 $n = 94$, Week 12 $n = 86$.

Independent-samples t-tests, chi-square tests for independence and Mann-Whitney U tests were used to examine whether participants with complete (n = 85) vs. incomplete (n = 12) ART adherence data varied significantly on demographic characteristics, level of depressive symptoms and CT variables. Participants with incomplete data were those who had missing adherence data at any of the three time points. Analyses conducted on all of these variables discerned no significant differences between the groups. Results are displayed in Table 5.

ART adherence rate differences between participants with complete and incomplete data were also explored. The number of participants with incomplete ART adherence data (percent taken and percent taken on time) varied by study week. During the week 1 time point, only one participant or 1% of the study sample had incomplete adherence data. Four (4.1%) of the participants had incomplete ART adherence data at week 2, and 12 (12.2%) of the participants had incomplete ART adherence data at week 12. Differences in adherence rates for those with complete and incomplete adherence rate data were calculated for week 1 and week 2. No between group differences in ART adherence rates were found at week 2. A Mann-Whitney U test revealed that week 1 ART adherence (percent doses taken on time) approached significance: participants with complete ART adherence data (Md = 93, n = 85) had a greater percent of doses taken on time at week 1 than did those with incomplete ART adherence data (Md = 75, n = 12), U = 346.5, z = -1.87, p = .059, r = .19. Because only one participant with incomplete data had ART adherence rate data for the week 12 time point, the differences between the groups were not calculable for the longer-term week 12 time point.

Table 5

Participant Characteristics and Incomplete vs. Complete ART Adherence Rate Data

Characteristic	Incomplete Data n =12	Complete Data n = 86
Age, mean years (SD)	33.8 (12.4)	40.6 (9.1)
Male Gender at Birth, No. (%)	12 (15.8)	64 (84.2)
Female Gender at Birth No. (%)	1 (4.5)	21 (95.5)
Race/Ethnicity		
African American, No. (%)	9 (17.3)	43 (82.70)
Hispanic, No. (%)	0 (0)	10 (100)
		(--table continues--)

Characteristic	Incomplete Data n = 12	Complete Data n = 85
Race/Ethnicity		
White, No. (%)	3 (9.1)	30 (90.9)
Other, No. (%)	1 (12.5)	7 (87.5)
Education		
Less than High School, No. (%)	5 (23.8)	16 (76.2)
High School Grad/GED, No. (%)	1 (3.5)	27 (88.9)
More than High School Degree, No. (%)	7 (14.2)	42 (85.7)
Depressive Symptoms, mean No., (SD)	21 (12.8)	18.3 (12.6)
ART Adherence		
Week 1 - % Taken, mean (SD)	76.6 (25.3)	88.2 (19.2)
Week 1 - % Taken On Time, mean (SD)	67.1 (32.2)	83.3 (23.4)
Week 2 - % Taken, mean (SD)	75.3 (39.8)	94.1 (16.3)
Week 2 - % Taken On Time, mean (SD)	73.4 (39.4)	87.3 (22.0)
Week 12 - % Taken, mean (SD)	100 (0)	84.4 (22.9)
Week 12 - % Taken On Time, mean (SD)	100 (0)	75.5 (24.8)
Category of Change Talk		
Other CT, mean (SD)	62.9 (45.6)	58.5 (32.9)
Commitment CT, mean (SD)	10.9 (9.6)	6.7 (6.3)
Other CCT, mean (SD)	27.6 (42.2)	18.7 (15.9)
Mean Commitment Strength, mean (SD)	2.7 (2.3)	1.6 (1.7)
Commitment Strength Shift, mean (SD)	.02 (1.6)	.17 (1.8)

Note: Week 1 incomplete *n* = 12, Week 2 incomplete *n* = 11, Week 12 incomplete *n* = 1.

Main Analyses

Relationship between Depressive Symptoms and ART Adherence

The first goal of the study was to examine the relationship between depressive symptoms and ART adherence. Adherence included percent ART doses taken and percent ART doses taken on time at three study time points (week 1, 2, and 12). As shown in Table 6, the Spearman's rho correlation coefficient revealed statistically significant relationships between depressive symptoms and week 12 percent ART doses taken and week 12 percent ART doses taken on time. Specifically, there was a relatively weak, negative correlation between depressive symptoms and week 12 percent doses taken, $r = -.23$, $n = 86$, $p < .05$, as well as for depressive symptoms and week 12 percent doses taken on time, $r = -.23$, $n = 86$, $p < .05$. Each of the week 12 adherence variables (percent doses taken and percent doses taken on time) shared only 5 percent of their variance with the depressive symptoms variable. Nevertheless, the first hypothesis that there would be a negative association between depressive symptoms and ART adherence was confirmed for the week 12 time point.

Table 6

Spearman's Rho Correlation between Baseline Depressive Symptoms and ART Adherence

	% Doses Taken		% Doses Taken On Time	
	r	*P*	*r*	*p*
Week 1	-.082	.43	-.033	.755
Week 2	.040	.792	-.034	.748
Week 12	-.231*	.033	-.225*	.037

Note: *$p < .05$; Week 1 *n* = 98, Week 2 *n* = 94, Week 12 *n* = 86.

Mediating Effects of CT, CCT and Commitment Language Strength and Shift in the Relation between Depressive Symptoms and Week 12 ART Adherence

The second goal of the study was to examine all of the six change talk variables (CT, CCT, commitment CT, commitment CCT, and commitment strength and strength shift) as potential mediators of the relationship between depressive symptoms and ART adherence. The single mediator model was used to determine mediation effects for each CT variable at the week 12 time point. In accordance with the Bootstrap method of mediation analyses, point estimates of the indirect effects were considered significant if the 95% confidence intervals did not contain zero. Examination of the Bootstrap generated confidence intervals revealed that all of them contained zero indicating that none of the six CT, CCT or commitment language strength and strength shift variables emerged as significant mediators of the relationship between depressive symptoms and week 12 ART adherence for percent doses taken or percent doses taken on time. Results of the Bootstrap mediation analyses are presented in Table 7.

Table 7

Summary of Mediation Results for CT, CCT and Commitment Strength and Shift in the relationship between Depressive Symptoms and 12 Week Percent ART Adherence (5000 Bootstrap Samples)

Independent Variable (X)	Mediating Variable (M)	Dependent Variable (Y)	Effect of X on M (a)		Effect of M on Y (b)		Total Effects (C)		Direct Effects (C′)		Boot strapping			
											Indirect Effect (*a x b*)		95% CI BCa	
			B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	Boot	*SE*	Lower	Upper
1. DST	Other CT	% Taken	-.3269	.2771	.1275	.0756	-.1038	.1942	-.0621	.1937	-.0443	.0485	-.1742	.0228
2. DST	Commit CT	% Taken	-.0081	.0533	.2750	.3992	-.1038	.1942	-.1016	.1948	.0062	.0288	-.0949	.0306
3. DST	Other CCT	% Taken	.3958	.1276	.0796	.1669	-.1038	.1942	-.1343	.2060	.0320	.0730	-.0992	.2094
4. DST	Commit Strength	% Taken	-.0025	.0046	4.997	4.559	-.1038	.1942	-.0913	.1943	-.0048	.0404	-.1458	.0369
5. DST	Commit Shift	% Taken	1.0125	.0155	-.7732	1.370	-.1038	.1942	-.1135	.1958	.0085	-.0302	-.0211	.1200
6. DST	Other CT	% On Time	-.3269	.2771	.1067	.0823	-.2296	.2098	-.1947	.2107	-.0418	.0505	-.1820	.0166
7. DST	Commit CT	% On Time	-.0081	.0533	.2186	.4318	-.2296	.2098	-.2278	.2108	.0088	.0294	-.1020	.0264
8. DST	Other CCT	% On Time	.3958	.1276	-.0230	.1805	-.2296	.2098	-.2205	.2228	-.0091	.0748	-.1670	.1431
9. DST	Commit Strength	% On Time	-.0025	.0046	5.738	4.921	-.2296	.2098	-.2152	.2097	-.0063	.0428	-.1598	.0349
10. DST	Commit Shift	% On Time	-.0125	.0155	-1.191	1.477	-.2296	.2098	-.2444	.2111	.0128	.0340	-.0224	.1374

Note: DST = Depressive Symptoms Total; BCa = Bias Corrected and Accelerated Confidence Intervals

Relationships between Change Talk and Depressive Symptoms and ART Adherence.

Although examination of the individual relationships between potential mediators and independent and outcome variables is not required for Bootstrap mediation analyses, individual assessment of these relationships was conducted to explore potentially important associations for understanding the MI process. Results for Spearman's rho correlation coefficients for the relationships between change talk variables and depressive symptoms and ART adherence measures are displayed in Table 8.

As depicted in Table 8, level of depressive symptoms was not significantly related to either average commitment strength or shift to greater commitment toward change within the MI session. However, depression was significantly negatively related to the total number of commitment CT statements made during the MI session ($r = -.25$, $p = .006$). In addition, depressive symptoms had a significant positive association with the total number of other CCT statements made during the session ($r = .25$, $p = .007$). Table 8 displays the correlations between depressive symptoms and all of the six categories of CT/CCT.

Table 8 also displays the relationships between CT, CCT and commitment language strength and shift and ART adherence outcome variables of percent doses taken and percent doses taken on time for the week 1, 2 and 12 time points. At week 1, Spearman's rho analyses revealed a significant positive relationship between strength of commitment language and ART doses taken on time ($r = .18$, $p = .04$) as well as a significant positive relationship between ability to shift to greater commitment strength and percent ART doses taken ($r = .168$, $p = .05$). There were no significant associations between the six CT variables and ART adherence at the week 2 time point. At week 12, significant positive relationships were observed between other CT and percent of ART doses taken ($r = .18$, $p = .05$) as well as

for mean strength of commitment language and percent ART doses taken (r = .23, p = .02)

and percent doses taken on time (r =.21, p = .03).

Table 8

Spearman's Rho Correlation of Change Talk Variables with Depressive Symptoms and ART Adherence

	ART Adherence													
	Depressive Symptoms		Week 1				Week 2				Week 12			
			% Taken		% On Time		% Taken		% On Time		% Taken		% On Time	
	r	p	r	p	r	p	r	p	r	p	r	p	r	p
Other CT	-.13	.10	.10	.17	.09	.20	.07	.26	.11	.51	.18*	.05	.17	.06
Commit CT	-.25**	.01	-.02	.43	.02	.44	-.01	.45	.00	.49	.15	.08	.12	.14
Other CCT	.25**	.01	-.14	.08	-.14	.09	-.07	.27	-.12	.13	-.05	.31	-.13	.11
Commit Strength	-.07	.25	.14	.08	.18*	.04	.06	.28	.09	.20	.23*	.02	.21*	.03
Commit Shift	-.086	.20	.17*	.05	.13	.11	-.01	.46	.05	.32	-.11	.15	-.15	.08

Note: *p < .05; **p<.01; Week 1 *n* = 98, Week 2 *n* = 94, Week 12 *n* = 86

CHAPTER 6

DISCUSSION

Despite the effectiveness of MI interventions in helping individuals change health related behaviors, little is known about the patient characteristics and MI intervention processes that affect MI intervention outcomes. The main purpose of this study was to explore whether the language used by patients during an MI intervention session, specifically language indicating that the person is moving toward or away from ART adherence, mediates the relationship between depressive symptoms and ART adherence.

Analyses confirmed the first study hypothesis that there would be a negative relationship between depressive symptoms and ART adherence. Consistent with findings from prior research (Ammassari et al., 2004; Holzemer et al., 1999; Starace et al., 2002; Wagner et al., 2004, 2011), there was a statistically significant relationship between higher level of depressive symptoms and lower ART adherence for the week 12 time point of this study. Similar to Wagner et al. (2011), while statistically significant, the effect size or magnitude of the relationship between the depressive symptoms measured by the CES-D and percent ART dose adherence was weak.

The second hypothesis predicting that the impact of depressive symptoms on ART adherence would be mediated by any or all of the six categories of CT, CCT and strength and shift of commitment language, was not confirmed. A likely explanation for this result concerns the weak association between depressive symptoms and ART adherence, which is discussed in more detail below.

Despite the null CT mediation findings, additional analyses examining the bivariate associations between CT and depressive symptoms and CT and ART adherence revealed significant results. Analyses related to depression's relationship with the patient's CT within an MI session revealed an association between a higher level of depressive symptoms and both a decreased production of commitment to change language as well as an increase in the patient's expression of the more general category of other CCT (desire, ability, reason, and need not to adhere). These results are consistent with the notion that depressive symptoms are likely to hamper the production of CT or increase CCT, however they differ somewhat from the findings of Aharonovich et al. (2008), who found that cognitive functioning was related only to the shift toward greater commitment. In light of the number of analyses conducted, clear conclusions regarding the significant effects of patient characteristics such as depressive symptoms on change talk are not warranted. However, the overall pattern of results in this study taken together with the findings of Aharonovich et al. (2008), suggests that further research is warranted to examine the influence of patient characteristics on CT. If the association between depressive symptoms and CT is ultimately supported, a somewhat modified MI approach may be warranted with depressed patients; the therapist may need to work harder at eliciting client commitment language and rolling with resistance throughout the session.

In regard to the relationship between change talk and ART adherence, patients with lower baseline ART adherence rates for percent doses taken on time engaged in more commitment CCT during the MI intervention session. In addition, higher baseline adherence rates were related to greater shift in commitment language strength toward the end of the MI session. There were no significant relationships between CT variables and ART adherence at

week 2. For the distal week 12 follow-up time point, the more general category of other CT (desire, ability, reason, and need to adhere) as well as commitment language strength were positively associated with ART adherence (percent doses taken and percent doses taken on time), respectively.

Contrary to findings from the seminal study by Amrhein et al. (2003), commitment related CT was not the only type of CT related to a distal behavioral outcome. Analyses from the present study revealed that the more general category of other CT (desire, ability, reason and need to change) was also predictive of improved outcome at the week 12 time point. In general, a number of prior studies (Aharonovich et al., 2008; Amrhein et al., 2003; Hodgins, Ching & McEwen, 2009) support only commitment related CT as outcome predictors and a number of others (Baer et al., 2008; Gaume, Gmel & Daeppen, 2008; Moyers et. al., 2007, 2009; Strang & McCambridge, 2004) indicate that both commitment related and other (desire, ability, reason, need) categories of CT predict outcome. Despite these mixed findings, all of the studies provide evidence that the client's own change talk language predicts behavior change (Moyers et al., 2009). Until now, linguistic subcategory analysis of CT has primarily been conducted in the context of addiction (substance abuse and gambling) interventions. The present study is the first to provide evidence that both commitment strength and other categories of client CT are potentially critical components of MI ART adherence intervention sessions as they are positively related to ART adherence outcomes.

Given that significant correlations were found among the main variables and that this is the first study with a sample size large enough to explore whether change talk variables mediate the effects of depressive symptoms on ART dose adherence, it is logical that lack of mediation effects within this analysis not be used to rule out CT as a mediator in the

relationship between depressive symptoms and ART adherence. Instead, it is assumed that CT is only one of a number of within-MI session and post-session variables that influence ART dose adherence. Hence, lack of CT mediation effects may have been due to a variety of factors including omission of important moderator variables (e.g., other patient characteristics not included) and measurement limitations.

For example, several measurement, sample and intervention trial factors impacted study findings. As in most ART adherence studies (Ammassari et al., 2004; Holzemer et al., 1999; Starace et al., 2002; Vranceanu et al., 2007; Wagner et al., 2004, 2011) this study used a global and continuous measure (the CES-D) to assess depressive symptoms. According to MacKinnon (2008), a low effect size between independent and outcome variables may be present when an independent variable is operationalized as a continuous variable or when other influences are moderating the relationship. Given these findings, it is reasonable to surmise that use of this continuous measure for depressive symptoms contributed to finding a significant but unexpectedly weak relationship between depressive symptoms and ART adherence outcomes.

Consistent with this possibility, Wagner et al. (2011) explored the association between depressive symptoms and ART adherence more fully by transforming the continuous depressive symptoms values obtained from the CES-D into a categorical variable representing sub groups of depression severity. Subsequent analysis with the categorical depressive symptom variable revealed that the relationship between depressive symptoms and ART dose adherence varied by level of depression severity. Only severe levels of depressive symptoms were related to percent ART dose adherence. Subgroups of no

depressive symptoms or mild to moderate depressive symptoms were not related to ART adherence.

Based on the findings of Wagner et al. (2011), the inclusion of participants with the full range of CES-D scores in the present study may explain the lack of CT mediation findings. Similar differences among depressive sub groups in the present study would constitute a violation of the single mediator model assumptions that could result in undetectable mediation effects (MacKinnon, 2008). Although the sample size of this study precluded expansion of this single mediator model to include analyses by level of depression severity subgroups, results from Wagner et al. (2011) suggest that a future study with larger sample sizes for employing more complex models for simultaneous assessment of moderation and mediation may be required to detect a true mediation effect for CT on the relationship between depressive symptoms and ART adherence.

Another study related contributor to low effect sizes and null mediation effects for CT variables was the high ART dose adherence rate at all study time points. Study inclusion of individuals without documented ART adherence problems appears to have resulted in rates of adherence that are consistently higher than those reported in other studies (DiIorio, et al., 2008; Liu et al., 2001). Recent research demonstrating much larger effect sizes for studies that target HIV positive patients with existing adherence problems (Bangsberg, 2009) supports the notion that high rates of ART adherence maintained by many participants throughout the 12 weeks of this study likely reduced the ability to accurately detect meditation effects of CT in the relation between depressive symptoms and ART adherence.

Study findings demonstrated significant but weak relationships between CT variables and ART adherence at the week 12 time point, but there was no relationship at the week 2

time point. Upon examination, it appears that ART adherence rate was so high at the week 2 time point that there was little room for CT variables to exert their influence on or share variance with ART dose adherence outcome variables. At the more distal week 12 time point, overall adherence rates declined and the relationship between CT and ART adherence was detectable. Specifically, there were weak but significant associations between other CT and ART adherence percent doses taken as well as between strength of participant commitment language and percent ART doses taken on time.

Another possible explanation for the weak relationship between CT and week 12 adherence rates is the amount of time that passed between them. Shrout and Bolger (2002) suggest there is a time-limited relationship between predictor and outcome variables that results in diminished or non-significant real effects when too much time passes between the occurrence of the predictor and outcome variables. Hence, the weak association between CT and adherence rates at week 12 (the most distal follow-up time point) could be a consequence of the length of time which, in turn, could be related to the extant lack of mediation effects for CT. In future studies, subsequent MI sessions and measurement of depressive symptoms at all of the distal time points could provide information about the effects of changes in depression on changes in ART adherence resulting in a more complete picture of the mediation relationship.

Finally, several MI session and CT coding related factors may have impacted study findings. The single MI intervention session could be considered a semi-structured manualized MI approach. The session was driven by a series of MI and adherence related questions on the following topics: 1) a review of the participant's previous adherence data, 2) pros and cons of adherence, 3) motivation and confidence rulers for adherence, and 4)

discussion of values and their relation to adherence. As pointed out by Miller and Rose (2009), a caveat with this structured session approach is that it is in conflict with an increasing number of studies showing that it is the natural language of clients that predict improved outcomes (Madson & Campbell, 2008). With this structured approach, the therapist runs the risk of maintaining the structure of the session rather than fully attending client responses.

The structure of the MI session may also be a source of discrepancy between CT findings from this study and CT findings from other studies. MI sessions were divided into 10 equal deciles that represent temporal segments, but the topic raised or question asked during the decile was not considered. Because the topics of deciles in this study may differ from topics in other semi-structured or non-structured sessions from other studies, comparisons between them could be confounded. In addition, where topics occur within the decile structure of this study could vary between the therapists.

Despite the good overall reliability of CT coding within this study, there is a chance that differences in this study's findings and those from other studies may be a result of coding discrepancies. Coding methods in this study are based on those outlined in Amrhein et al. (2003), a study finding that a pattern of increasing commitment strength and shift in commitment strength from mid point to the end of the session were the most important predictors of behavior change. Although the overall reliability of coding within this study was good, reliability for strength of commitment language in four of the twenty individual deciles was considerably lower than for all of the other CT variables. Consistent with the present study, Moyers et al. (2009), also experienced difficulty in attaining adequate reliability for strength of commitment ratings and chose to rely on frequency of CT data

rather than strength of commitment data. We did not omit the strength of commitment variables from our analyses because mean strength of commitment scores for all of the deciles were reliable. Of note, strength of commitment, commitment shift and the more general other CT frequency data were all associated with ART adherence within our study.

Another possible coding discrepancy may lie in the decile structure of the coding. Deciles within his study were temporal rather than content markers. Because content for this and other studies tended to be at least semi-structured, commitment language may be present in certain deciles due to the MI structure rather than where it might more naturally occur in the session. Commitment strength shift was defined primarily as being from the mid- point of the session to the end of the session, but in Amrhein et al. (2003) it was determined to be from the 4th to the 10th decile while in Aharonovich et al. (2008) it was from the 5th to the 10th decile. In addition to being the mid-point and end of session it was also where the low point or back pedaling of commitment strength occurred prior to a final shift toward commitment for those with positive outcomes (Amrhein et al., 2003). In the present study, the decrease in commitment strength began in the 4th decile and the end of the session was determined as the 9th decile because CT language essentially ended there; the 10th decile was when the therapist and patient were making arrangements for their next meeting.   Despite these adjustments, lack of commitment shift at the week 12 time point within this study, compared with positive findings for commitment strength shift in Amrhein et al. (2003) and Aharonovich et al. (2008), may be still be due to differences in session content or in the definitions of commitment strength shift.

With regard to generalizing these findings, it is important to note that this study was conducted within the context of an ART intervention conducted for research purposes. This

was a population connected with medical care and seeking help in adhering to their ART regimen, and thus these findings may not be generalizable to individuals who are not as connected to medical care or not seeking help. Further, those who are not seeking help with medication management may be the most non-adherent. On the positive side, because study participation was not limited to those with adherence problems or diagnosable depression, these findings do mirror the broader spectrum of HIV-positive patients being seen in clinical settings. The much larger number of men than women in the study and small but significant difference in CT among men and women suggest that these result may not generalize well to women and indicate that further studies according to gender and CT may be warranted.

In conclusion, this is the first study to examine patients' verbal statements related to change, depressive symptoms and ART adherence outcome among HIV-positive patients. Despite a null effect for CT as a formal mediator in the relationship between depressive symptoms and ART adherence outcome, results indicated that depressive symptoms are related to the patients' ability to produce commitment CT language as well as other CCT (desire, ability, reason and need not to change) language. In addition, other CT (desire, ability, reason and need to change) language and mean strength of commitment language during the entire session were related to ART adherence at the more distal time point. Although findings should be interpreted cautiously, clinicians may find it worthwhile to modify their MI approach with depressed patients. Emphasizing the use of MI to encourage commitment CT, other CT and strength of commitment language throughout the MI session and minimize the impact of other CCT by rolling with rather than confronting patient resistance may be helpful. Findings from this study support the need for a study with a larger sample size in which more complex moderator mediator models of analyses can be tested to

determine whether CT variables mediate the effect of depression on ART adherence outcomes within particular subgroups of depressed patients. HIV-positive patients and MI practitioners will benefit from future studies that can identify mechanism of change within MI for improving ART adherence behavior.

APPENDIX A

CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE (CES-D)

Center for Epidemiologic Studies Depression Scale (CES-D)

These items are about how you may have felt or behaved recently. For each item, click on the option that best describes your feelings or behavior **over the last week**.

0	Rarely or none of the time (less than 1 day)
1	Some or a little of the time (1-2 days)
2	Occasionally or a moderate amount of time (3-4 days)
3	Most or all of the time (5-7 days)

Over the last week…

1.	I was bothered by things that usually don't bother me.	0	1	2	3
2.	I did not feel like eating; my appetite was poor.	0	1	2	3
3.	I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4.	I felt that I was just as good as other people.	0	1	2	3
5.	I had trouble keeping my mind on what I was doing.	0	1	2	3
6.	I felt depressed.	0	1	2	3
7.	I felt that everything I did was an effort.	0	1	2	3
8.	I felt hopeful about the future.	0	1	2	3
9.	I thought my life had been a failure	0	1	2	3
10.	I felt fearful.	0	1	2	3
11.	My sleep was restless.	0	1	2	3
12.	I was happy.	0	1	2	3
13.	I talked less than usual.	0	1	2	3
14.	I felt lonely.	0	1	2	3
15.	People were unfriendly.	0	1	2	3
16.	I enjoyed life.	0	1	2	3
17.	I had crying spells.	0	1	2	3
18.	I felt sad.	0	1	2	3
19.	I felt that people disliked me.	0	1	2	3
20.	I could not get "going."	0	1	2	3

NOTE: Items 4,8,12 and 16 are reverse scored.

DV = Total score

High symptoms ($\geq$ 16)

APPENDIX B

MANUAL FOR THE MOTIVATIONAL INTERVIEWING SKILL CODE, VERSION 2.1

Manual for the Motivational Interviewing Skill Code (MISC)

Version 2.1

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A. Introduction to MISC Version 2.1

The Motivational Interviewing Skill Code (MISC) was originally developed in 1997 as a method for evaluating the quality of motivational interviewing (MI) from audiotapes and videotapes of individual counseling sessions. The possible uses of MISC include:

- Documenting counselor adherence to MI within clinical trial protocols

- Providing detailed session feedback for counselors in the process of learning MI, including specific goals for improved skillfulness

- Evaluating the effectiveness of training in MI by comparing counselor skills before and after training

- Conducting psychotherapy process research to examine relationships among counselor and client responses

- Predicting treatment outcome from psychotherapy process measures

- Generating new knowledge about MI and its underlying processes of efficacy

Over years of using MISC 1 we have learned much about which categories were redundant or unreliable, and also about which processes are most important to the effectiveness of MI. The MISC has also helped us to clarify the points at which skill acquisition in MI is more challenging.

Based on this experience, we have developed Version 2.1, which is intended to improve on earlier version of the MISC in reliability, efficiency, and relevance to training and clinical practice. A disadvantage of revising an instrument, of course, is that one must start over in demonstrating its reliability and validity. Although many strong features of MISC 1.0 have been retained, we have also made substantive changes that we believe will further strengthen this instrument. In the interim, while we are studying the characteristics of this new version, it may be desirable for some purposes to continue using MISC 1, which has known psychometric properties. Section A outlines the significant changes that have been introduced with MISC 2.1, and the rationale for these changes.

As psychometric data for MISC 2.1 emerge and further refinements are made, we will be issuing subsequent revisions. When revisions are minor, we will retain the same version number (e.g., 2.0) and give the date of update. As significant revisions are made that affect coding, we will change the version number designation (2.2, 2.3 etc.). Before making use of this coding system, check to make sure that you have the most current version. Information is posted on the Motivational Interviewing website at www.motivationalinterview.org.

A.1 Changes in the Structure of MISC

MISC Version 1 required three "passes" through each tape: (1) an initial pass for completing global rating scales; (2) a second pass in which each counselor and client utterance was classified within a behavior code; and (3) a final pass in which counselor and client talk time were recorded. In MISC 2.1 we no longer include the third pass for timing of relative counselor and client talk time. We found that the timing pass was not cost-effective. It yielded relatively little information for the additional time required, and did not add to the predictive utility of MISC. Investigators who are particularly interested in client and counselor talk time may,

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of course, still choose to include this timing pass. We found that recording client and counselor talk time had very high inter-coder reliability (usually >.95).

MISC 2.0 retained two separate passes: a first pass for the global rating scales, and a second pass for behavior classifications. This proved quite challenging for coders, as it required them to track 18 counselor behavior codes and seven client behavior codes, six of which required an additional quantification of strength from −5 to +5. With MISC 2.1, we recommend a total of three separate passes: the first pass for global ratings, a second pass for counselor behavior codes, and a third pass for client behavior codes. With experienced coders, it may be possible to combine the second and third passes.

It would be conceivable, of course, to perform one pass each for therapist and client, in which behavior classifications are completed, then at the end of each pass to complete the global ratings. This may still be desirable in cases where therapy process and therapist competence are of more interest than is treatment integrity, particularly when cost is an issue. In general practice, however, we have chosen to retain three separate passes for three reasons. (1) The first pass allows the global ratings to be uncontaminated by behavior counts. (2) The first pass provides an uninterrupted overall perspective on the session, which we believe is helpful in making accurate global ratings. (3) If the same coder performs all three passes, the first pass provides a contextual perspective within which to complete the behavior codes. It remains to be determined whether in fact global ratings are biased by prior completion of behavior coding, or whether second pass codes are any different when done by coders who did (versus did not) complete the first pass.

Important new knowledge regarding the psycholinguistics of MI emerged from research directed by co-author Paul Amrhein. Previously we had been successful in predicting (lack of) behavior change from client resistance levels (e.g., Miller, Benefield & Tonigan, 1993). Mean levels of client "change talk," however, rather consistently failed to predict behavior change – an important problem for the theory of motivational interviewing (Miller & Rollnick, 2002). Amrhein's research revealed why change talk, as we were coding it in MISC 1, failed to predict behavioral outcomes (Amrhein et al., 2003). First, our definition of change talk included a wide range of statement types, including those reflecting desire, ability, reasons, need, and commitment to change. In Amrhein's study, only commitment language predicted behavior change. The other four (desire, ability, reasons, and need) predicted the occurrence of subsequent committing language, and thus influenced behavior change indirectly. This finding paralleled what were previously described as "Phase 1" and "Phase 2" of MI (Miller & Rollnick, 1991). In Phase 1, the goal is to enhance motivation for change (e.g., by evoking client speech regarding desire, ability, reasons and need to change). In Phase 2 of MI, the goal shifts to strengthening commitment to change (i.e., evoking client committing speech). We had not differentiated these tasks before, and separate attention to committing speech turns out to be important. Using these new definitions for client language, the frequencies of both change talk and sustain talk independently predict outcomes (Moyers et al., 2007).

Second, we learned from Amrhein's work that when predicting outcomes, the *slope* of committing speech across the course of an MI session may provide information above and beyond that obtained from the *mean* level of committing speech.

Finally, we discovered that client change language is not constant over an MI session. In highly structured MET sessions, Amrhein found that the strongest prediction of behavioral outcomes came from client speech toward the *end* of the session, when the client's plan for change was the primary topic. Client commitment level at the beginning of an MI session, when clients discussed their reasons for presenting for treatment, did not predict the probability of behavior changeWhen client language is of interest we recommend coding the entire MI session with MISC so that dynamic patterns of this kind are not missed.

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The fact that slope, in addition to mean, predicts behavior change suggested another adaptation of the MISC. In the second pass of MISC 1, we had simply kept a tally of the total number of responses within each behavior category across the entire coding period. This prevented us from examining behavior at different points in the session. A sequential coding system, the Sequential Code for Observing Process Exchanges (SCOPE), was developed for this purpose. Sequential coding retains the *order* in which therapist and client behaviors occur. Using the SCOPE, it is possible to evaluate the impact of therapist behaviors upon subsequent client behaviors (Moyers & Martin, 2006). Where detailed information about therapy process is desired, we recommend *sequential* recording of behavior codes using the SCOPE.

B. Coding Instructions: First Pass Global Ratings

The MISC 2.1 is designed for rating an interview between two individuals, identified in this manual as the Counselor and the Client. Many other descriptors could be used for the counselor (e.g., clinician, doctor, interviewer, practitioner, counselor) or client (e.g., consumer, patient, student). These particular terms are used here simply for convenience and consistency.

B.1 Global Counselor Ratings

A global score requires the coder to assign a single number from a seven-point scale to characterize the entire interaction. The first pass of MISC 2.1 includes counselor ratings on three dimensions: **Acceptance, Empathy and Spirit.** Global scores are intended to capture the rater's overall impression of the counselor's performance during the interview. While this may be accomplished by combining a variety of elements, the rater's gestalt or all-at-once judgment is paramount. The global scores should reflect a holistic evaluation of the counselor, one that cannot necessarily be separated into individual elements. Global scores are given on a 7-point Likert scale, with the coder assuming a beginning score of 4 and moving up or down from there. For projects evaluating the integrity of MI interventions, or those desiring greater comparability with MITI scores, the MITI 3.0 globals may be used here instead.

Specific Guidelines:

- All ratings on this form are on a **7-point Likert scale.**
- Ratings should be based primarily on the *counselor's* behavior during the observed session.
- Circle *one and only one number* for each item, and do not leave any item blank. Do not make ratings that fall between the whole numbers.
- These are global ratings, based on the *entire* interview or sample. Thus, for example, a rating of empathy is given for the *whole* interview, which might combine longer periods of high empathy and a few periods of low empathy.
- It is helpful to **note examples** of Empathy, Acceptance and Spirit on the Global Counselor Rating sheet as you listen to the session.

Acceptance

This rating captures the extent to which the counselor communicates unconditional positive regard for the client. A rating should be made starting at 4, and moving toward either the high (7) or low (1) end of the scale based on the following criteria:

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High Acceptance. Counselors high on this scale consistently **communicate acceptance and respect** to the client. They may be perceived as warm and supportive, but the key attribute is to communicate **unconditional positive regard** for the client.

Low Acceptance. Counselors at the low end of this scale consistently **communicate non-acceptance, disregard, or disapproval** of the client. They may be perceived as **judgmental, harsh, disrespectful, labeling, or condescending.**

Differentiating Acceptance from other counselor characteristics. Acceptance is **person-focused** (*unconditional positive regard*) and should not be confused with agreeing with the client's opinions or approving of the client's behavior. A counselor may:

> Respect a client's opinions without agreeing with them (acceptance vs. agreement)

> Accept a client's choices without approving of them (acceptance vs. behavioral approval)

> Support the client as a worthwhile human being without either condoning or condemning the client's actions and views (acceptance vs. judgment)

Empathy

This rating is intended to capture the extent to which the counselor understands and/or makes an effort to accurately understand the client's perspective. A rating should be made starting at 4, and moving toward either the high (7) or low (1) end of the scale based on the following criteria:

High Empathy. Counselors high on this scale show an **active interest** in making sure they understand what the client is saying, including the **client's perceptions, situation, meaning, and feelings.** The counselor **accurately follows** or perceives a client's complex story or statement or probes gently to gain clarity. Reflective listening is an important part of empathy, but this global rating is intended to capture all efforts by the counselor to understand accurately the client's perspective and convey that understanding back to the client. Nevertheless, a high rating on Empathy requires more than question-asking, and reflects skillful use of reflective listening.

Low Empathy. Counselors at the low end of this scale show **little interest** in the client's own perspective and experiences. There is **little effort to gain a deeper understanding** of complex events and emotions. Counselors low in empathy may probe for **factual information** or to **pursue an agenda,** but they do not do so for the sole purpose of understanding their client's perspective. Reflective listening is noticeably absent.

Differentiating empathy from other counselor characteristics. Empathy is not to be confused with warmth, acceptance, genuineness or client advocacy. These characteristics are independent of the empathy rating. It is possible for a counselor to:

> Work very hard to understand the client's perspective but not be especially warm or friendly while doing so. (empathy vs. warmth)

> Understand fully without accepting the client's perspective. (empathy vs. acceptance)

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Be fully present and authentic, but not make efforts to understand the client's perspective. (genuineness vs. empathy)

Be invested in helping the client or gaining services for them without a particular effort to understand the client's perspective (client advocacy vs. empathy)

Motivational Interviewing Spirit

This rating is intended to capture the **overall competence of the counselor in using motivational interviewing**. It explicitly focuses on the three inter-related characteristics of **collaboration, evocation,** and **autonomy.** The rater should consider all three of these characteristics when assigning a value for this scale, and low scores in any of these dimensions should be reflected in a lower overall spirit score. Nevertheless, the global spirit rating is intended to capture the whole *gestalt* of the counselor's competence without too much "picking apart" of the scale's components. A rating should be made starting at 4, and moving toward either the high (7) or low (1) end of the scale based on the following criteria:

High MI Spirit. Counselors at the highest end of this scale clearly manifest all three of the following characteristics in the session:

Collaboration is apparent when counselors negotiate with the client and avoid an authoritarian stance. Counselors show respect for a variety of ideas about how change can occur and can accept differences between their ideal plan and what clients are willing to endorse. They avoid persuasion and instead focus on supporting and exploring the client's own concerns and ideas. These counselors minimize power differentials and interact with their clients as partners.

Evocation is apparent when counselors draw out the client's perspectives rather than "installing" the counselor's knowledge, insights and advice. They do not educate or give opinions without permission. They are curious and patient. They give the client the benefit of the doubt about wanting to change and show a focused intent to draw out the client's own desire and reasons for changing. Counselors high in evocation show an active interest in helping clients say to themselves the reasons that change can and should happen.

Autonomy-supportive counselors accept that clients can choose not to change. They may be invested in specific behavior changes, but do not push for an immediate commitment at the expense of "taking the long view" about the option of change in the future. They emphasize the client's freedom of choice, and convey an understanding that the **critical variables for change are within the client and cannot be imposed** by others.

Low MI Spirit. Counselors at the lowest end of this scale clearly manifest low levels of collaboration, evocation, and support for autonomy:

Low Collaboration is evident when counselors **confront** clients with their point of view. An **authoritarian and rigid** stance is apparent and little effort is made to include the client's ideas about how change might be accomplished. Low collaboration counselors attempt to **persuade** clients about the need for change. These counselors seem to view their clients as deficient in some manner and attempt to provide what is missing, often using an **"expert" stance** to do so. These counselors convey a sense of having **expertise** the client needs in order to make a change.

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Low Evocation is evident when the counselor shows little or no interest in exploring the client's own reasons for change. They may convey an attitude of **suspicion or cynicism** about the client's desire to change. They may focus on giving information and advice, educating the client or giving logical reasons for changing. These occur at the expense of arranging conversations so that the client talks himself or herself into changing.

Low Autonomy counselors communicate a lack of acceptance that clients might choose to avoid or delay change. They convey a **sense of urgency** about the need for change, and may use imperative language, telling clients what they "must" or "have to" do. Little emphasis or acknowledgment is given to the client's freedom of choice and self-determination.

Differentiating MI spirit from other characteristics. Motivational Interviewing Spirit is not to be confused with sympathy, expertise, education, skills-building, uncovering unconscious motivations or spiritual guidance. A counselor might:

Feel sad that the client has so many burdens, without conveying a sense that the counselor can solve them. (sympathy vs. MI spirit)

Be able to give excellent advice to the client about how to solve problems, but fail to ask the client what he or she has already thought of. (expertise vs. MI spirit)

Help clients replace irrational thoughts about the benefits of continuing in a maladaptive behavior, rather than explore the client's perceived benefits. (skill-building vs. MI spirit)

Probe developmental antecedents of the client's need for a behavior, rather than asking about how this behavior is consistent or inconsistent with the client's current values and goals. (uncovering unconscious motivations vs. MI spirit)

Help the client to contact or utilize spiritual resources to assist in changing, rather than using reflective listening and open questions to determine the client's strengths and successes (spiritual guidance vs. MI spirit)

B.2 Global Client Rating

The MISC 2.1 uses a single global rating of client Self-Exploration during a treatment session. This rating closely parallels the construct of experiencing used by Truax and Carkhuff in the study of client-centered therapy. The rating should reflect the client's **high point** during the session. This is a period (more than momentary) that reflects the client's highest level of self-exploration during the session. Because client's behavior often changes markedly over the course of a session, this is *not meant to be an average across the entire session.*

Specific Guidelines:

- The rating is made on a **7-point Likert scale.** Assign the rating that best describes the client's high point of self-exploration during the session.
- The rating should be based primarily on the *client's* behavior during the observed session.
- Circle *one and only one number*, and do not leave this item blank. Do not make a rating that falls between the numbers.

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- It is helpful to **note examples** of self-exploration and personally relevant material on the rating sheet as you listen to the session.

Client Self-Exploration (based on Truax & Carkhuff)

Rating Description

1   No personally relevant material is revealed or discussed by the client during the session.

2   The client avoids bringing up personally relevant material but may respond minimally if the counselor brings it up.

3   The client may respond to and elaborate on personally relevant material that is brought up by the counselor, but does not add significant material or volunteers information in a mechanical manner or without demonstration of emotional feeling.

4   The client elaborates on or volunteers personally relevant material with either spontaneity (not directly solicited by the counselor) or feeling, but not both.

5   The client elaborates on personally relevant material with both spontaneity (not directly solicited by the counselor) and feeling.

6   The client explores and discusses personally relevant material, discovering new feelings, perspectives, or personal meanings.

7   The client engages in active intrapersonal exploration, openly exploring values, feelings, relationships, fears, turmoil, life-choices, and perceptions of others. Clients may experience a shift in perception.

Defining "Personally Relevant Material" in Coding Self-Exploration

Personally relevant material may include expression or exploration of the following:

- Personal problems

- Self-descriptions that reveal the self to the counselor, expressions of the internal world

- Personally private material which when revealed tends to make the client more vulnerable or could be personally damaging

- Personal values, life choices

- Expression of feelings

- Personal roles, perception of one's relationship to others

- Perception of self worth

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C. Coding Instructions: Second Pass Behavior Counts

C.1 Counselor Behavior Counts

Behavior counts are intended to capture specific behaviors without regard to how they fit into the overall impression of the counselor's use of MI. While the context of the exchange will have some influence on the rater, behavior counts will *generally* be determined as a result of categorization and decision rules (rather than attempting to grasp an overall impression). Relying on inference to determine a behavior count is to be avoided.

C.2. Defining Counselor Utterances

- An utterance is a **complete thought**.

- An utterance ends either when one thought is completed or a new thought begins with the same speaker, or by an utterance from the other speaker.

- If two consecutive sentences merit different codes (e.g., a Reflection followed by a Question), they are, by definition, separate utterances. **Example:** "So you feel confident that you can quit. What gives you that confidence?"

- Two utterances often **run together** without interruption, as with a sentence that contains more than one thought. **Example:** "You seem disappointed that you haven't quit, but you've made a fantastic effort." This is one sentence that is both a **Reflection** and an **Affirm** and should receive multiple codes.

- A client response always terminates a counselor utterance, and the next counselor utterance becomes a new response.

    Examples: (Counselor in normal type - **Client** in bold type.)

    "So you've cut down by ten cigarettes a day (**Yes**) and you smoke more in the morning than in the afternoon." Reflect/ **Follow Neutral**/ Reflect

    "It's not easy (**No, it's not**) to quit." Support/ **Follow Neutral**

    "You feel like you can (**Yes**) do this." Reflect/ **Change talk**

    "So you've told me that you don't like the smell of cigarettes, (**Yeah**), the expense (**Uh-huh**) and what they do to your health." (**Right**).

    Summary/ **Change talk**/ Summary/ **Change Talk**/ Summary/ **Change Talk**

C.3. Coding Counselor Utterances

- Once an utterance is complete decide in which of the main behavior categories it belongs. In some cases, sub classification is required within a category.
- The tape may be stopped in order to deliberate carefully.
- Each utterance receives one and only one code. The same utterance may never be given two different codes.

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- Separate utterances, even if they occur within the same sentence, may each receive a separate code.

> "Good morning, Susan./ Thank you for taking the time to speak with me this morning./
> I'd like to start by talking about our last conversation./ Does that sound ok to you?"
> (Filler/ Affirm/ Structure/ Closed Question)

C.4. Volleys: Definition

A *volley* is an **uninterrupted sequence of utterances** by one party, before another party speaks.

> "It isn't my job to force you to quit or cut down. That's totally up to you. Only you know what's right
> for you./ We'll meet every week during the study, /but again whether or not you
> decide to make a change is your decision."

A volley is terminated when the other party speaks.

C.5. Coding of Volleys

A volley may contain only one of each behavior code. Once a behavior count is assigned within the volley it is not assigned again. Thus, as in the example above, the counselor Emphasizes Control in the first three utterances. The fourth utterance contains Structure and another Emphasize Control. The whole volley would be coded as Emphasize Control, Structure. (EC/ST)

C.6. Behavior Categories: Definitions and Abbreviations

There are 15 major categories of counselor behavior in MISC 2.1. Each has a unique 2-letter code. Four categories require differentiation between two subcategories, which are 3-letter codes. For these four categories, the two-letter codes (AD, QU, RC, RE) are not permissible alone, but must include the third (subcategory) designation. The Counselor Behavior categories are:

AD	Advise	Required subcategories: with (ADP) or without permission (ADW)
AF	Affirm	
CO	Confront	
DI	Direct	
EC	Emphasize Control	
FA	Facilitate	
FI	Filler	
GI	Giving Information	
QU	Question	Required subcategories: Closed (QUC) or Open Question (QUO)
RC	Raise Concern	Required subcategories: with (RCP) or without permission (RCW)
RE	Reflect	Required subcategories: Simple (RES) or Complex (REC)
RF	Reframe	
SU	Support	
ST	Structure	
WA	Warn	

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Advise (with or without permission) (ADP/ADW)

The counselor gives **advice, makes a suggestion, or offers a solution or possible action.** These will usually contain language that indicates that advice is being given: should, why don't you, consider, try, suggest, advise, you could, etc.

Advise requires sub classification for whether the advice was given **with or without prior permission** from the client.

Prior permission can be in the form of a request from the client, or in the counselor asking the client's permission to offer it.

Indirect forms of permission asking may also occur, such as a counselor statement that gives the client permission to disregard the advice ("This may or may not make sense to you").

(ADP) Advice with permission:

> "Would it be all right if I suggested something?"
> "We could try brainstorming to come up with ideas about quitting if you like."

(ADW) without permission:

> "Consider buying more fruits and vegetables when you shop."
> "You could ask your friends not to drink at your house."

Differentiating Advise from other categories

Advise should not be confused with Direct or Question.

"Don't let your friends drink at your house."	**Direct** due to the imperative "*Don't*"
"Could you ask your friends not to drink at your house?"	**Closed Question.**
"What could you ask your friends to do to help you?"	**Open Question.**

Affirm. (AF)

The counselor says something **positive or complimentary** to the client. It may be in the form of expressed **appreciation, confidence or reinforcement.**

The counselor comments on the client's **strengths or efforts.**

It is not necessary to subclassify Affirm responses.

Appreciation. The counselor compliments the client on a **trait, attribute, or strength.**
The reference can be to a "stable, internal" characteristic of the client, something positive that refers to an aspect of the client that would endure across time or situations (smart, resourceful, patient, strong, etc.). It may also be for **effort.**

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"You're a very resourceful person."
"Thank you for coming today."
"You've made a huge cut in your smoking."
"I've enjoyed talking with you today."

Confidence. The counselor makes a remark that bespeaks **confidence in the client's ability** to do something, to make a change; it predicts success, or otherwise supports client self-efficacy. These are related to a particular task, goal, or change.

Client: "I don't think I can do it."
Counselor: "You've succeeded through some difficult changes in the past"

Reinforcement. These are general **encouraging** or "applause" statements even if they do not directly comment on a client's nature, and do not speak directly to self-efficacy. They tend to be short.

"That's a good idea."
"Good for you."
"That's good."

Differentiating Affirm from other categories

Affirm should not be confused with Support or Emphasize Control.

Support takes on a **sympathetic** or **agreeing** quality, while affirm comments favorably on a client **characteristic**, bespeaks **confidence**, **congratulates** or **encourages**.

Emphasize Control takes precedence over Affirm when a counselor response could be interpreted as both.

"That must have been difficult."	**Support** (sympathetic not appreciative)
"You've accomplished a difficult task."	**Affirm** (effort/reinforcement)
"It was your decision to come here today."	**Emphasize Control**
"Thank you for coming today."	**Affirm** (appreciation)

Confront. (CO)

These are the expert-like responses that have a particular **negative-parent quality**, an uneven power relationship accompanied by disapproval, disagreement, or negativity. There is a sense of "expert over-ride" of what the client says.

The counselor *directly* disagrees, argues, corrects, shames, blames, seeks to persuade, criticizes, judges, labels, moralizes, ridicules, or questions the client's honesty.

Included here are utterances that have the form of questions or reflections, but through their content or **emphatic voice tone** clearly constitute a roadblock or confrontation.

If you are in **doubt** as to whether a behavior was a confront or some other code do *not* code it as Confront.

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Re-emphasizing negative consequences that are already known by the client constitutes a Confront, except in the context of a Reflection. The Reflection restates information presented by the client and is merely reflected back to the client without disapproval or negativity.

Client: "I can't believe they took my license away."
Couselor: *"You knew you'd lose your license and you drove anyway."*   **Confront**
(criticizes)

Client: "I looked for a job this week."
Counselor: *"Sure you did. Right."* (Disbelieving, sarcastic voice tone)   **Confront**

Client: "I thought when I got pregnant I'd quit smoking for the baby, but I haven't"
Counselor: *"You're willing to jeopardize the baby's health just for cigarettes."*   **Confront**
(judgmental, shaming, re-emphasizes consequences not voiced by the client)

Differentiating Confront from other categories

Do not confuse Confront with Reflect or Question or Facilitate.

Confront should be unmistakably confrontational. Subtle inference is not sufficient reason to code a counselor's behavior as Confront.

If a question has a sarcastic tone, code as Confront as referenced above.

Client: "I don't really have a problem with alcohol."

    Counselor: Drinking really hasn't caused problems for you.   **Reflection**

or   *Counselor: So YOU think that you don't have any problems AT ALL!*   **Confront** (conveyed
    by sarcastic tone in vocal emphasis)

Client: "I can't believe I missed work and blew a good job just to party.

    Counselor: "It seems like a high price to pay for a good time."   **Reflection**

or   *Counselor: "Well, surprise surprise! Imagine that!"*   **Confront** (sarcasm)

Client: "I don't care if I lose my job because I drink too much."

    Counselor: "Losing your job is a pretty high price to pay for having a good time" **Confront**
(disagrees)

or   *Counselor: It really doesn't matter to you.*   *Reflect*

Client: "I feel kind of run down."

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> *Counselor:* "Don't you understand what drinking is doing to your health?" **Confront**

or *Counselor:* "Do you think alcohol is affecting your health?" **Question** (not sarcastic in tone)

or *Counselor:* "D'ya think that alcohol might be responsible, maybe? **Confront** (sarcastic tone)

> Client: "I didn't drink all weekend."

> *Counselor:* "So you say. Tell me another one." **Confront**

or *Counselor:* "Uh huh" **Facilitate**

Occasionally a Confront can masquerade as an Affirm.

> Client: I went for five days without drinking this week.

> *Counselor: I told you you could do it!* **Confront** (Expert, paternal quality)

or *Counselor: Good for you!* **Affirm**

> Client: I'm doing a little better, I guess, but I feel like it's pretty hopeless.

> *Counselor: But look how much progress you've made!* **Confront** (disagreement)

or *Counselor: You can see some progress, but mostly you're discouraged.* **Reflect**

Direct (DI)

The counselor gives an **order, command, or direction**. The language is imperative.

> "Don't say that!"
> "Get out there and find a job."

Phrases with the effect of the imperative tone include

> "You need to___."

> "I want you to___."

> "You have to___"

> "You must___."

> "You can't___."

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Examples:

> "I want you to watch this video."
> "You've got to stop drinking."
> "You must have more respect for yourself."

Differentiating Direct from other categories

Direct should not be confused with Affirm, Advise or Confront.

"You could try looking for a job this week."	**Advise**
"I want you to try to find a job."	**Direct**
"There's no reason for you not to be working."	**Confront**
"You should be proud of yourself for finding a job."	**Affirm**
"Now get out there and get a job!"	**Direct**

Emphasize Control. (EC)

The counselor directly acknowledges, honors, or emphasizes the client's **freedom of choice, autonomy, personal responsibility**, etc. This may also be stated in the negative, as in "Nobody can make you change." There is no tone of blaming or faultfinding.

Statements acknowledging the client's autonomy in an accomplishment are coded as Emphasize Control rather than Affirm.

> Client: "I went for five days this week without drinking"
>
> *Counselor: You made that choice.* **Emphasize Control**
>
> or *Counselor: Good for you!* **Affirm**

Emphasize Control takes precedence over Affirm or Reflect when a counselor response could be interpreted as both.

> "It is totally up to you whether you quit or cut down."
> "It's your decision."
> "You know what's best for you." (No sarcasm)

Differentiating Emphasizing control from other categories

Emphasize Control should not be confused with Affirm, or Confront, or Reflect.

When one utterance can clearly be coded as an Emphasize Control, an Affirm or a Reflect, Emphasize Control takes precedence.

> "It's great that you're doing this for yourself."   **Affirm** (reinforcement)

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"It's your decision whether you quit or not." choice)	**Emphasize Control** (freedom of

Client: " I'm finding this difficult."

Counselor: "You're the one who has to change."   **Confront** (negative quality)

Client: "I need to make up my mind about drugs."

Counselor: " You're ready to make a decision."   **Reflect**

Client: "Since I'm quitting, I won't allow smoking in the house."

Counselor: "You're setting your own goals and boundaries."   **Emphasize Control** (not Reflect)

Facilitate. (FA)

These are simple utterances that function as **keep going** acknowledgments. "Mm Hmm." "OK." "Tell me more." "I see."

Facilitate responses are **stand alone** utterances. They do not usually occur with other counselor responses in the same volley. Do not code as Facilitate if the vocal sound is a preface to some other counselor response like a Question or a Reflect. In these combinations, code only the second response. No Facilitate would be coded for:

"OK, well let's get started with these questionnaires, then." **Structure**

Do not code as Facilitate if the vocal sound serves as **a time holder** (uh . . .) that serves to delay the client's response, rather than having the "go ahead" function. These are not coded at all. Instead what follows is coded.

"Uhhhhhh, I think it's about four standard drinks." **Giving Information**

In videotape coding, **do not code a head-nod** or other nonverbal acknowledgment as Facilitate, unless it is accompanied by an audible utterance.

A counselor may make an utterance that sounds like a Facilitate but has a **negative or sarcastic quality.** It must unambiguously disagree, question the client's honesty, express sarcasm, etc. These have a "Hah!" or "Aha!" or cynical "Yeah, right!" quality. **Code as Confront.**

Differentiating facilitate from other categories

Do not confuse Facilitate with Question or Confront.

Some brief utterances sound like Questions, but function as Facilitates: "Oh, did you?" "Really!" If voice tone *clearly* implies skepticism ("Oh you did, did you?") it would be coded as **Confront.**

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If a Facilitate has a sarcastic or cynical quality it is coded as a Confront. When in doubt code, however, as Facilitate rather than Confront.

Filler. (FI)

This is a code for the few responses that are not codeable elsewhere: **pleasantries**, etc. It should not be used often. If these exceed 5% of Counselor responses, they are probably being over-coded.

"Good Morning, John."

"I assume you found a parking space OK."

"Nice weather today!"

Giving Information (GI)

The counselor gives **information** to the client, **explains something**, **educates** or **provides feedback** or **discloses personal information**.

When the counselor gives an opinion but does not advise, this category would be used.

It is no longer necessary to distinguish among types of Giving Information. If a Counselor response fits any of the following example types, code it as Giving Information.

Some example types of Giving Information include providing feedback from assessment instruments, explaining ideas or concepts relevant to the intervention, or educating about a topic

Providing feedback from assessment

"You indicated during the assessment that you typically drink about 18 standard drinks per week. This places you in the 96th percentile for men your age."   **Giving Information**

"Your blood pressure was elevated when the nurse took it this morning."   **Giving Information**

Personal feedback about the client that is not already available.

"Your doctor tells me you've been struggling with your glycemic control."**Giving Information**

"I talked to your wife and she said she was really worried about your drinking."   **Giving Information**

Explaining ideas or concepts relevant to the intervention

"This homework assignment to keep a diary of your urges to drink is important because an urge is like a warning bell, telling you to wake up and do something different."   **Giving Information**

Educating about a topic

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"Individuals who eat five fruits and vegetables each day reduce their cancer risk five fold. For certain kinds of cancer, like colon cancer, it's even more of a reduction." **Giving Information**

Differentiating Giving Information from other categories

Giving Information should not be confused with **Warn, Direct, Confront, Advise** or **Reflect.**

Reviewing information contained on assessment instruments does not typically qualify as a Reflection.

Informing can become a Warn if there is a tone of threat or if..then

"If you do tell me that you've used drugs, I am required to disclose that to your probation officer." **Giving Information**

"If you tell me that you've been using drugs, I'm going to tell your probation officer." **Warn**

Giving Information can be combined with other responses that go beyond the simple provision of information:

"You indicated during the assessment that you typically drink about 48 standard drinks per week. That much drinking is bound to damage your health sooner or later." **Giving Information/ Warn**

"Here is a diary that you can use to keep track of urges." **Giving Information**

"Keep track of your urges this week, using this diary, and bring it in next week to review with me." **Direct**

"Well, you are only eating two fruits per day according to this chart, even though you think you are eating five. It can be easy to deceive yourself." **Confront**

"AA worked for me (**Giving Information**), and it will work for you if you give it a try (**Confront**). We need to find the right AA meeting for you. You just didn't find a good one." (**Advice without Permission**)

Question. (QU)

The counselor asks a question in order to **gather information, understand,** or **elicit the client's story.** Generally these begin with a question marker word: **Who, What, Why, When, How, Where,** etc.

Questions require sub classification as either Closed (QUC) or Open (QUO)

A question may also be stated in **imperative statement** language: "Tell me about your family." (QUO) These are coded as Question, and *not* as Direct.

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There may be two separate utterances that constitute **both a Reflect and a Question**. In transcript these would usually be written as separate sentences. Sometimes, however, the counselor begins with a Reflect but turns it into a Question to check the accuracy of the Reflection or to move forward. When both elements are present within the same utterance, **only the Question is coded**.

The exception to this is "near reflection" when a Reflect is inflected upward at the end (implying a question), and that is *the only* difference from a reflective listening statement. Reflections that are inflected upward at the end are still coded as **Reflect**, unless they contain specific words that mark them as a question.

> Client: I'm just not sure what's going to happen with this relationship. Sometimes we seem to be so good together, and sometimes it's a disaster.
>
> *Counselor: This relationship has been a mixed blessing for you.* **Reflect**

or   *Counselor: This relationship has been a mixed blessing for you? (voice inflects upward at the end)* **Reflect**

or   *Counselor: This relationship has been a mixed blessing for you, has it?* **Closed Question** because of the question words "has it?" inserted at the end.

or   *Counselor: This relationship has been a mixed blessing for you. Tell me more about how you are together.* **Reflect/ Open Question**

or   *Counselor: Has it been kind of a mixed blessing for you?* **Closed Question**

Closed Question. (QUC)

The question implies a short answer: **Yes or no, a specific fact, a number, etc.**

The question specifies a **restricted range** or satisfies a **questionnaire** or **multiple-choice** format.

This includes a **"spoiled open question"** where the counselor begins with an open question but ends it by asking a Closed Question. In this case, the QUO is not coded, but only QUC.

> "Tell me about your smoking. How old were you when you started?" **Closed Question** (A "spoiled open question")

All of these are Closed Questions:

> "Did you use heroin this week?"   (Yes or No answer)
>
> "Where do you live?" (Specific fact)
>
> "Do you want to stay where you're at, quit, or cut down?"   (Multiple choice)
>
> "On a scale from 0-10 how motivated are you to quit?"   (Restricted range)

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Open Questions. (QUO)

An open question is coded when the counselor asks a question that allows a **wide range of possible answers.**

The question may seek **information, invite the client's perspective, or encourage self-exploration.**

The Open Question allows for the **option of surprise** for the counselor.

If a counselor asks an Open Question and then gives a **series of "for example" questions** before the client answers, this is coded as *one* Open Question.

> "What problems has cocaine caused for you? – health problems, legal problems, family problems, money problems?" This is one **QUO**

An Open Question need not be in the form of a question. **"Tell me more"**, is an Open Question.

These are all Open Questions:

> "How might you be able to do that?"

> "How do you feel about that?"

> "In what ways has being overweight caused problems for you? For example, I wonder if you've felt bad about yourself, been left out of things, had health problems . .Things like that."

> "Tell me about your smoking."

Differentiating Questions from other categories

Question should not be confused with Facilitate, Confront or Reflect

To qualify as a near reflection and be coded as **Reflect**, the utterance must be a reflection by definition, with the *only* difference being the inflection of voice at the end of the sentence.
If question words are added to a reflection, code it as a **Question.**

Facilitate responses may resemble questions, but are characteristically short, and their function is to communicate, "Keep going."

Confront responses may also take the linguistic form of a question, but if they meet the definition for confrontation (above) they are coded as **Confront.**

> "Really?" "Do you?" **Facilitate** (keep going, not sarcastic)

> "How could you possibly not know what would happen? **Confront** (critical, shaming)

> "You smoke 15 cigarettes a day, . . or is it 20? **Closed Question** (unless the context makes it an obvious **Confront**)

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"So you you're drinking more. How much more?"   **Reflect/ Open Question**

Client: "My drinking is OK during the week, but I really go overboard on the weekends."

Counselor: "You're OK except on the weekends?"   **Reflect** (near reflection)

vs   *Counselor: "Are you OK except on the weekends?"*   **Closed Question**

or   *Counselor: "You're OK except on weekends, are you?*   **Closed Question**

Raise Concern (with or without permission) (RCP/ RCW)

The counselor points out a **possible problem** with a client's goal, plan, or intention.

It always contains language that marks it as the **counselor's concern** (rather than fact).

Raise Concern always requires sub classification as to whether the concern was raised with or without **permission.**

Prior permission can be in the form of a request from the client or in the counselor asking the client's permission to offer it.

Indirect forms of permission asking may also occur, such as a counselor's statement that gives the client permission to disregard the counselor's concern.

Raise Concern may include elements of **possible negative consequences** as long as these are expressed as the **counselor's own concern.**

Examples: Raise Concern with Permission (RCP)

"This may not seem important to you, but I'm worried about your plan to move back to your old neighborhood".

"Is it OK if I tell you a concern that I have about that? I wonder if it puts you in a situation where it might be easy to start using again?

Client: What do you think of that idea?

Counselor: Well, frankly it worries me.

Examples: Raise Concern without Permission (RCW)

"I'm worried that you may have trouble when you're around your old friends."

"I think you may wind up using again with your old friends."

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Differentiating Raise Concern from other categories

Do not confuse Raise Concern with Advise, Support, Question, Giving Information, Confront or Warn.

Advise is coded when the counselor is suggesting a form of action. Raise Concern does not advise a course of action, but rather points to a potential problem or issue for the client's consideration.

Support includes statements of compassion that can appear similar in language. The difference is that Raise Concern points to a particular issue, problem, or risk.

If concern is raised in the form of a question, code as *Question*, unless the counselor is asking permission to raise a concern in the form of a question.

In *Giving Information* the counselor provides factual information that is not identified as a concern.

Confront involves direct disagreement, argument, criticism, shame, blame, judgment, moralization, disapproval, etc. Confront has a particular negative-parent quality that acts as a roadblock or confrontation. Confront contains language that implies the concern as "fact" rather than opinion or concern. Raise Concern contains language that identifies it as the counselor's concern only.

Warn always threatens or implies negative consequences without identifying them as the counselor's concern.

"I'm worried that you'll use drugs when you're bored.	**RCW**- (no advice given)
"You could ride your bike when you get bored."	**Advise** (makes a suggestion)
"I've been concerned about you this week."	**Support** (sympathetic, no specific issue)
"Could I tell you what concerns me about your plan?"	**RCP** (not coded as Question)
"Boredom is a common trigger for drug use."	**Giving Information** (if the context does not imply Warn)
"How will you keep on track when you go back home?"	**Open Question**, not RCW or Confront)
"There's no way your plan will work if you're around your old friends."	**Confront** (factual statement)
"I'm concerned that you are an alcoholic".	**Confront** (labeling)
"If you get bored you'll use drugs."	**Warn** (negative consequences, not concern, fact)

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Reflect. (RES/REC)

A reflection is a reflective listening statement made by the counselor **in response** to a client statement.

It can reflect client utterances from the current or **previous sessions.**

Reflections **capture and return** to the client something that the client has said.

Reflections can simply **repeat** or **rephrase** what the client has said or may **introduce new meaning** or **material.**

Reflections can **summarize** part or all of a session.

Information that was provided by the client in a **questionnaire** or on an **intake form** can be coded as **Reflect** as long as it does not give the client new information.

Reflections require sub classification as either Simple (**RES**) or, Complex (**REC**)

When a coder cannot distinguish between a **Simple** and **Complex Reflection**, the **Simple Reflection** is the **default category.**

A reflection is still coded as **Reflect** even if the counselor's voice inflects upward at the end (a "near reflection"), as long as no question words are added. That is, the **Reflect** must be identical in all respects to a statement, except for the voice inflection at the end. **Near Reflections** may be coded separately from **Reflect** statements, as discussed below.

Simple Reflection. (RES)

Simple Reflections add **little or no meaning** or **emphasis** to what the client has said.

Simple reflections **merely convey understanding** or facilitate client/counselor exchanges.

Simply **repeating or rephrasing** what the client has said qualifies as a Simple Reflection.

They may identify very important or intense client **emotions** but do not go far beyond the original overt content of the client's statement.

Summaries pull together points from two or more prior client turns. Summaries are usually Complex Reflections, but can be coded as Simple Reflections if they add little or   nothing to prior client statements. When in doubt, code a summary reflection as complex (**REC**). (There is no longer a separate Summary code.)

Complex Reflections. (REC)

Complex Reflections typically **add substantial meaning** or **emphasis** to what the client has said.

They convey a **deeper or richer** picture of the client's statement.

They contain significantly more or different content from what the client actually said.

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The counselor may add **subtle or obvious** content or meaning to the client's words.

The following are almost always Complex Reflections

Analogy, metaphor and simile (not stated by the client)

Exaggeration or amplification by **understating or overstating**

"Continuing the paragraph" by anticipation of what the client might reasonably say next

Double-sided reflection containing both sides of ambivalence in a single Reflect

Summaries are usually coded as Complex Reflections when they add content or meaning to client statements.

Examples

Client: "I wouldn't mind coming here for treatment but I don't want to go to one of those places where everyone sits around crying and complaining all day."

Counselor: "You don't want to do that."   **Simple Reflection**

Counselor: "So you're kind of wondering what it would be like here." **Complex Reflection**

Client: "The court sent me here."

Counselor: "That's why you're here."   **Simple Reflection**

Counselor: "That's the only reason you're here."   **Complex Reflection** (by amplication)

Client: "At one time I was pretty much anti anything but marijuana."

Counselor: "Marijuana was OK"   **Simple Reflection**

Counselor: "That's where you drew the line."   **Complex Reflection**

Client: "Everyone's getting on me about my drinking."

Counselor: "Kind of like a bunch of crows pecking at you."   **Complex Reflection** (simile)

Client: "I don't like what smoking does to my health, but it really reduces my stress.

Counselor: "On one hand you're concerned about your health, on the other you need the relief."   **Complex Reflection** (double-sided)

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Counselor: *"You don't like what smoking does to your health, but it's a stress-reducer"* **Simple Reflection** because it adds nothing to what the client just said.

Client: "I'm a little upset with my daughter."

Counselor: *"You're really angry at her."*   **Complex Reflection**
(overstates)

Counselor *(looking at questionnaire): So you said you eat about five fruits and vegetables a day, and that is the usual recommended daily level."*   **Simple Reflection/**
Giving Information

Near Reflections. (NRS, NRC)

The codes NRS (Near Reflect Simple) and NRC (Near Reflect Complex) can be used to differentiate Reflects in which the voice inflects upward at the end. This is included as an option - an investigator may elect just to collapse Near Reflects with Reflects, in which case they would be coded only RES or REC as described above.

The purpose of including the Near Reflect code is to differentiate a counselor who is thinking reflectively, but missing the optimal form of a reflection by using a questioning tone at the end. A Near Reflection serves to reflect a client statement, but **raises the voice inflection** at the end, causing the reflection to resemble a question.

A Near Reflection must **qualify as a reflection** in every sense except for the inflection at the end of the statement. If words are added to the front or end of the statement that would typically mark a question, then Question is coded instead of Reflect.

Like other Reflect responses, Near Reflections require sub classification as either Simple (NRS) or Complex (NRC).

Examples:

Client: "I'm OK drinking during the week, but I really drink a lot on the weekends."

Counselor: *"You're OK except on the weekend."*   **RES**

Counselor: *"You're OK except on the weekend?"*   **NRS**

Client: "I've tried to quit, but maybe I haven't tried hard enough."

Counselor: *"You haven't given it your best effort yet?"* **NRC**

Counselor: *"You haven't given it your best effort yet."* **REC**

Counselor: *"Have you given it your best effort?*   **QUC**   **Closed Question**

Counselor: *"What have you tried so far?"*   **QUO**   **Open Question**

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Differentiating Reflections from other categories.

Reflections can be similar to Affirmations, Confronts, Emphasize Control, Question, or Giving Information.

What may sound like an **Affirm** is a **Reflect** if it is reflecting what the client has said himself or herself. Similarly, in differentiating **Reflect** from **Emphasize Control**, the key factor is whether the counselor is reflecting something that the client has just said.

Near Reflect should not be confused with **Question**. Simply inflecting the voice upward at the end of a **Reflect** does not make it a question.

The differential between **Confront** and **Reflect** usually has to do with added emphasis that provides a clear tone of disagreement or sarcasm. Particularly subtle is differentiation between **Confront** and an amplified reflection. Confront should be unmistakably confrontational. Subtle inference is not sufficient reason to code a counselor's behavior as Confront. When in doubt, **Reflect** is the default.

Examples:

Client: "I don't really have a problem with alcohol."

Counselor: Drinking really hasn't caused problems for you.   **Reflection**

or   *Counselor: So YOU think that you don't have a problem in the world!* **Confront** (conveyed by sarcastic tone in vocal emphasis)

Client: "I don't care if I lose my job because I drink too much."

Counselor: "Losing your job is a pretty high price to pay for having a good time"
Confront (disagrees - this is not a reflection of what the client said)

or   *Counselor: It really doesn't matter to you*   **Complex Reflect**

Counselor: It really doesn't matter to you at all.   **Complex Reflect** *(amplified)*

Client: "I think I can do this."

Counselor: You believe in yourself   **Complex Reflect** (not **Affirm**)

Client: "I drank this weekend."

Counselor: "So you went and <u>drank</u> this weekend." **Confront** (from judgmental tone)

Client: "I really think I can quit this time."

Counselor: You're pretty sure you can do it."   **Reflect**

Counselor: "You're very strong and resourceful." **Affirm**

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Counselor: *"It's a decision only you can make."* **Emphasize Control.**

Reframe. (RF)

The counselor suggests a **different meaning** for an experience expressed by the client, placing it in a new light.

These generally have the quality of **changing the emotional valence** of meaning from negative to positive or from positive to negative.

Reframes generally **meet the criteria for Reflect** but go further than adding meaning or emphasis by actually **changing the valence** of meaning and not just the depth.

Reframing can involve giving the client **new information** in order to see their situation from a different perspective. In this case the information is a vehicle for reframing, and the default is v **Reframe.**

Examples:

Client: My husband is always nagging me about taking my medication.

Counselor: *"Sounds like he's pretty concerned about you."* **Reframe** ("nagging" as "concern")

Client: "My wife and kids know I've cut down a lot, but every time I do smoke they make a remark."

Counselor: *Their efforts to help feel like pressure to quit.* **Reframe** ("pressure" as "help")

Differentiating Reframe from other characteristics

Reframe needs to be differentiated from **Reflect, Affirm, Giving Information**, and **Confront**

The above examples certainly reflect counselor understanding but they also change the valence or emotional charge of a client statement.

Client: I don't know if I can do it. I've tried so many times, and then something else comes up that I have to deal with first.

Counselor: *Something always gets in the way* **Complex Reflect**

Or   Counselor: *You have clear priorities.* **Reframe**

Reframe may make a positive attribution about the person, but the difference from **Affirm** is that it is a direct restructuring of what the person has just said.

Client: I don't think I can do it. I've tried so many times, and then something else comes up that I have to deal with first.

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Counselor: Oh, I don't know. You're a pretty strong person. **Affirm** (it is not obviously linked to the content of the client's preceding statement)

Counselor: You have clear priorities.   **Reframe**

The giving of information is only coded as a **Reframe** if it changes the valence of meaning of a client statement.

Client: "Do people who go through this program quit the first time?"

Counselor: "Some do and sometimes it takes a few tries before they succeed."   **Giving Information**

Client: I've tried to quit before and failed.

Counselor: Each attempt can move you closer to success." **Reframe** ("failure" as "step toward success")

Finally, **Reframe** can border on **Confront** because it involves an indirect form of disagreement with the client. The distinctive difference is that **Confront** has a corrective, expert tone that implies that the client is mistaken.

Client: I don't think I can do it. I've tried so many times, and then something else comes up that I have to deal with first.

Counselor: Oh, I don't know. You're a pretty strong person. **Affirm** (it is not obviously linked to the content of the client's preceding statement)

Counselor: You have clear priorities.   **Reframe**

Counselor: Now look here. How can you sit there and tell me you can't do it, when you know full well that you can?   **Confront**

Support. (SU)

These are generally **sympathetic**, **compassionate**, or **understanding** comments.

They have the quality of **agreeing** or siding with the client.

Examples of Support:

"You've got a point there."   Agreement

"That must have been difficult."   Compassion

"I can see why you would feel that way."   Understanding

"I'm here to help you with this."   Compassion

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Differentiating Support from other categories

Support needs to be differentiated from Affirm, Reflect or Confront.

Affirm imparts appreciation, confidence or reinforcement.

"That's a difficult thing to say."	**Support** (compassion)
"I appreciate you saying that."	**Affirm** (appreciation)
"You've accomplished a very difficult task."	**Affirm** (effort)

Client: "It wasn't easy to do that."

Counselor: "It was hard for you." **Simple Reflection**

Client: "I don't have a car."

Counselor: "That must make it difficult for you to get here for appointments." **Support**

Counselor: So that's your excuse for not keeping your appointments. **Confront**

Structure (ST)

To give information about what's going to happen directly to the client **throughout the course of treatment or within a study format, in this or subsequent sessions.**

To make a **transition** from one part of a session to another.

Examples of Structure:

"What we normally do is start by asking you about your eating habits."

"Now I'd like to talk with you about your motivation."

"In this study I'll meet with you twice a month and the sessions will be tape recorded."

"I usually meet with clients once a week for 10 weeks.

Differentiating Structure from other categories

Structure needs to be differentiated from Giving Information. If a counselor gives the client information about the study or treatment in general, code as **Giving Information**. When there is a clear purpose of preparing the client for what will happen, code as **Structure**.

"We'll ask you about your smoking every week."	**Structure** (directly pertains to client)

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"We analyze all of the blood samples for nicotine levels." **Giving Information**

Warn. (WA)

The counselor provides a **warning or threat, implying negative consequences** unless the client takes a certain action.

It may be a threat that the counselor has the perceived power to carry out or simply the **prediction of a bad outcome** if the client takes a certain course.

"You're going to relapse if you don't get out of this relationship."

"You could go blind if you don't mange your blood sugar levels."

"If you don't come to our sessions I'll have to talk to your parole officer."
"You can lose the weight you'll put on if you quit, but you can't lose cancer."

Differentiating Warn from other categories

Warn needs to be differentiated from **Advise, Confront, Direct, Inform or Raise Concern.**

Warn should always be identified as **containing a threat or implied negative consequences.** The following examples *do not* imply negative consequences.

"You should consider leaving your partner."   **Advise** (suggestion)

"There's no reason for you to neglect your health."   **Confront** (shames)

"You have to come to our sessions."   **Direct** (lacks consequences)

"One of the health risks for diabetics is blindness." **Giving Information** (all diabetics)

When a potential negative consequence is expressed as a concern of the counselor, **Raise Concern** takes precedence.

"I'm worried that you'll relapse if you stay with your partner." **Raise Concern** (counselor's concern)

TRAINING STRATEGY FOR THE MISC

Training coders to competency, as measured by interrater reliability and matching to a gold standard, usually requires a stepped learning process. We have found that MISC coders do best beginning with fairly simple tasks and proceeding to more complex ones only when competence on the simpler tasks is solid. We recommend that coders begin by learning Level I tasks to an acceptable reliability and validity standard prior to attempting Level II tasks. Only when acceptable standards for combined I and II tasks have been accomplished

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should coders begin on Level III tasks. The self-review of MI text and video learning tools can be used at any time (perhaps as a prelude to beginning Level I tasks).

The use of pre-scored gold standard transcripts will assist in evaluating coder competency and areas for improvement. We have found that coders often have difficulty in particular areas, requiring a more intensive focus on those topics. This can be identified by using standardized transcripts as a quiz for each level. More than one quiz is often needed. We have found that coders typically require 40 hours of training to reach interrater reliability using the MISC. In addition, regular (probably weekly) group coding sessions are optimal to insure drift does not occur. Clinical experience has not predicted ease of training or eventual competence in our laboratory.

Here are some examples:

Level I competencies: Start with second-pass coding of specific behaviors. Learn how to recognize and parse utterances. Learn to recognize and code the more discrete behavior categories, such as giving information and open/closed questions

Level II competencies: Add **Reflect** responses, and differentiate simple from complex. Learn differentials between similar response categories.

Level III competencies: Having mastered individual behaviors, include the global ratings.

D. Client Behavior Counts

The task of capturing the frequency, type and intensity of client language has proved to be a challenge in the developing research efforts to investigate the underlying processes in MI. Systems for thinking about and measuring such language during treatment sessions have been revised based on new data, new ideas about key constructs such as client resistance and evidence regarding the level of inter-rater reliability that can be achieved when parsing and coding client speech. Evaluating client language during MI sessions is very much like capturing a snapshot of a river: the outline is recognizable, but the content changes constantly.

The MISC 2.1 is intended for assessing client language within MI and MET sessions (and their variants) using audio or video recordings. As with all our coding systems, a transcript alone should never be used since the resulting loss in voice tone, inflection and pace renders an unacceptable loss of information and reliability. The entire session is coded and a code is assigned every time the client emits a codeable utterance. Client language coding in MISC 2.1 is exhaustive, but not mutually exclusive. In general, the complexity of client language coding in MISC 2.1 will require a separate review of the tape, possibly using a transcript, with clinician behavior to be evaluated on a different pass through the tape.

Overview of Changes and Essential Differences between MISC 2.1 and other MI client language Coding Systems

1) Within the MISC 2.1, "Reason" is an umbrella category, with Desire, Ability and Need representing subcategories of Reason. Thus, an utterance coded as a "Reason" may, or may not, receive additional subcodes of "desire", "ability" or "need".

2) An "Other" category has been added to reflect particular types of change talk that do not fall easily into the Reason category. Examples include hypothetical advice to others, if-then statements about the possibility of changing, and foretelling of future problems if change does not occur. Problem recognition also falls into the Other category.

3) The "Ask" category has been folded into Follow/Neutral.

4) Decision rules for minimal responses from clients have been elaborated, particularly with regard to speech that is "set-up" or prompted by the therapist.

5) Strength ratings for client utterances have been reduced to High, Medium and Low values. Due to ongoing reliability issues, these strength ratings are optional.

6) Client discussion of past behavior is now excluded from coding, with the exception of behavior immediately prior to the current treatment session.

7) Nomenclature of client language has been changed to be consistent with the Consensus Statement on Client Language (June, 2005) by Amrhein, Miller, Moyers and Rollnick

D.1 Client language overview

Categorizing client language: Within the client language coding system, any language that moves in the direction of change is termed "change talk" and language indicating a movement away from change is termed

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"sustain talk". Each of these positive (change) and negative (sustain) language categories is comprised of four categories: Reason, Other, Taking Steps and Commitment.

Identifying the Target Behavior Change (TBC): Use of MI to recognize, reinforce, and elicit client language presupposes that the interviewer has a target behavior in mind, so that he or she will know which particular instances of client language to attend to and which to ignore. Before evaluation of the tape begins, coders should be made aware of the target behavior change. In general, this is the problem area specified by the research protocol or the focus of the therapy session. A few examples of target behaviors are:

Stopping smoking
Increasing exercise
Adhering to specific exercise guidelines
Compliance with medication regimen
Increasing fruit and vegetable intake
Obtaining vaccines for children
Abstaining from alcohol
Holding toddlers while feeding them, instead of propping a bottle
Journaling alcohol intake
Wearing a helmet while riding a motorcycle
Entering treatment
Remaining in treatment

The target behavior must be specified in enough detail so that coders can reliably discriminate it from all other topics a client might discuss. The MISC 2.1 will evaluate client language related to that target behavior (or behavior change) *and no other*. Multiple target behaviors can be identified as long as the inclusion criteria are identified in advance and are specific. Examples of such target behavior "trees" are found below:

Smoking Cessation (Target behavior)
    "Thinking Through" cravings
    Throwing out cigarettes
    Telling friends not to offer cigarettes
    Avoiding high risk situations

HIV Risk Reduction
    Using clean needles
    Avoiding sex with multiple partners
    Using a condom when having sex

Reducing risk for complications of diabetes
    Counting carbohydrates
    Checking feet for wounds
    Testing blood sugar levels

In general, coders should not infer a link between actions being discussed by the client and the TBC goal, unless it is clear from the context that the purpose of the behavior is to move toward or away from the TBC goal. For example, if the TBC goal is to reduce cardiovascular risk, (and corollary TBC's have not been specified): "I wish I were less stressed" would not in itself indicate movement toward or away from the TBC goal. If, on the other hand, the client said, "Decreasing my stress at work would probably help my heart," it would be coded as

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TBC. Similarly, if the counselor's or client's prior responses clearly provide a context for TBC, it is coded. For example, if the counselor asked,

> "What could you do to reduce your risk of having another heart attack?"

and the client replies, "I could exercise more," change talk would be coded even if the client does not directly state the connection. If the counselor says,

> "One way that people can have a healthier heart is to stop smoking"

the client's next response is likely to be relevant to TBC, whether positive or negative.

D.2 Coding Procedure

Elements of Coding. Speech in the MISC 2.1 is divided into clinician and client VOLLEYS. A volley is a speaking turn. A client volley occurs when the clinician stops speaking and the client begins. Client volleys can be lengthy or very short – even one word *can* be a volley.

Parsing Volley into Utterancess. Volleys are divided into utterances. Utterances are complete and separate thoughts within a volley. Utterances are defined by the meaning attached to them. A volley may have many different ideas, and therefore many utterances. Likewise, it may have only a single idea and therefore only one utterance. Generally, each utterance will merit a separate behavior code. If a client's volley includes two statements, each of which can be assigned a different code (as below), then *both* are coded as utterances. This would include:

two utterances that would be given different signs:

> *I really have to stop smoking* (+).
> *My cigarettes are like a friend to me* (-)

or two utterances that state different content (e.g., reasons) for or against change:

> *I'd have a better change of getting my children back if I quit drinking* (R+)
> *and I'm sure I'd feel better, too* (R+),
> *but I would miss going out with my friends* (R-)

or two utterances that result in different strength scores (see below):

> *Probably I do need to cut down a little bit . . .* (Rn+ Lo)
> *No, who am I kidding? I definitely need to cut down* (Rn+ Hi)

Even a single sentence might have two different ideas, both of which would constitute separate utterances.

> *I could quit* (+), *but I don't want to* (-).

> *My drinking is not a problem* (-), *but I do need to drink less* (+).

> *I know I ought to exercise more* (+), *but I hate sure hate getting up in the morning* (-), *even thought it would do me good* (+).

Although longer volleys usually have more utterances, this is not always the case. It is possible for clients to speak at length about a single idea without deviating from it much, such as storytelling, or reporting past behavior. In this unusual case, only a single utterance would be parsed from the volley.

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Client responses to clinician questions. Clients may respond to clinician questions with language that fits within any of the change talk categories, and it should be coded as such. The fact that the clinician "set it up" with a particular sort of question or comment does not mean that the client's response is not change talk. Even a one-word answer to a question may qualify for a change talk code if the coder deems it to be a genuine response rather than simply a socially facilitating response.

Counselor: On a scale from 0 to 10, how important is this change to you? **Closed question**
Client: I guess about a 3.   **R-d**

Counselor: What are some of the good things about drinking, things you like about it?   **Open question**
*Client: I guess the way it makes me feel (**R-d**). But sometimes I don't feel too good the next day (**R+d**)*

The Target Behavior Change (TBC)

Before you begin coding a session, it is essential to have a clear understanding of the Target Behavior Change (TBC), which is usually specified by the Principal Investigator. Examples of clear TBCs are:

> Stopping smoking
> Stopping or reducing use of alcohol
> Increasing dietary intake of fruits and vegetables
> Taking blood pressure medication as prescribed

Note that a well-specified TBC includes both a target behavior (smoking, drinking, fruit/vegetable intake, taking medication) and a specified direction of change (stopping, increasing, adhering to prescription).

Sometimes the TBC may involve a specified class of behaviors. For example, the goal of reducing risk for HIV/HCV infection might include any of a specified set of behaviors including:

> Avoiding (stopping or reducing) unprotected sex
> Avoiding alcohol/drug use prior to sex
> Avoiding needle sharing
> Sterilizing needles before re-use

In this case the Principal Investigator should specify the list of behavior changes that constitute TBC.

Least desirable as the TBC is an ill-defined general goal, such as to "be healthy." In this case, client speech relevant to TBC would be any behavior change that the *client* clearly identifies as intended to move toward or away from the general goal. Coders should not infer a link between actions being discussed by the client and the TBC goal, unless it is clear from the context that the purpose of the behavior is to move toward or away from the TBC goal. For example, if the TBC goal is to reduce cardiovascular risk, and the Principal Investigator has not specified specific target behaviors: "I wish I were less stressed" would not in itself indicate movement toward or away from the TBC goal. If, on the other hand, the client said, "Decreasing my stress at work would probably help my heart," it would be coded as TBC. Similarly, if the counselor's or client's prior responses clearly provide a context for TBC, it is coded. For example, if the counselor asked, "What could you do to reduce your risk of having another heart attack?"

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And the client replies, "I could exercise more," it would be coded as TBC even if the client does not directly state the connection. If the counselor says,

"One way that people can have a healthier heart is to stop smoking"

The client's next response is likely to be relevant to TBC, whether positive or negative.

What is a Client Change Talk Utterance?

At the very least, any client "turn" in a conversation is one utterance, starting from the client's first word until the next person (typically a counselor) speaks. It is not uncommon, however, for a client turn to include more than one utterance. If a client's turn includes two statements, each of which can be assigned a different code (as below), then *both* are coded as utterances. This would include:

Two utterances that would be given different signs:

I really have to stop smoking (+),
but I just don't want to (-)

or two utterances that state different content (e.g., reasons) for or against change:

I'd have a better change of getting my children back if I quit drinking (R+)
and I'm sure I'd feel better, too (R+),
but I would miss going out with my friends (R-)

or two utterances that result in different strength scores (see below):

Probably I do need to cut down a little bit . . . (N+1)
No, who am I kidding? I definitely need to cut down (N+5)

D.4 Assigning Content Codes to Utterances. Each and every utterance within a volley will be assigned one of the following eight content codes:

R: Reason
(subcodes: d: Desire, a: Ability, n: Need)
O: Other
TS: Taking Steps
C: Commitment
FN: Follow/Neutral

With the exception of Follow/Neutral, every time an example of one of these occurs in client speech it is recorded with a positive (+) or negative (-) valence, depending on whether it reflects inclination toward (+) or away from (-) the TBC. Client language in favor of change is generally termed "Change Talk" while language moving away from change is called "Sustain Talk".

D.4.a. Reason: Statements of Reasons usually refer to a specific rationale, basis, incentive, justification or motive for making, or not making, the TBC. Client discussions of health, family problems, legal difficulties or other kinds of problems that are presented as a reason for considering change (or not changing) typically fall into the reason category. Client expressions of worry and concern about their behavior and circumstances are reasons to change (not simply the report of the concerns of others). "Ought" and "Should" statements are reasons to change. Benefits that would probably come to the client as a result of changing (+) are included in

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this category, as well as likely disadvantages of changing (-). Hypothetical benefits (if-then) are included in the "Other" category. Statements incorporating the words "have to" or "got to" are reasons.

My liver's busted, so I have no choice. (R+)

I just don't drink that much. (R-)

I want my kids to have a real father. (R+)

It would be so good for my kids. (R+)

My drinking doesn't affect my kids. (R-)

My doc told me I'm going to lose my leg if I don't start checking my blood sugars. (R+)

My diabetes is as good as it's gonna get. (R-)

I've gotta get a grip on this (R+)

I've got a friend who got a head injury on his motorcycle and I don't want that to happen to me. (R+)

Only idiots need helmets and I am not an idiot. (R-)

I don't want my child to have all these expensive cavities. (R+)

My mother gave me my own bottle when I was her age and I never got cavities. (R-)

My drinking is getting worse. (R+)

My drinking is hopeless. (R-)

If I don't stop using crack, my wife will leave me. (R+)

If I have to use a condom, why even bother? (R-)

Protecting my health is the most important thing to me. (R+)

I have young children to take care of. (R+)

I just want to quit hearing those voices and the medicine helps with that. (R+)

I know I'd feel closer to God if I quit using drugs. They just keep me away from Him. (R+)

It's the right thing to do. (R+)

I'm a mother and I ought to take better care of my kids. (R+)

It's getting out of hand. I have to have my eye-opener in the morning. (R+)

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D. 4. b Subcodes for Reasons: Any reason statement *may* receive an additional code indicating desire, ability or need.

      D. 4. b. 1 Desire: Desire statements must have some form of one or more of the following words: "want", "desire", "like" or a close synonym of them. Depending on the meaning and context of the discourse, an antonym may also indicate a desire statement. The statement must refer to the target behavior, and not some other aspect of change.

      I want to stop smoking (R+d)

      I'd like to quit, yeah (R+d)

      I hate a night without a buzz (R-d)

      I love waking up sober (R+d)

      I hate being an addict (R+d)

In the following exchange, the client statement is NOT desire:

      T: So you see that quitting has its advantages.
      C: It'd sure be nice.

While this client statement may seem to indicate desire, and probably does, it is NOT a desire statement, since it does not contain key desire words. See the discussion of the Other category for more examples of this type.

      D. 4. b. 2 Ability: Ability statements are those that refer to the target behavior and include some form of the word "can", "possible", "willpower" or "ability" or a close synonym or antonym of them. Statements that indicate that changing the target behavior is difficult or hard should be coded as ability (R-a) statements. Obvious colloquialisms or turns of phrase that indicate ability may be coded as ability statements.

      I am able to do this. (R+a)

      I just can't quit. (R-a).

      I can quit. (R+a)

      I have the ability to stop smoking. (R+a)

      I don't think I have it in me (R-a)

      Once I make up my mind, I know I can do it (R+a)

      I don't have much willpower (R-a)

      It's not that hard to do (R+a)

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Examples of statements that might seem to be, but are not, ability statements:

> *I can't smoke at work.* (R+)

> *When I smoke I can think more clearly and focus for longer periods of time.* (R-)

Don't be fooled: these statements include the word "can", but the "can" part does not refer to the target behavior. These statements are Reasons to change or maintain the status quo.

> **D. 4. b. 3 Need:** These are statements that refer to the target behavior and include some form of the words "need" or "must". If the statement does not include the words "need" or "must", then they are not Need statements. If a statement does not refer to the target behavior, then it is not a Need statement.

> *I need to stop smoking.* (R+n)

> *I must quit.* (R+n)

> *I gotta do this.* (R+n)

> *I need a cigarette.* (R+n)

Examples that are NOT Need:

> *I need more money, so I should give up smoking.* (R+)

> *I gotta get my life together, and part of that is laying off the booze.* (R+)

> *"I have to do it"* (R+)

These statements are Reasons to change.

Here is one that is a need statement followed by a reason:

> *I need to stop smoking* (R+n) *or I'm gonna get cancer* (R+).

This statement should be parsed as two utterances, the first one coded as Reason: need and the second coded as Reason.

Decision Rule for D-A-R-N:
The Reason code is the default when coders cannot decide among the DARN categories

D. 4. c. Other: This category is intended to allow coders to capture language that clearly reflects the client's movement toward change, but does not necessarily fit easily into the Reason category. General statements of problem recognition will often reside in this category if they do not fall into one of the Reason categories. Similarly, minimization of problems will also be categorized here. Hypothetical language will usually fall into the Other category, as well as client statements of general attitude or advice to others with regard to the undesirability of the target behavior. In addition, coders may place in this category examples of language that are CLEAR and COMPELLING examples of the client's move toward change, but do not meet any criteria

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other established here. All such examples must be recorded word for word and discussed in the weekly coding meeting.

> *I tell everyone I know, "Stay away from crack. That shit will just mess up your life."* (O+)

> *"The right AA meeting is the key."* (O+)

T: Did you come in to treatment on your own?
C: *Yes, I know exactly where I belong.* (O+)

> *Cocaine is just not the answer for me.* (O+)

> *I'm going to be thinking positively about it.* (O+)

> *I never have thought I was an alcoholic* (O-)

T: What will you put in place of drinking?
C: *That's what I'm trying to find out.* (O+)

> *I promised myself that if I do drink, I will tell you.* (O+)

> *If I weren't in AA right now, I'd be on a bender.* (O+)

> *If I go to the track all day I can usually win enough money to stay drunk. That's sad.* (O+)

D. 4. c. 1. Differentiating Hypothetical Language from other codes

Hypothetical language coded within the Other category should have the quality of a client *imagining* a different situation or outcome that would impact the target behavior. There is sometimes a wistful quality to hypothetical talk ("If I could just go kayaking on the Colorado river for three weeks, I could quit smoking") or an if…then configuration ("If my wife would just quit pushing me, I know I'd do it.")

Sometimes if…then language will fall into another change talk category, usually Reason, and when it does it should receive that code instead. For example, a client might say, "If I could just stay sober, then I could really do well at this job." Because this probable outcome represents a reason for changing the target behavior, rather than an exercise in imagination, it should be coded as a reason.

> *If I could just stay off cocaine, I'd be a better mother.* (R+)

> *If my kids were with me this weekend, I could stay off cocaine.* (O+)

D.4. c. 2. Differentiating Facilitating Language from Change Talk

Facilitating language in clients occurs when they respond to therapist speech with phrases such as "uh huh" or "yeah" or "sure". Usually, such utterances are NOT coded, as they are merely continuation markers in the conversation. In essence, the client is saying, "keep talking". However, these phrases CAN be coded as change talk if they occur in response to a question/reflection that "pulls" for change talk.

> T: "Don't you ever wish things were different?"

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C: "Yeah." (D+)

T: I'm going to look over this report and give you some feedback.
C: Sure. (F/N)
T: Then we can get your point of view
C: ok (F/N)

When client facilitates interrupt therapist speech, there is no need to code them.

T: On the one hand, you have decided that to quit drinking is going to be the best thing for you….
C: Uh-huh
T: …and on the other hand you feel like it's going to be really tough…
C: Yeah
T: …because you have tried it in the past and you feel like you have failed every time, even though you were able to stay sober for months at a time, which I really commend you on being able to do!

D. 4. d. Commitment Language: While change talk utterances reflect motivating factors related to change, **Commitment Language** implies an **agreement, intention**, or **obligation** regarding **future TBC**. Commitment can be expressed directly via a committing verb, or indirectly. Client statements of how they will rearrange their life in the future relating to the TBC are considered commitment statements. (Note that if this rearrangement is stated hypothetically, it would be coded as Other.).

I swear I'm going to stop this.

Nothing is going to stop me this time.

With commitment language, if a reason is given, it is coded separately, but does not trump the commitment language. For example:

I'm going to do it. (C+)

I'm going to do it (C+) for my family. (R+)

No way I'm going to stop drinking. (C-)

I'm not coming to treatment (C-) because I don't have a drinking problem. (R-)

D. 4. e. Taking Steps: Concrete and specific steps the client has recently taken toward the behavior change are coded as Taking Steps. These statements usually describe a particular action that the person has done in the very recent past that is clearly linked to moving toward or away from TBC. To be coded, the behavior must clearly be one that is *intended* by the client to lead to (or away from) TBC. It is an intermediate response on the way to (or away from) the TBC. Taking Steps represents the only time that past client language is given a code.

The action may not be TBC itself. For example, if TBC is reduction in alcohol use:

I got rid of all the alcohol from my house this week. (TS+)
I went to two AA meetings this week. (TS+)
I bought a six-pack of beer this week. (TS-)
I stopped going to AA this week. (TS-)

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I tried cooking without butter. (**TS+**) (concrete step)
I'm going to try cooking without butter. (**C+**) intention
If I tried cooking without butter, I'd reduce my fat intake. (**O+**)
I swear I will stop this (**C+**)
I'm always going to eat sweets. (**C-**)
I'll go to the gym everyday. (**C+**)
I'm going to throw away all of my cigarettes. (**C+**)
I threw away all of my cigarettes. (**TS+**)
I'll buy apples for snacks instead of chocolate. (**C+**)
I didn't drink at all last week. (**TS+**)
I worked overtime so I wouldn't be tempted to drink. (**TS+**)
I tell my partner I'm working late, then I go to the bar. (**C-**)

If a change talk utterance is made along with an Other, Commitment or Taking Steps statement, both utterances are coded. For example:

I'm going to do it. (**C+**)
I'm going to do it (**C+**) *for my family* (**R+**)

If I threw away all of my cigarettes, I'd be less tempted to smoke. (**O+**)

If I threw away all of my cigarettes I'd be less tempted to smoke (**O+**), *but I'd be a nervous wreck.* (**R-**)

I got my blood drawn for the HIV test this week, (**TS+**) *but I can't deal with the stress of finding out the results* (**R-**).

D. 4. f. Follow/Neutral (FN). In a follow-neutral turn, there is no indication of client inclination either toward or away from the TBC. The client may be asking a question, reporting, making non-committal statements, saying TBC-irrelevant things, or just following along with the conversation. Note that only TBC-relevant change talk is coded. If the target behavior is cocaine use and the client says, "I want to get my children back," it would not be coded as + unless there is a clear link made between cocaine use and getting the children back.

T: Why are you here?
C: I want my children back." (**FN**)

Whereas:

T: Why would you want to quit cocaine?
C: I want my children back. (**R+**)

Sometimes clients will emit language that indicates they are listening to what therapists are saying, or that indicates a therapist should continue speaking. These are referred to as facilitating utterances. In general, client facilitating language, unlike that of therapists, is NOT coded.

T: You've really had a rough week.
C: Yeah. (**FN**)
T: But even with all of that, you were able to stay away from cigarettes.
C: Uh huh. (**TS+**)
T: We've spent some time talking about the things you enjoyed about drinking.

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C: Uh huh. (not coded)
T: What I'd like to do next is to get your impressions of how drinking affected your life.
C: Okay. (not coded)

When you are in doubt about an utterance - when you are not sure if there is talk (+ or -) relevant to the TBC, the default code is Follow/Neutral (FN).

Finally, a client turn is coded at Follow/Neutral (FN) *only* if it contains no other codeable utterance. That is, for a sequence of utterances within a turn, any + or - code trumps a FN. Suppose that this were the conversation:

T: What are you thinking about marijuana at this point?
C: Actually I wasn't thinking about it at all. I was thinking about
my girlfriend. (FN)
... but yeah, I guess I'm smoking too much for my own good (+).
At least she says so and she wants me to quit (FN).
I don't want to break up with her (R+).
I think it's messing me up at school, too. (R+)

Remember that it is also possible to have positive and negative responses within the same turn, reflecting ambivalence (such as R+ R- N+).

D. 4. f. 1. Decision Rule for Follow/Neutral and other codes : Client language that does not fit other available categories should be coded as FN. Inaudible or incomprehensible utterances should not be coded.

D. 4. f. 2. Decision Rule for Coding client facilitating language: Facilitative language that has the sense of "I'm listening" or "keep talking" is not coded. Neutral client language that occurs in response to a question is typically coded as F/N. Client language that occurs in response to a question about the TBC is coded as change talk (see sect. B.4. c. 2).

T: We'll be meeting four times during the next sixteen weeks.
C: Yeah (not coded)

T: Has your husband been supportive of you in the past?
C: Uh huh (FN)

T: If you could push a button that would make you stop drinking, would you do it?
C: Uh huh (O+, hypothetical change)

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Rating the Strength of Client Language (Optional). Every time Reason, Other, Commitment and Taking Steps are coded, a strength rating may be assigned: High, Medium or Low. It is important to note that ratings for strength require coders to make artificial separations along a continuum of intensity. There are no "natural" categories of language intensity, so making High, Medium and Low designations may be less precise (and more frustrating) than other tasks in the coding system. Examples of strength ratings for each code are given below:

Reason: High

> *I definitely can't afford to get another DWI* (R+)
> *I'll go back to jail if I have another positive urine* (R+)
> *If I lose one more paycheck at the track, my husband will divorce me* (R+)
> *I hate the way my clothes smell* (R+)
>
> *There's no way I'd check my blood sugar three times a day because I'd be a human pincushion* (R-)
> *It's the only way I can deal with the stress of my job* (R-)
> *Sobriety just sucks most of the time* (R-)

Reason: Medium

> *It's embarrassing to remember what I did that night* (R+)
> *The reasons are starting to pile up* (R+)
> *If I go to the casino again, my husband would probably leave me* (R+)
> *It's the right thing to do* (R+)
>
> *I can never find that machine when I have the time to test my blood sugar* (R-)
> *My cigarettes are like a good friend* (R-)

Reason : Low

> *I guess I'd be healthier if I exercised* (R+)
> *It seems like the right thing to do* (R+)
> *It's cramping my style* (R+)
>
> *Well, it helps me to relax a little* (R-)
> *I'd kind of miss my friends at the casino* (R-)
> *It's sort of nice to just eat whatever I want* (R-)

Subcodes for Reason

> desire: High
>
> > *I want to get off drugs for good* (Rd+)
> > *I'd love to be able to control my diabetes* (Rd+)
> > *I really wish I could just cut down* (Rd+)
> >
> > *I don't want to quit* (Rd-)
> > *I like my life the way it is* (Rd-)

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desire: Medium

I wish I could just snap my fingers and lose 10 pounds (Rd-)
I just want to wake up sober in the morning (Rd-)

I like smoking (Rd-)
What's wrong with a little nightcap every now and then? (Rd-)

desire: Low

I guess I'd like to smoke less (Rd+)
I sort of wish I hadn't started using coke (Rd+)
It would be kind of nice to have the extra money (Rd+)

There's a few good things about it (Rd-)
I'm pretty much enjoying things the way they are (Rd-)
I guess I'm not very motivated to exercise (Rd-)

ability: High

> *I'm positive I can quit* (Ra+)
> *I can do it: I just have to stick to it* (Ra+)
> *I can quit whenever I want* (Ra+)
> *Once I make up my mind, I do it* (Ra+)
>
> *I just can't keep the weight off* (Ra-)
> *There's no way I could make it through the day without a cigarette* (Ra-)
> *I don't have a snowball's chance in hell* (Ra-)

ability: Medium

> *I think I can* (Ra+)
> *Pretty much, yes* (Ra+)
> *I could* (Ra+)
>
> *I don't think I can* (Ra-)
> *Probably not* (Ra-)
> *I don't have it in me* (Ra-)

ability: Low

> *I might be able to* (Ra+)
> *I guess I could* (Ra+)

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need: High

> *I definitely have to get off the street and this is the way to do it* (Rn+)
> *I absolutely have to lose weight* (Rn+)
> *I've got to use a condom every single time I have sex, no question about it* (Rn+)
>
> *I need my pain pills and that's all there is to it* (Rn-)
> *Cigarettes are the only thing keeping me going* (Rn-)

need: Medium

> *Probably I need to do something about my drinking* (Rn+)
> *A change would be a good idea* (Rn+)
>
> *Mostly, I have to drink* (Rn-)
> *I guess I need some excitement in my life* (Rn-)

need: Low

> *I sort of have to drink right now* (Rn-)
> *I guess I don't think I need to quit* (Rn-)

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Other: High

I've had it with this way of living (O+)
I imagine my liver must be saying, Thank God! (O+)

I'm no teetotaler! (O-)
I'm one of the hopeless ones they talk about in the Big Book (O-)

Other: Medium

I feel good about what I've accomplished (O+)
I realize now that all that drinking was wrong (O+)
AA gives me a lot of hope (O+)
If not know, when? (O+)

I keep asking myself: when are the benefits gonna show up? (O-)

Other: Low

I think that will motivate me to quit (O+)
If I could just be on a desert island for a month, I could quit (O+)
The court asked me to come to treatment, but that's probably not such a bad idea (O+)
I'm kind of questioning my behavior (O+)

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E. MISC Summary Scores

As with MISC 1.0, MISC 2.1 provides several summary scores based upon the second-pass behavior codes. These are recommended as provisional summary indicators of the quality of motivational interviewing.

Ratio of Reflections to Questions (R/Q)
R/Q is the ratio of the total number of Reflect responses to the total number of Questions asked.

Percent Open Questions (%OQ)
%OQ is a percentage in which the numerator is the number of Open Questions asked and the denominator is the total number of Questions asked (Open + Closed).

Percent Complex Reflections (%CR)
%CR is a ratio in which the numerator is the number of complex reflections and the denominator is the total number of Reflections.

MI-Consistent Responses (MICO)
MICO responses are those directly prescribed (e.g., affirmation, emphasizing client control, reflection, reframing) in *Motivational Interviewing* (Miller & Rollnick 1991, 2002). The MICO score is the sum of:
     Advise with permission
     Affirm
     Emphasize Control
     Open Question
     Reflect
     Reframe
     Support

MI-Inconsistent Responses (MIIN)
MIIN are those directly proscribed (e.g., giving advice without permission, confronting, directing, warning) in *Motivational Interviewing*. The MIIN score is the sum of:

     Advise without permission
     Confront
     Direct
     Raise Concern without permission
     Warn

Percent MI-Consistent Responses (%MIC)
%MIC is a percentage in which the numerator is the number of MIICO responses, and the denominator is the sum of the MICO and MIIN responses.

Percent Client Change Talk (%CCT)
%CCT is a ratio in which the numerator is the number of all client commitment language (+) divided by the sum of client commitment language plus client negative commitment (-) responses.

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APPENDIX C

MANUAL FOR THE MOTIVATIONAL INTERVIEWING SKILL CODE (MISC),

VERSION 1.1: ADDENDUM TO MISC 1.0

Manual for the Motivational Interviewing Skill Code (MISC), Version 1.1:
Addendum to MISC 1.0
(As used in the Talking about Drinking study, 2008)

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Purpose, History, and What to Code

Purpose. The MISC 1.1 coding system serves as both an addendum to the MISC 1.0 (Miller, 2000) and as a stand-alone coding system. The sole purpose of the MISC 1.1 is to classify and quantify client language that is either change talk (CT) or counter-change talk (CCT). As such, MISC 1.1 focuses upon the types of in-session client language that have been predictive of future change (or non-change). When all that is of interest is how much CT and CCT are present in a Motivational Interviewing (MI) therapy session, we believe that this system represents an appropriate and efficient way to characterize these types of client language.

History. The MISC 1.1 system builds directly upon the work of Miller and colleagues (e.g., Miller, 2000; Miller, Moyers, Ernst, & Amrhein, 2008) and is an adaptation of the client-language portion of the MISC 1.0, which offers a simple coding scheme for in-session client language. Unlike the MISC 1.0, version 1.1 includes only two categories—Change Talk and Counter-Change Talk—and leaves the previously included Ask and Follow/Neutral categories uncoded. However, MISC 1.1 also adds upon MISC 1.0 by providing updated names and definitions for CT and CCT categories and sub-categories (although sub-categories are not coded individually) that are more specific and consistent with recent Motivational Interviewing research. Later versions of the MISC 1.0 (i.e., MISC 2.1 and MISC 2.5) are more complex than the MISC 1.1 and provide more extensive information about each session.

The benefits of MISC 1.1 are its simplicity, relative ease of training and use, and ability to calculate the Percentage Change Talk variable. Percentage Change Talk was the primary outcome variable of the Talking about Drinking study has been used in other studies conducted by CASAA; it is defined as change talk frequency over the sum of change talk frequency plus counter-change talk frequency ($\% \, CT = CT \, / \, [CT + CCT]$).

To determine which coding system might be most appropriate for your purposes, please refer to Table 1, which compares the MISC 1.1 to other MI coding systems available free of charge from the CASAA Web site (http://casaa.unm.edu/codinginst.html).

Table 1.

Comparing and Contrasting Motivational Interviewing Coding Systems

System	Client Behaviors	Therapist Behaviors	Sequential	Whole Session	Detailed CT/CCT	Globals	Significa Other
MISC 1.0	X	X		X		X	
MISC 1.1	X			X			
MISC 2.1	X	X		X	X	X	
MISC 2.5	X	X	X	X	X	X	
MITI 3.0		X					
MISO				X		X	X
SCOPE	X	X	X	X	X	X	
GROMIT				X		X	

What to code. The following considerations will help to define the MISC 1.1 coding system and distinguish it from other ways of coding MI therapeutic interactions.

- MISC 1.1 is intended for use with audio (not video) recordings; if video recordings must be used, visual information should be disregarded, so we suggest obscuring the monitor.

- MISC 1.1 is coded aurally, and typically without the use of transcripts.

- This system is neither mutually exclusive nor collectively exhaustive: Only client CT and CCT are coded, and neutral client language and all therapist language are ignored.

- Unlike many of its coding-system counterparts, the MISC 1.1 is coded in just one pass.

- Only behavior counts are coded—not global ratings.

- MISC 1.1 is not sequential, so behaviors are coded using only tallies.

- The entire session should be coded (i.e., not just a 20-minute sample as in the MITI).

- Several types of CT and CCT are recognized, and each is counted as a separate utterance. However, utterances are not classified by their specific sub-categories—just by their valence (i.e., CT or CCT).

- Like most MI coding systems, a target behavior must be specified for the coding system to be meaningful.

- Transcripts are not used to code the MISC 1.1, and therefore utterances are not pre-parsed in this system; however, using transcripts might be useful when first introducing the concept of parsing.

- Please note that in the Talking about Drinking study tallies were calculated by quartile (i.e., each fourth of the timed session) and then summed overall, but only because the quartiles related to specific study hypotheses; the typical MISC 1.1 user will prefer to record tallies for the entire session using the MISC 1.1 Coding Sheet (see Appendix).

Coders, Training, and Reliability

Coders. Although we have not collected empirical data about the characteristics of an ideal Motivational Interviewing coder, CASAA has been successful in training coders from undergraduates to professionals. Training coders in any coding system requires a significant investment of time (and possibly of money), even when teaching a simple one such as MISC 1.1. For the Talking about Drinking study, coders were advanced undergraduate volunteers who made a year-long commitment to the project. We recommend training at least three coders at a

time so that you will still have two coders if one coder must leave the study early; this will allow you to calculate reliability analyses.

Training. Training novice coders to reliability in this coding system is expected to take roughly 5 instructional hours, 15 hours of individual coding practice per coder, and an hour of weekly group-coding practice throughout the project to minimize coder drift. Because MISC 1.1 merely collapses the sub-categories of CT and CCT, training coders already proficient in other MISC coding systems likely would take just a few hours. To teach the MISC 1.1, we suggest the following progression:

- Provide an overview of the system and its goals.

- Practice listening and parsing. (Reassure coders that the client-therapist interaction will seem to "slow down" as they become more comfortable with the system; in this way coding is much like learning a new language.)

- Introduce CT and CCT (and their sub-categories).

- Practice distinguishing CT and CCT from neutral client language.

- Code CT and CCT in a group setting.

- Have coders rate recordings independently. (Note: Do not use recordings from your current study for training or reliability checks!)

- Conduct statistical inter-rater reliability checks periodically.

- Meet as a group to give feedback, discuss independent codes, and resolve questions and disagreements.

Reliability. It is important to calculate coder reliability after every few recordings. To do so, we suggest the use of intraclass correlations (ICCs), which can be calculated easily in SPSS. According to Cicchetti (1994), ICCS of .75 – 1.00 are excellent, .60 - .74 are good, .40 - .59 are

fair, and below .40 are poor. When test reliabilities become consistently high, then administer an independent coding sample of approximately 5 – 10 tapes, which will serve as a "final exam". Scores of approximately .60 or higher on both CT and CCT usually indicate that coders are ready to begin coding "real" study recordings. We suggest double-coding 20% of the study sample.

Parsing

Parsing refers to breaking up language into utterances—that is, meaningful units of speech. To parse client language using the MISC 1.1, first separate out client and therapist "volleys"—that is, speaking turns. Then divide each client volley into "utterances"—that is, complete ideas. Each complete client idea that is CT or CCT will receive a code (and therefore, a tally mark on the coding sheet). Typically, a new therapist utterance will end a client utterance.

Although parsing should be introduced prior to coding, how to parse skillfully will become more obvious after starting to learn how to code and to distinguish CT and CCT from neutral client language. Consider the parsing of the following dialogue. (Note: Brackets indicate parsed utterances. Superscripts following brackets indicate neutral client language (^{0}), change talk ($^+$), or counter-change talk ($^-$).)

Example.

Therapist: What brings you in today?
Client: [I got caught drinking in the dorms last weekend. My roommate said that I had, like, nine shots, so I guess I was pretty wasted that night. But I don't really even remember getting in trouble.]^0
Therapist: You're not even sure why you're here, then.
Client: [No—just because I got a little drunk doesn't mean that I need to be in counseling.]$^-$
Therapist: The punishment seems a little disproportionate to the crime.
Client: [Exactly!]$^-$ [Plus, none of my friends ended up here and most of them drink a lot more than I do.]$^-$
Therapist: You drink less than everyone else you know.
Client: [I wouldn't say less than *everyone*]$^+$, [but I'm not an alcoholic, either.]$^-$
Therapist: You haven't really noticed any problems with your drinking so far.

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Client: [No—I never miss work because of drinking]⁻, [I make it to most of my classes,]⁻ [and I don't drive after I drink at parties.]⁻ [On a usual weekday night I have a couple of drinks and then go out with friends.]⁰ [Does that sound like a "problem" to you?]⁰ [I definitely don't think so.]⁻

Coding

Target behavior. In order to code MISC 1.1, it is crucial that the topic of the conversation—that is, the "target behavior" that is to be changed—is known before beginning coding. In a substance-abuse-treatment setting, the target behavior change is usually obvious (e.g., decreasing alcohol use or abstaining from all drugs), but in other settings it might be less so (e.g., controlling blood sugars in primary care, increasing brushing and flossing at a dental office, or increasing physical activity in a weight-loss center). The target behavior change should be specified by your particular project or setting to avoid confusion; for example, the Talking about Drinking study specified the target behavior change as any movement away from problematic drinking or toward harm reduction, moderation, or abstinence, but client language about other drugs was ignored. In some cases, the target behavior change might be broader (e.g., any lifestyle changes that will prevent heart attack).

Neutral client language. Neutral, or non-change, client language, does not receive a code in MISC 1.1, it is important to be able to recognize it so that it can be distinguished from CT or CCT. Neutral client language includes:

- Questions asked of the therapist
  - "What do you think I should do?"
- Reporting of factual information (e.g., drinks per week)
  - "Sometimes on Fridays I'll go out to the bar."
- Story-telling unrelated to current change in the target behavior

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- o "I was downtown with my girlfriend a while back and we ran into some old friends. We had a few beers and were going to catch a movie, but she was tired from work and just wanted to go home."
- Behaviors/events occurring in the distant past (defined as more than approximately a week prior to the current therapy session)
  - o "After I spent a month in juvie in high school, I was really determined not to drink."
- Talking about someone else's intentions to change/not change
  - o "My brother is thinking about joining AA, and I think he really needs it. That guy drinks way too much and his life is a wreck because of it."
- Language that indicates the client is following the therapist but does not indicate agreement with the therapist
  - o "Uh huh."
  - o "OK."
- Any other client language that is neither CT nor CCT
  - o "I'm going to need to leave a little early today because my daughter has soccer practice."
  - o "I'd like a tissue."

Counter-change talk. This type of client language refers to any movement away from change, or toward sustaining the target behavior. Note that "change" here is defined in reference to the target behavior. Within the context of treatment for problem drinking, for example, CCT is coded in relation to maintaining or increasing drinking behavior. Clients may express CCT on other subjects (e.g., change in a relationship, moving to a new apartment), but these are not

coded unless directly related to the identified target behavior change. CCT need not have an oppositional quality nor an emotional charge. The key is that the client language favors not changing the target behavior, representing status quo or movement backward. Endorsing or expressing agreement with CCT offered by the therapist should be coded as an instance of CCT.

Each *different* CCT statement counts as one instance of CCT. For example, if a client lists several different reasons against or disadvantages of change, each one is coded as CCT (e.g., a volley that included a Desire⁻, Need⁻, and Other⁻ would count as three CCT tallies, and a string of four Reason⁻'s would count as four CCT tallies).

Some sub-categories of CCT include:

- Reason⁻: A statement indicating a rationale for not changing or for why change is unnecessary.

    o "Dancing wouldn't be any fun without doing a few shots first."

    o "The kids stress me out too much when I'm not drinking."

    o "My grades are fine."

- Desire⁻: A special type of reason, expressing the client's unwillingness to change or wish to partake in the target behavior.

    o "If I could, I would drink every day until I'm 90."

    o "I love drinking."

- Need⁻: A special type of reason stating a need not to change or to stay the same.

    o "Treatment isn't something that I need right now."

    o "I don't need to quit drinking entirely."

    o "I need to keep drinking if I want to keep these friends."

- Ability⁻: A statement that client is unable or unconfident about change

- o "It's just too hard to change my drinking after so many years."

- o "I'm feeling pretty low on the confidence scale."

- Commitment⁻: A statement that the client will not change, or an idea for how not to change/to stay the same.

  - o "As soon as I get out of rehab I'm going to buy a case."

  - o "I'm not going to say that I won't drink ever again."

- Taking Steps⁻: A statement that the client is already resisting change; this represents steps taken in the recent past (within approximately the past week).

  - o "I picked up another fifth over the weekend."

  - o "I quit my clean-and-sober housing today."

- Other⁻: A statement that is clearly CCT but does not fit reasonably into the other categories. This includes minimization of problems and hypothetical statements about non-change.

  - o "A DWI isn't that big of deal to me."

  - o "If I were 21, I'd run out and buy a bottle of wine right now."

Change talk. This type of client language refers to any movement toward change or away from the target behavior. As with CCT, "change" here is defined specifically in reference to the target behavior. The client makes a statement that directly or indirectly shows evidence of at least one of the following categories, which have the quality of moving forward in the direction of change in the target behavior. Within the context of treatment for problem drinking, for example, CT is coded in reference to reducing or stopping drinking behavior.

Each *different* CT statement counts as one instance of CT. For example, if a client lists several different reasons for or advantages of change, each one is coded as CT. As with CCT,

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endorsing or expressing agreement with CT offered by the therapist should be coded as an instance of CT.

Some sub-categories of CT include:

- Reason[+]: A statement indicating a rationale for changing the target behavior.

    o "Quitting drinking would help me get up for work."

    o "I hate the hangovers."

    o "My family needs me to be home at night, not at the bar."

- Desire[+]: A special type of reason stating the client's willingness to alter the target behavior.

    o "I really want to get started with treatment."

    o "I don't even feel like drinking today."

- Need[+]: A special type of reason stating the client's need to change.

    o "I have to do this."

    o "Therapy is what I need right now."

- Ability[+]: A statement indicating that the client is able to change.

    o "I know that I can quit if I try hard enough."

    o "This doesn't seem so difficult."

- Commitment[+]: A statement that the client will change, or an idea for how the client could change.

    o "I'll do whatever it takes to cut down on my drinking."

    o "I could start by tossing out everything in the liquor cabinet."

- Taking Steps[+]: A statement that the client has already begun to change; this represents steps taken in the recent past (within approximately the past week).

- o "At dinner last night I told my parents that I'm going to quit."

- o "I've already cut down this week."

- Other[+]: Any other statement about changing the target behavior. Includes hypothetical situations or circumstances that would convince the client to change, and problem recognition.

  - o "My drinking is out of control."

  - o "If I could get my own place I'd be less likely to feel the urge to drink."

Making Difficult Decisions

Inherent in coding is the need to make difficult decisions, and often with limited time. Decision rules can be helpful in alleviating confusion and increasing inter-rater reliability. Our team identified some problematic situations that arose again and again, and created decision rules to deal with them:

- Following vs. agreeing: For "uh huh" statements, code as CT if you think that the client is agreeing with therapist-lended CT, but do not code anything if you think that the client is merely showing that (s)he is following the therapist.

- Coding in (close to) real time: Coding is supposed to be done on "the fly". If you cannot decide whether to divide statements into two (or more) utterances, then only code the statement as one instance of CT or CCT.

- Coding a number. If the therapist asks the client to rate importance, confidence, or readiness on a scale, do not code the numerical answer as CT or CCT. However, if the client includes a qualifier for the number (e.g., "10. I know I can quit drinking if I want to."), then code the statement as an instance of CT.

- Statements about the past in a present context: Only code past CT as CT if the client connects the past with a statement about the present. For example, if the client mentions past ability to cut down on drinking as a reason that (s)he can quit this time, code it as CT.

- Statements about other behaviors in the current context: A connection between the target behavior and other events/values must be established *explicitly* by the client in order to be coded later in the session. For example, if the client ties drinking into receiving lower grades, code subsequent statements about the importance of doing well in school as CT.

- Statements about others: Do not code client statements about *other* people when they are mentioned together (i.e., "we" or "us"); the client must be referring to him or herself specifically. However, if the client uses a statement about another person as a reason to change or not change, then code it as CT or CCT. For example, if the client cites a relative going to prison for DWI as a reason not to drink, then code it as CT, but do *not* code a statement about "none of us" having drinking-related problems as CCT.

15 April 2009

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APPENDIX D

CHANGE TALK AND COMMITMENT LANGUAGE CODING SHEET

CHANGE TALK AND COMMITMENT LANGUAGE CODING SHEET

Other CT/CCT
-Desire to/not to change   - Ability to/not to change
-Reason to/not to change   -Need to change/ not change

Commitment to/not to change
- Commitment Language implies an agreement, intention or obligation regarding **future** medication adherence.
- Client statements of how they will rearrange their life in the future related to medication adherence are considered commitment statements.
- Hypothetical situations are coded as other.

Transcript #   Global _____ Coder:

Change Talk   Total C + O _____

	Deciles	Other	Commitment	Strength		
				L	M	H
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
	Totals					

Counter Change Talk   Total C+ O _____

	Deciles	Other	Commitment	Strength		
				L	M	H
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
	Totals					

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Shelly Peterson was born on December 7, 1964, in Kansas City, Kansas. She was raised in Prairie Village, Kansas, and graduated with honors from Shawnee Mission East High School. She attended Baylor University in Waco, Texas, where she earned a Bachelor of Arts degree in Psychology in 1987. She was married to Tedrick Housh, III in 1990, and they began raising a family of five children in 1994. She worked as a Research Project Manager for the National Cancer Institute's Cancer Information Service at the University of Kansas Medical Center for 10 years. To continue her education and marry her interests in psychology and health, she entered the Clinical Psychology Doctoral Program - Health Emphasis at the University of Missouri-Kansas City in 2004.

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